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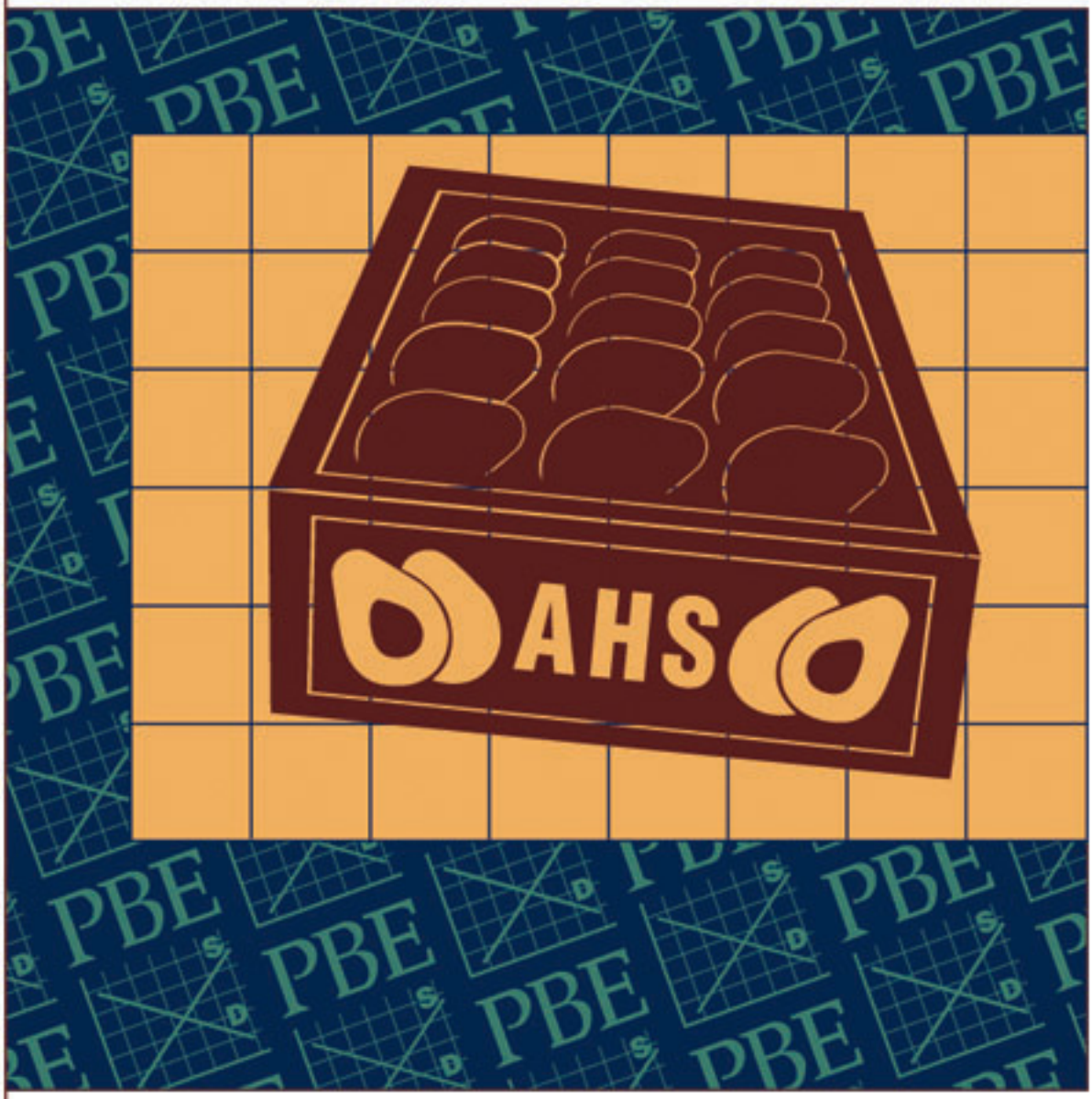

Raising Capital and Debating the Pros and Cons of a Monopoly in a Free-Market Economy

Monopoly's Might

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About the Buck Institute for Education

The Buck Institute for Education (BIE) is dedicated to improving 21st-century teaching and learning by creating and disseminating products, practices, and knowledge for effective Project Based Learning. Founded in 1987, BIE is a not-for-profit 501(c)3 organization that receives operational funding from the Leonard and Beryl Buck Trust, and funding from other education organizations, foundations, schools and school districts, state educational agencies, and national governments for product development, professional development, and research.

Project Based Economics

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Foreword

Students learn more when they care about what they are learning. Students understand concepts better if they see how these concepts apply to the world outside of school. Students retain information longer if they are actively engaged in discussion and demonstration of what they are learning.

These are hardly new ideas, but too much of what happens in American classrooms does not meet this ideal. *Project Based Economics (PBE)* is built upon these principles. It addresses the concepts and content defined by the *Voluntary National Content Standards in Economics*, but does it in such a way that this material becomes meaningful and involving to students. *PBE* reverses the traditional method of "teach the concepts first, then give students the opportunity to apply them." Instead, *PBE* places students in an interesting scenario with an open-ended problem to solve and asks them to arrive at a justifiable solution using economic concepts. The project thus "pulls" students through the content. The teacher's role is to clarify, facilitate, and guide, rather than "push" unmotivated students toward the learning objectives.

Additionally, the *PBE* methodology helps teachers build valuable interdisciplinary "21st-century skills" including collaboration, critical thinking/problem solving, and making a presentation. We have found that *PBE* works well for diverse students in a variety of school settings. Research comparing students' economic knowledge gained from *PBE* versus that gained by students who received traditional instruction has demonstrated that the *PBE* students learn more, and that this difference is statistically significant.

These units were developed collaboratively by the Buck Institute for Education, and the HIRE Center, California State University–East Bay. They have been pilot-tested and critiqued by a group of energetic and insightful teachers throughout California. Although too many teachers have been involved in the development of these units to thank each teacher by name, we are extremely grateful for their time, insight, and contributions to making these units successful. In addition, there have been a number of university professors, staff developers, and school district staff who have contributed to unit development. We have benefited from their observations and suggestions, and offer a collective "Thank you!"

Please visit the Interact website (www.teachinteract.com) to find out about professional development offerings and conference presentations.

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Introduction

Chapter One

What is Project Based Learning?

Project Based Learning (PBL) is an instructional method in which students:

- Engage in a rigorous, extended process of inquiry focused on complex, authentic questions and problems
- Work as independently from the teacher as possible, and have some degree of "voice and choice"
- Demonstrate in-depth understanding of academic knowledge and skills
- Build 21st-century skills such as collaboration, presentation, and critical thinking/problem solving
- Create high-quality products and performances which are presented to a public audience

PBL is often cited as a valuable method by educators promoting differentiated instruction, multiple intelligences theory, learning-styles theory, 21st-century skills, and the "new 3 Rs" of rigor, relevance, and relationships.

In PBL, the project *drives* the curriculum—it provides the structure for teaching and learning. A project is not just an "applied learning activity" that follows a traditionally taught unit of instruction. Nor is it like discovery learning in its most basic form, in which students are provided with tools and activities that allow them to "discover" knowledge and skills with minimal guidance from a teacher. Instead, PBL challenges students to solve a problem through the application of content knowledge and collaborative resource-gathering, investigation, discussion, and decision-making.

Each project in *Project Based Economics* is a complete unit of instruction centered on a scenario that presents students with an engaging, realistic problem with more than one possible reasonable solution. To resolve the problem successfully, students realize they need to understand economics. This increases their motivation to learn the curriculum. Coaching students to resolve the problem posed in each unit requires a teacher to weave together a number of instructional components while remaining focused on the economic concepts around which the project is organized.

Phases of a Project Based Economics unit: how learning unfolds

Although structured flexibly enough to allow for student discovery and

independent learning, all *PBE* projects follow a series of steps or phases. These phases may sometimes overlap, but can generally be defined as follows:

Project launch—the Entry Event

At the start of each *PBE* project, students either receive some type of authentic correspondence or have an authentic experience intended to engage them in the project scenario. The "Entry Event" provokes interest and generates curiosity, leading naturally to the next phase.

Framing the inquiry—Driving Question and Knowledge Inventory

To begin the inquiry and problem-solving process, students as a class analyze their task and write a "Driving Question" that guides the project. The teacher coaches students in the construction of a Driving Question that summarizes the problem to be resolved, which in *PBE* is written according to the model:

"How can we, as _____?, (do) _____?, so that _____?"

The teacher also leads the class through a discussion and recording of knowledge that the students already have (know) and information that they still require (need to know) in order to arrive at a solution to the problem. This process is repeated periodically throughout the lesson.

Problem-solving and learning activities

The project scenario unfolds as students receive additional information about the problem to be solved. Students work in teams to conduct independent investigation and complete project tasks, while the teacher provides resources and lessons, guided by the students' "Need-to-Know List." A Project Log is used to check for student understanding of key economic terms and concepts. The class revises the knowledge inventory periodically and revisits the Driving Question to help stay on track toward a reasonable resolution to the scenario. The teacher monitors students' progress and watches for "teachable moments" when students recognize their need to know more about economics.

Presentation, assessment, and debrief

The project culminates as students finalize their solution to the problem posed in the scenario. Students prepare authentic products and present them to an audience and/or publicly discuss each group's work. The teacher uses a rubric to evaluate the students' work, and may also choose to administer a test to assess learning. The last step is to debrief the project with students, discussing both economics content and the process by which it was learned.

Teaching in the PBL environment

Although Project Based Learning is designed to foster active, engaged learning, students do not work completely on their own or exclusively with their peers when addressing the problem presented in a scenario. PBL is most effective when accompanied by *project based teaching*.

In PBL, the teacher guides students through the process of collaborative problem-solving and the creation of high-quality products and performances. Teachers are an important provider of subject-area knowledge and remain responsible for monitoring and assessing student learning, clarifying content-related concepts and misconceptions, assigning students to work groups, and managing what goes on in the classroom. Although traditional tools such as lectures, homework, and quizzes still have a place in this setting, they are used in the meaningful context of solving a problem. The role of the teacher using PBL is one of making learning "inevitable" by carefully managing the learning process and promoting a spirit of inquiry.

Make it a collaborative effort

Timing and extent of a teacher's instructional interventions differ from those used in traditional approaches. Effective teachers in PBL wait for teachable moments when students are interested and ready to learn before intervening or providing the necessary content explanations; they present or clarify concepts once students realize they need to understand subject-area content in order to solve the problem. Project Based Learning is most effective when it is a collaborative effort between the teacher and students, with the teacher as the senior partner.

This collaboration begins by engaging students in the problem to be solved. As you launch the unit, it is important not to reveal too much about the problem that students are about to encounter, and not to pre-teach the content and take away the motivation to learn that comes after students are "hooked" by the Entry Event. Take the problem seriously. While acknowledging that it is a scenario, point out that the problem is closely modeled on what happens in the real world. Heighten student interest and motivation by emphasizing the important effects their decisions will have (summarized in the "so that" part of the Driving Question written by the class). Model genuine interest and enthusiasm for the challenge of exploring several possible solutions.

The "teacher-as-coach" metaphor applies as students go about the tasks of conducting research, understanding the problem's complexities, and preparing to present their solutions. Like a good coach watching athletes practice, the teacher needs to observe, diagnose, and guide

without doing students' work for them. Anticipate some needs before they arise, be prepared to meet them, and watch for new needs as they emerge—but wait until they emerge.

One of the biggest challenges for many teachers is to step back and wait for the "need to know" to arise in students. Instead of answering all questions right away, ask, "How could you find that out?" and offer suggestions and resources for further inquiry. If students get stuck at a certain point, act as a "cognitive coach" by modeling thinking strategies. Offer process-oriented comments such as, "How would I approach that issue/task? Well, I might break it down into steps, or I might want to talk with my group about _____, or make sure I understood _____. Or maybe I'd go back to my Need-to-Know List…"

Build classroom culture

Establishing the classroom culture is also important for successful PBL. Students must know that it is all right to take intellectual risks and offer creative solutions for critique by their classmates and teacher without fear of ridicule. A healthy spirit of give-and-take needs to be in evidence in a PBL classroom, as does the habit of reflection. Students and the teacher need to constantly ask, "What are we learning?", "How are we learning?", and, "What does it mean?"

Another vital part of classroom culture is collaboration. Students work in small groups in PBL, and key to their success is the ability to work together comfortably and productively. If students are not used to group work, these skills must be taught. If students are not working well together, the teacher needs to know how to intervene and smooth things out. And when students share ideas, ask questions, and present their work, whether it is to their own classmates or a public audience, a serious and respectful tone should be the norm.

Invest in planning

A teacher using PBL should be skilled in planning and organization. Before beginning a unit, make sure to read all instructions and prepare materials carefully. But, do not overplan and feel bound by a predetermined timetable. It is hard to predict exactly how each class will approach a project and what needs will arise. A certain amount of flexibility is required, as is the willingness to let go of some expectations and control. Students may propose solutions that you had not considered, or they may want to explore issues in greater depth and breadth.

A teacher also needs skill in the use of performance-based assessment. This means knowing how to assess skills such as collaboration, communication, and time and task management. You can enhance

student development of these skills by providing exemplars, well-written rubrics, and chances to practice with helpful feedback.

Teaching in a PBL environment differs from many traditional classrooms in two other ways. First, it can be noisy. That means a teacher (and his or her school neighbors and administrators) must be willing to accept occasional apparent disorder as being the inquiry process at work. Second, a teacher must be willing to personally engage with students in ways other than standing in front of the room, delivering content knowledge as the "sage on the stage." A degree of intellectual and sometimes emotional connection with individual students is often needed to meet the challenges of PBL.

Teaching Economics with Project Based Learning

Chapter Two

Economics is the study of the allocation of scarce resources. Because resources are scarce, individuals, firms, and society must make choices about how to allocate resources and where to make tradeoffs. If a company decides to hire more workers, for example, it must reduce capital costs. If government spends more on defense, it must reduce spending on education or other areas (or else increase debt).

When students learn about economics through projects, they apply economic theories and principles to solve authentic problems. The PBL process also challenges them to think critically, to understand complex systems, and to explain and defend their decisions.

To help students gain a better understanding of how our economy allocates scarce resources, units included in *Project Based Economics* focus on teaching different aspects of scarcity and the related concepts of opportunity costs and tradeoffs. By integrating each of these PBL units into a high school economics course, students will have a better understanding of how the allocation of scarce resources forces individuals, firms, and society to make choices among competing goods and why those choices determine how resources are used. Taken together, the units demonstrate how our economy responds to each of the four basic economic questions:

- What is produced and in what quantities?
- How are goods produced?
- For whom are goods produced?
- Who makes economic decisions and by what process?

Preparing students for PBL

Before launching the the *PBE* unit, we recommend introducing students to the concept of Project Based Learning. This can be accomplished with a 45-minute activity, **Make More Money?** (see Chapter Three). In this activity, students encounter an economics-related situation. As they set about solving the problem, they learn the process for how PBL works. In one class period, they gain experience analyzing an Entry Document, writing a Driving Question, conducting a Knowledge Inventory—and learning how to think and act in different ways than they might be used to in more traditional forms of learning.

What is provided in this unit

- A **Unit Overview**, including the time required, a summary of the problem to be resolved in a scenario, the economic concepts to be learned, the placement in the curriculum of a typical high school economics course, and the NCEE Content Standards addressed
- A section on how to teach each unit, which contains:
  - **Sequence of the Unit**, a quickly referenced list of each step
  - **Step-by-Step Teaching Guide**, with detailed instructions about how to manage each step, plus sample **Driving Questions** and **Know/Need-to-Know Lists, Economics Content Notes**, prompts for **Project Log** entries, and **Potential Hurdles**
- A section with all student handout masters
- A section of **Teacher Materials** with a detailed review of the economic concepts and terminology within the unit, which may be used to guide the preparation of lessons for students, plus a glossary of concept definitions, answer keys for unit assignments, and rubrics for major unit products
- A multiple-choice test with an answer key

At various points within each unit, you will see two types of special **Notes to the Teacher** on effective implementation:

- **Economics Content Notes** point out key concepts students should be learning, and provide guidance on how to ensure that they do.
- **Potential Hurdles** indicate certain points during the unit when students might become confused or sidetracked, and explain how to help them.

Teaching Strategies for *Project Based Economics*

Scaffold learning activities

Students are supported in a variety of ways in the *PBE* units. In addition to "soft scaffolds" such as conversations with a teacher, "hard scaffolds" are provided in each unit such as charts, tables, or worksheets, to help students learn concepts and organize their ideas. Students may practice using economic concepts through oral or written exercises that build knowledge and skills necessary for the culminating task in the unit.

Efficient project-based teaching generally involves selecting content resources for students to use before they embark on solving the problems presented and creating products. These can include economic textbooks, specially prepared handouts, newspaper articles, videos, and online resources. Students should be encouraged to grapple on their own or in small groups with economic concepts, and find their own answers to content-related questions as much as possible. Consequently, it is generally best not to assign specific resources but rather to tell students what they can easily access to find the information they need to complete project tasks. It is then up to students and their groups to decide what content resources they are going to pursue.

Provide clarifying lessons at "teachable moments"

PBL is most effective with continual dialogue between the teacher (as a coach) and students. Effective project-based teachers must actively direct students toward the curriculum goals by asking probing questions in class discussions, circulating and listening to discussions in group work, and taking advantage of teachable moments when students are ready to learn. When these moments arise, the teacher has a key role to play in explaining content-related concepts and clarifying misconceptions. The teacher may offer a quick explanation to individuals or small groups, or recognize when all or most of the class needs to be taught something as a whole via direct instruction.

When lectures are given, they should be short (hence the term used in these materials, "*mini-lecture*") and organized. Limit lectures to the information students need at that point in the problem-solving process. A mini-lecture should be introduced by talking about it as part of the teacher's role as "coach" for the students' problem-solving process. It is a good idea to refer to the "Need-to-Know" list and say something like, "Many of you said yesterday that you had questions about _____, so I have some information that will answer those questions." And, as in all cases when lectures are used, you should use the techniques of good lecturing; engage students by speaking in an interesting style, asking questions, giving examples, using visual aids, and pausing to have students think, talk, or do some activity.

Use formative assessments

A key part of your job in project based teaching is to monitor whether students are learning the concepts the project is designed to teach. A variety of formative assessments will help with monitoring, including individual questioning, pop quizzes, checks for understanding with peers, and project logs. Here are strategies for using formative assessment tools:

- Listen to student discussions in small groups or as a whole class, and ask questions to provide a window into students' thinking and reveal confusion or misunderstandings.
- Administer a short pop quiz requiring students to demonstrate their understanding of an economic concept.
- Arrange for peers to check each other's understanding by pairing up to explain an economic concept to another student. Follow this by asking students for a show of hands to report how well they thought they explained, and how well they (honestly) thought their partner explained the concept. If this check reveals a knowledge gap or misunderstanding, conduct a short whole-class discussion or mini-lecture to consolidate understanding of the idea or concept.

Project Logs provide a structured way of assessing student understanding and are included in *PBE* units at significant points during the project. You may have students record many things in a Project Log or journal, including notes on the process of learning, comments on how well they or their groups are working, or reflections on content-related topics. Project Logs provide for individual accountability for learning the material, and allow you to assess the understanding of each student when students work in groups.

Project Log entries *must be checked soon after they are written* if they are to be used effectively as a diagnostic tool. You need to find out what students do and do not know in order to plan the next day's instruction. Apart from skimming them all, one way to do this quickly is to select a small number of representative samples from a range of students in the class. Or, students could be asked to raise their hands according to how well their entries—or their peer's, if they have swapped and read each other's logs—matched the criteria provided.

Once Project Log entries have been reviewed to assess the degree to which individual students understand the conceptual material being addressed, you can plan further instructional actions such as:

- talking with the class about the concepts in question by giving another mini-lecture
- talking with certain students or groups to address their misconceptions and misunderstandings

- giving additional textbook reading assignments, and/or directing students to online resources and explanations
- arranging peer teaching between students who are confused about the concept and those who have a solid understanding of it

Manage small-group work

Although the problems posed in project scenarios can be resolved entirely by individuals or entirely through whole-class effort, Project Based Learning is most effective when students are required to work in small groups. Consequently, all *PBE* unit scenarios place students in the role of a team with three to six members. This gives students the opportunity to discuss their ideas and questions with peers and develops the skills of stating a position, listening to others' positions, respectfully disagreeing with others, and collaborating and compromising. There is no always-applicable guidance for forming groups, and you will have to think about your students and decide who works well together. Generally, we encourage teachers to include students with different interests and abilities in the group so that a range of talents and skills can be applied to the project. And, it is generally *not* a good idea for students to choose their own groups based on friendship alone.

Coaching and monitoring groups is important. Most groups will need some assistance maintaining a task focus. Groups may also need help maintaining a positive attitude or dealing with group members who are not carrying their weight. Although PBL is predicated on students taking charge of their own learning, teachers need to monitor this process continually, and pull groups into impromptu conferences when their process bogs down.

Communicate standards of excellence

Rubrics that specify the characteristics of quality work and exemplars of finished products are included in each *PBE* unit. Students should be given the rubric midway through the project, to guide them as they prepare the required major products and performances. Students should not be given the rubric at the same time they receive the Entry Document at the beginning of the project as part of a "complete packet of materials" for the whole unit. They need some time to define for themselves what they have to learn to resolve the problems posed by the scenario, and receiving the rubric or other materials too soon short-circuits that process.

Manage presentation and critique of answers to the Driving Question

All *PBE* units include the preparation of some sort of tangible product and/or performance to communicate an answer to the Driving Question—essentially, the solution a group has developed to the problem posed in the project scenario. Students will need guidance in the preparation of these

products, as well as the opportunity to practice and receive feedback on their work as much as possible from their peers and teacher. After students' solutions have been presented, the class should compare and discuss them, as explained in the debrief phase of each unit.

Oral presentations to the class or a panel are a valuable component of many *PBE* units. As teachers know well, you're often not really sure if you understand something until you explain it to others. However, managing oral presentations well presents several challenges. Student groups need time to prepare and practice. The expectations for a good oral presentation should be made very clear, including presentation techniques and proper attire, posture, attitude, and group member participation. The rubrics accompanying each unit provide guidance to students on the use of content knowledge as well as oral presentation skills.

To help ensure proper participation by all group members, experienced teachers use several strategies. One is to explain that everyone will be held responsible for understanding all parts of an oral presentation and the visual aids that accompany it—and the rubric and grading criteria will reflect this goal. In addition, groups could be informed that even if they have decided in advance who will say what during the formal part of a presentation, *anyone* may be asked a question about *any part* of the presentation. Or, a teacher could tell students they will be picked at random just before the presentation to deliver various parts of it, thereby putting all group members on notice that they all need to be prepared to fully participate.

On the day of presentations, if the number of groups is not too large, there may be time for each group to make a presentation. However, a potential problem with this approach is that groups tend to repeat themselves, and by the time the fourth or fifth group has made its presentation, there is very little new left to say or very few new questions to ask the group. Also, students in groups presenting nearer the end may have an advantage by hearing previous presentations. This can be avoided if it is possible to send the rest of the class to the library or another room, so each group can present only to the teacher or panel—or have presenting groups go to another location. If all students need to remain together, give student audience members a task. Have them listen to other presentations and make notes of good points made and good answers to questions, as well as how they might have done it differently. Some classes may be ready to assess their peers' performance, using a rubric or other set of criteria while they observe and listen.

Practice 21st-century skills

To meet the challenges of the changing economy in the United States and across the world, and become participating citizens in a democracy, students need to learn more than basic skills and acquire subject-area knowledge. Accordingly, all *PBE* units provide opportunities for students to learn and practice 21st-century skills such as collaboration (e.g., working well with others, sharing resources, arriving at consensus), critical thinking (e.g., gathering relevant information, generating and evaluating solutions to problems), and communication (e.g., discussing ideas, writing, making an oral presentation, using technology). You can discuss, teach, and even assess these skills before, during, and at the end of every project.

Establish group and individually based grading procedures

As students usually work together to create the products and/or performance that culminate a project, you may need to assign a single grade for that product, given to all students working in the group. Of course, however, some students—like some adults—will become freeloaders and allow others to do their work for them. Self-reports, combined with group self-evaluation and group leader reports, can provide some information on how much each student may have worked, but not how much each has learned. Students will take more responsibility for their learning, and learn more, if they know their economics content understanding will be assessed individually, so let them know the group product is not the only component of their grade. Instead of relying on one speaker to make a presentation, they should be asked to divide up the task—and be ready for questions about *any* part of it, not just the part they did. But since time is usually short, questioning students during oral presentations can only be a partial assessment strategy. Consequently, multiple-choice tests that can be used to assess individual student understanding appear at the conclusion each *PBE* unit. Additionally or alternatively, you could require students to turn in individual written assignments or take a short-answer/short-essay test. You will have to work out what is most appropriate for your own grading system, but the fundamental idea holds: Make sure to assess students individually on their content knowledge, in addition to any group assessment you conduct.

Allow for several possible "right answers"

Part of what engages students in Project Based Learning is knowing that they can make choices and are not simply "doing what the teacher wants." All *PBE* unit scenarios are built around problems for which there can be multiple reasonable solutions. There are also solutions which are clearly wrong; not *every* solution will work. Guidance on evaluating reasonable and unreasonable solutions for each unit is offered in the **Step-by-Step Teaching Guide**.

Stay within the project scenario

Since the scenarios are hypothetical, students often want to add details, modify what is known, or otherwise *change* the scenario so that it is easier to resolve the problem presented. Such creativity will sabotage the core purpose of the project—it has been carefully developed as a vehicle to teach specific economics content. All *PBE* units have been developed in close consultation with U.S. high school teachers, tested in their classrooms, and revised based on their feedback to ensure that the project, although enjoyed by most students, does not become merely a "fun activity." The project has been created to achieve a serious instructional purpose, and deviating from the project scenario's storyline tends to focus students' attention on irrelevant or less important learning objectives.

Consider needs of English language learners

Students who are learning to speak, read, and write English can benefit greatly from Project Based Learning, but special scaffolding may be necessary. They may need more time to complete tasks, more vocabulary-building, and more peer-to-peer support. Some of the authentic-sounding documents presented in *PBE* scenarios may contain jargon, slang, or cultural references that will need to be explained. When forming small groups, care should be taken to assign students learning English to teams with supportive and skilled members. Finally, oral presentations may present special challenges—ELL students may be allowed to participate to a lesser extent than other group members, and/or be given questions to be answered later in writing, rather than "on the spot."

Make More Money?

Chapter Three

An Activity to Introduce Students to the Project Based Learning Methodology

Overview

In this activity, students are presented with a problem-solving task focused on a fictitious high school senior who wants to drop some classes in order to work more hours. In the role of a counseling team at the school, students investigate the facts of the situation, consider the personal and economic choices involved, and recommend a reasonable solution.

Although this activity touches on some basic economic concepts, it is primarily designed for another purpose—to demonstrate the instructional methodology of Project Based Learning (PBL). It may be used with two groups of participants: high school students in the classroom, or their teachers in professional development workshops. The Buck Institute for Education (BIE) has field-tested this activity successfully with both groups. With students, we recommend using it prior to teaching the units from the *Project Based Economics* series. The instructions below are written with this use in mind. (If the activity is being used with an audience of teachers, they should experience it much as students will, which is the best way to learn how to implement it.)

Project Based Learning may be an unfamiliar process for many students and teachers. In this activity, which requires less than a typical class period to complete, students will become familiar with many of the key elements of the methodology as designed by BIE for its economics units. Like the *PBE* units, the **Make More Money?** activity begins with a problem-solving scenario (not all projects in PBL begin this way, but it is an effective option). PBL is an inquiry-based process that springs from what students identify they need to know in order to solve the problem presented in the scenario. Accordingly, it is important not to "frontload" any information before starting the activity. Do not conduct a discussion, assign reading, or give a lecture in advance about the value of going to college vs. going to work, nor tell students all about PBL. It is sufficient to simply say, "Now we're going to do an activity that will introduce you to one of the ways we're going to learn about economics in this course." The first thing students should see is the Entry Document, the note that launches the scenario. After the scenario has run its course, the debriefing time is when the principles and features of PBL should be discussed, along with any content-related issues or further work on the topic that the teacher would like to do.

Project Based Learning has proven effective in teaching content knowledge as well or better than a traditional lecture/textbook approach, improves

retention of knowledge, and contributes to the acquisition of 21st-century skills such as collaboration, presentation, and critical thinking. Moreover, it increases student engagement and interest in the subject of economics, which is important in their lives as workers and citizens. .

Content standards addressed

Voluntary National Standards in Economics:

Standard 1: Productive resources are limited. Therefore, people cannot have all the goods and services they want; as a result, they must choose some things and give up others.

Content keywords: scarcity, tradeoffs, opportunity cost

Materials needed

- One copy for each student or pair of students of the Entry Document, the note from a student, "AJ," with the additional context for it
- To have on hand in case students request it: copies or a displayed version of the handout, "Earnings by Education Level"
- Chart paper, whiteboard/chalkboard, or computer projector

Procedure (40–50 minutes)

1. Read the **Entry Document** aloud as a whole class (page 22, note from "AJ" with added context)
2. Write an **initial "Driving Question"** as a whole class (recorded on a projector, chart paper or board)

   Sample:

   How can we, as the counseling team, find out what's going on with AJ, so we can help him/her make a good decision?

3. Write a list of **"What Do We Know?"** as a whole class (recorded on a projector, chart paper or board)

   Sample:

   - We're a high school teacher who got a note from a student
   - It is September
   - AJ is an 18-year-old high school senior
   - AJ wants to drop classes

- AJ isn't sure about going to college right away
- AJ has seemed withdrawn and distracted lately
- AJ's grades have slipped
- We are on AJ's counseling team
- AJ won't graduate on time if s/he drops classes
- AJ wants to work more and make more money
- AJ doesn't want his/her parents involved

4. Write a **list of "What Do We Need to Know?"** as a whole class (recorded on a projector, chart paper or board)

Sample:

- Is AJ male or female?
- What classes does AJ want to drop?
- Why has AJ been distracted and withdrawn?
- What college was AJ planning to go to?
- Why doesn't AJ want his/her parents involved?
- Do AJ's parents agree with this decision?
- What job does AJ have?
- How much money does AJ make?
- What does AJ need more money for? Is it urgent right now?
- Has AJ thought through the consequences of not going to college?
- How much more money could AJ make in the long run by going to college?

5. Discuss what **resources** could provide answers to our "need to know" questions.

For example, some answers could be found through research—such as a comparison of earnings in jobs requiring college degrees vs. jobs that only require a high school diploma—and some might need to come from actually talking to people. Students should recognize, or be coached to see, that the best way to get more information at this point is to talk to AJ—so tell them AJ will be here in a minute for a meeting.

6. Students take 2–3 minutes, working in pairs or small groups, to plan **questions to ask AJ**.

7. *If they ask for it*, students receive the handout **found on page 24, which shows earnings by educational attainment.** This information may give students ideas for what to discuss with AJ, and should be very briefly discussed as a class. If students do not request this information, the handout may be held for the debrief as an optional discussion piece if you want to use it.

8. Students ask questions during a **"live" meeting** with someone playing the role of AJ.

   - AJ is reluctant to talk, but eventually reveals details about the decision to drop classes.
   - For suggested responses to questions, see "Guidelines for Conducting the Interview and Playing the Role of AJ" below.
   - After AJ reveals the "secret"—that he/she needs more money to help support the family since the father was laid off—the interview ends.

9. Revisit the **Know/Need-to-Know Lists** and revise the **Driving Question** as a whole class.

   Point out that students now have answers to some of their "need to know" questions—and that the list of "what we know" has lengthened. To save time, you do not actually have to write new items on the lists. However, do ask students if they think the Driving Question still fits or if they want to change it, and do so. A new Driving Question might be:

   How can we, as the counseling team, talk more with AJ and his/her parents, so we can help him/her graduate on time and go to college?

10. **Wrap-up:** Explain that although they may not have all the answers to their "need to know" questions, it is now time to propose solutions, or at least say what they would do next. Allow 2–3 minutes for students working in pairs or small groups to brainstorm possible solutions, and then share them aloud and evaluate them.

    Sample of possible solutions:

    - Try to rearrange AJ's class schedule so he/she can complete courses required for graduation and still work the required hours.
    - Talk with AJ's parents to try to find a way to keep AJ on track for graduation and attending college.
    - Go ahead and do what AJ wants.
    - Recommend independent study or the Graduate Equivalency Diploma (GED).

11. **Debrief** with the whole class by leading a brief discussion about both the economics content and the process of learning in PBL.

Economics Content Note

Discuss the economic concepts of *scarcity, tradeoffs,* and *opportunity cost.*

Economics Content Notes: Discuss the economic concepts of *scarcity, tradeoffs*, and *opportunity cost:*

- Since the time available for work is a limited, or scarce resource, AJ must consider the trade-offs between work and further education.
- Point out that the cost of AJ's decision can be thought of in terms of what he/she gives up—the opportunity cost—by working more hours to make more money now, versus going to college and earning more later. If you wish, introduce the data comparing earnings of college graduates vs. high school–only graduates.

Potential Hurdle

Discuss what this activity demonstrates about Project Based Learning.

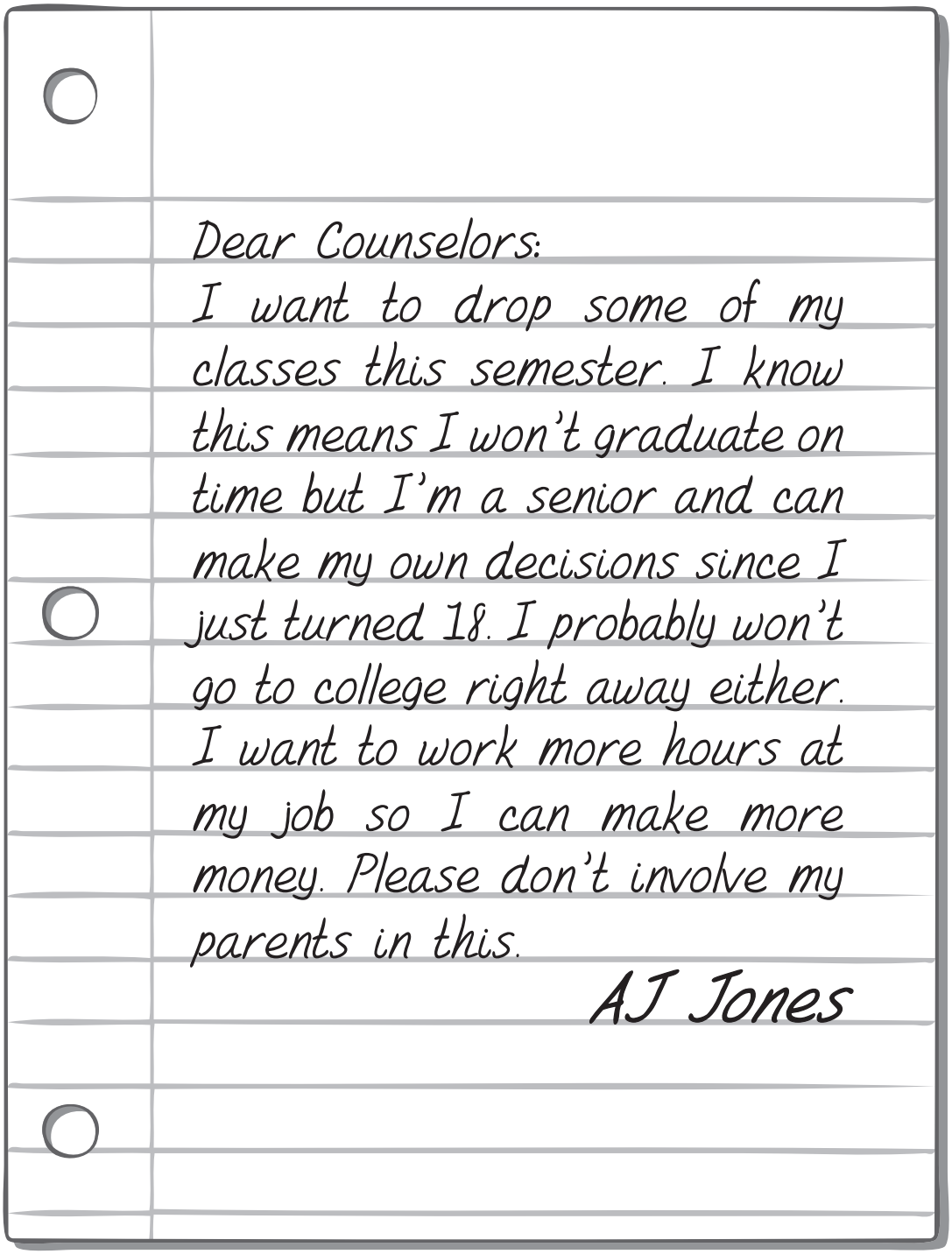
Potential Hurdle: Discuss what this activity demonstrates about Project Based Learning:

- There is no *single* ***right*** answer to the problem in the scenario—it is "open-ended"—but there are ***wrong*** answers. For example, denying AJ's request without further discussion or contact with his/her family would probably be a mistake.
- ***It is important to be persistent.*** During the "live" interview, encourage students to find different ways to ask AJ the same question. During the debriefing, point out that persistence is an important "habit of mind" for PBL.
- ***Frustration is OK—it is an important part of PBL.*** Ask students if they were frustrated at any time during the process. This often leads to a discussion of how students become frustrated during research or other inquiry-based assignments when they cannot find the answers easily. You should allow for some frustration but also offer coaching if students are getting too far off track. Focus students back on the "need to know" list when they are having difficulty thinking of questions to ask AJ.
- ***The Driving Question and the Know/Need-to-Know Lists are important tools*** for keeping on task and focused on the problem to be solved as it evolves.
- ***Good PBL gets students to ask questions about content.*** Asking questions demonstrates that students are open to learning, which can lead to "teachable moments." Rather than give students the answers too quickly, record questions as they come up and have students investigate. In this activity, the information on average earnings by level of education was handed out, but it could have been easily researched by students if there was more time.

- ***New information leads to shifts in perspective—and new questions***. For example, learning that AJ needs more money to support his/her family, not for frivolous expenses, creates a major shift in the way students think about the problem, and new "need to knows" could be identified.
- ***Decisions are often made under conditions of uncertainty.*** Just like people in the real world, students do not always have complete information on which to base decisions. Some of the items on the "need to know" list in the **Make More Money?** activity may not be answered, but that doesn't mean reasonable solutions to the problem can't be proposed.

Letter From AJ

You are a high school teacher who is also on a counseling team, and one day in September you received this note from a student your team counsels:



Dear Counselors:
I want to drop some of my classes this semester. I know this means I won't graduate on time but I'm a senior and can make my own decisions since I just turned 18. I probably won't go to college right away either. I want to work more hours at my job so I can make more money. Please don't involve my parents in this.

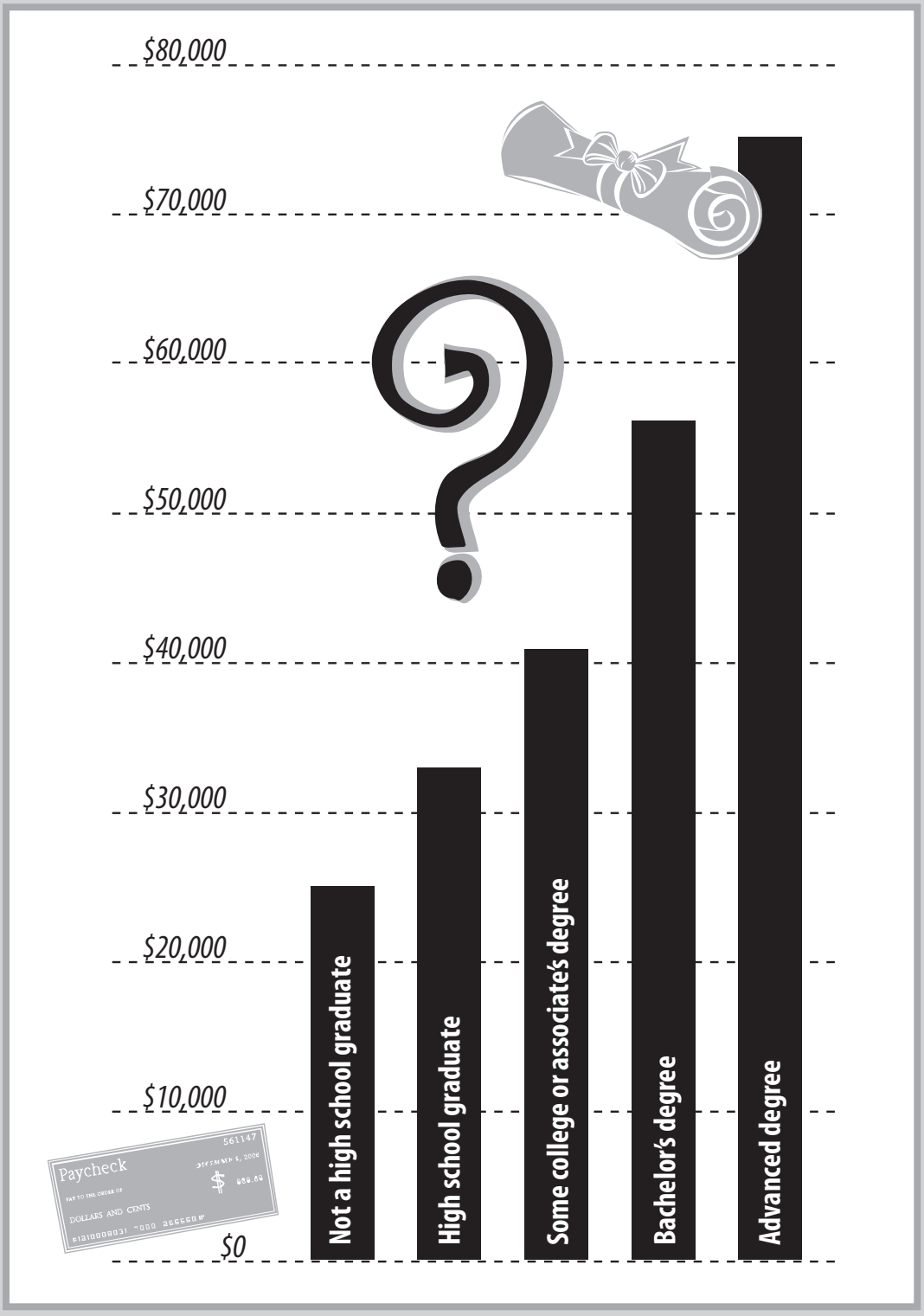
AJ Jones

You have always thought AJ was doing just fine in school—but then you remember hearing that AJ's grades have been slipping lately and that AJ has seemed somewhat distracted and withdrawn. You've decided to take this to the counseling team for action.

Guidelines for Conducting the Interview and Playing the Role of "AJ"

- The role of AJ may be played by a male or female—either you, another adult, or a competent student who has been rehearsed.
- AJ should be very reluctant to talk at first. Avoid answering direct questions by saying things like, "It's a personal decision,"—"I just want to work more hours,"—"I'm 18 and can handle myself,"—"It's nothing to do with not liking school or having trouble or anything."
- Slowly reveal the following information, when asked about it:
  - Job is at a local supermarket; bagger and stocker now, but could become a checker soon
  - Hourly wage is $8
  - Now work 15 hours a week, want to increase it to 40
  - May have appeared withdrawn and distracted because of this decision, but nothing else is going on (relationships are good, no drug/alcohol abuse, no physical or mental problems, no difficulties with school, etc.)
  - Want to drop government, economics, and English classes and keep art, yearbook; not taking math or science this year but have taken three years of each
- Be evasive about what the money is needed for—"Oh, I just want to buy stuff," … "My cell phone bill is pretty big," … "I might get a car, better clothes, just spending money for going out with my friends, you know…," … "And I'll save some money too."
- Show discomfort when talking about your parents. Say you do not want to involve them because, "I'm 18 and can make my own decisions," … "I don't want them to stress about me," … "They've got my two brothers and sister to worry about."
- If asked, "Why not wait to work more until after you graduate?" AJ should respond, "I really need the money now." (This should be said in a way that begins to raise suspicions, and/or show discomfort with body language and facial expressions.)
- If the group is getting too frustrated and/or you wish to end the activity, give a clue about what question to ask to get AJ to reveal the "secret" by saying, "My family…I mean, I really need the money now."
- Upon further questioning, it should be revealed that AJ's father has suddenly been laid off from his job (you could choose something in a downsized sector of the economy—computer programming, auto-parts factory, etc.). AJ feels like s/he should work to help support the family, but they would be ashamed to admit it, and would not want AJ to do this.
- *After this last piece of information is revealed, the meeting ends and "AJ" leaves.*

Median Earnings for Full-time, Year-Round Workers Age 25 and Over by Educational Attainment (2007)



Source: www.census.gov/prod/2009pubs/p20-560.pdf

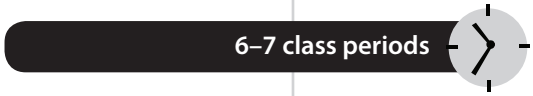
Monopoly's Might

Chapter Four

Purpose and Overview

Time required

6–7 class periods



Project scenario

In a free market economy, competition and monopoly have advantages and disadvantages. As firms enter a competitive market, price falls and the amount of goods available increases. When a monopoly is established, the quantity of goods in the market as a whole decreases, and price increases over the equilibrium price set in a competitive market. However, the promise of economic profit created by monopoly power provides an incentive to innovate, which can lead to new discoveries and improved goods and services. Monopolies, then, have some positive effects as well as some that could be perceived as negative—especially by other firms driven from the market or consumers fearing higher prices and fewer choices.

> *High school student entrepreneurs in a School-Based Enterprise (SBE) have developed, produced, and marketed an avocado with fewer calories than other avocados. Their faculty advisor alerts them to the need to expand production given the possibility of competition from other firms. During the course of the next three years, students analyze data on sales, revenue, costs and profits to help them convince a venture capitalist to invest in their SBE, then to fund research and development for a much-needed pesticide. Finally, after becoming a monopoly with a patent for the pesticide, the SBE is bought out by a large corporation. Students face an ethical dilemma—should they become employees of the monopoly or not—and must write a position paper and debate the pros and cons of competition and monopolies in a free market economy.*

Concepts to be learned

To successfully resolve the problem and complete the products required in this project, students need to understand and be able to apply the following economic concepts:

- Barrier to entry
- Competition
- Corporation
- Demand (change in and quantity)
- Demanded
- Entrepreneur
- Equilibrium price
- Equilibrium quantity
- Market
- Market economy
- Monopoly
- Opportunity cost
- Patent
- Price
- Profit
- Scarcity
- Supply (change in and quantity supplied)
- Tradeoff

Although an understanding of the following economic concepts is not essential to complete project tasks, teachers can use the unit to explain additional economic concepts including:

- Corporation
- Economies of scale
- Industry

NCEE content standards addressed

Monopoly's Might is intended to be taught throughout the United States and, as appropriate, in other English-speaking countries. Teachers can use it to address the following *Voluntary National Content Standards in Economics* codified by The National Council on Economic Education in partnership with the National Association of Economic Educators and the Foundation for Teaching economics. For more information see www.ncee.net/ea/standards.

Standard #	Economic Concept
1	Scarcity
2	Opportunity cost
3	Market systems (allocation of goods & services)
4	Economic incentives (prices, wages, profits, taxes, etc.)
7	Market economies
8	Supply and demand
9	Effects of competition
14	Entrepreneurs

Teaching *Monopoly's Might*

Sequence of the unit

Like the other BIE *Project Based Economics* Units, students complete *Monopoly's Might* by following a standard set of activities in a proscribed order. But within these activities, there will be variation in the timing and in the way students complete them.

The sequence of instructional activities is described below. This sequence is logical, and is based upon extensive pilot testing in high school economics classrooms. It is also informed by research into effective instruction. Although changes may be necessary to meet time constraints, address the needs of specific student populations, or include additional instructional materials and learning opportunities, we strongly encourage teachers to adhere to the sequence of activities as closely as possible—at least during the first several times *Monopoly's Might* is taught. Each instructional activity is discussed in more detail in the following section, the **Step-by-Step Teaching Guide**.

Pre-project planning

0. **Prepare** for successful project implementation.

Launching the project

1. Students receive the **First Memo from Ronnie Johnson, with 2008–2009 production data tables**, and discuss it as a whole-class.

Framing the inquiry

2. Students develop the **initial Know List** with you (whole-class discussion).
3. Students develop the **initial Driving Question** with you (whole-class discussion).
4. Students develop the **initial Need-to-Know List** with you (whole-class discussion).

Problem-solving and learning activities

5. Guide students in analyzing **2008–2009 production data tables** (whole-class discussion).
6. Give **Clarifying Lesson #1** on *demand*.
7. Students individually write **first Project Log entry**.
8. Review **individual Project Log entries** to assess understanding of economic concepts.

9. Students **write summaries and present "elevator talk"** to venture capitalist (in small groups).
10. Students receive **second memo from Ronnie Johnson and 2010 production data tables** (whole-class discussion).
11. Students revise **Driving Question** (whole-class discussion).
12. Students **revise the Know/Need-to-Know List** with you (whole-class discussion).
13. **Gives Clarifying Lesson #2** on *competition*.
14. Students individually write **second Project Log entry**.
15. **Review individual Project Log entries** to assess understanding of economic concepts.
16. Students plan and make **two-minute presentation to venture capitalist** (in small groups).
17. Students receive **final memo from Ronnie Johnson and 2011 production data tables** (whole-class discussion).
18. Students **finalize the Driving Question** with you (whole-class discussion).
19. Students **finalize the Know/Need-to-Know List** with you (whole-class discussion).
20. Give **Clarifying Lesson #3** on *monopolies*.
21. Students write **final Project Log entry**.
22. **Review individual Project Log entries** to assess understanding of economic concepts.
23. **Share supplied rubric with students** to guide their work (whole-class discussion).

Presentation, assessment, and debrief

24. Students write **position paper on joining a monopoly** (as individuals).
25. Students prepare their arguments and **debate the ethics of monopolies**.
26. Use **supplied scoring guide to assess** position papers.
27. Conduct **debrief to clarify and consolidate** students' understanding of key economic concepts.

28. Manage **student reflection** on the 21st-century skills practiced and the process of learning in PBL.

29. Use supplied **multiple-choice test** to assess individual students' understanding of key economic concepts.

30. Make **notes on adjustments** to the unit to improve student learning for the next time the unit is taught.

Step-by-Step Teaching Guide

Each of the above instructional activities is discussed in more depth below, with tips for successful classroom implementation.

Pre-project planning

0. Prepare for successful project implementation.

There are a number of issues that must be considered before embarking on a problem with students. These include:

- How much time will be devoted to the project?
- What economics content resources need to be prepared in advance?
- Do all students have the basic skills (i.e., non-economics content, such as reading, working in groups, etc.) they need to tackle the project? If not, is it necessary to preteach some of these skills, establish student mentor relationships, or deal with these challenges in other ways?
- How will student groups be formed?
- How will groups report on their progress and be held accountable? Do report forms or other tools need to be developed?
- Is it necessary to arrange access to the media center or computer lab?
- Do parents or administrators need to be informed about the process of Project Based Learning and be assured that time spent on the project is focused on standards-specific learning goals?

Launching the project

1. Students receive the Entry Document, the first memo from Ronnie Johnson, with attached 2008–2009 production data tables, and discuss it as a whole class.

*The first memo from Ronnie Johnson and 2008–2009 production data tables may be found in the **Student Materials**.*

Have students *only focus on the memo* at this point—save the data tables for later (you may hand them out separately if you wish). Ask one or more students to read aloud the Entry Document while the whole-class focuses on it.

The memo can be projected so it can be read by the whole-class. Alternatively, copies of the memo can be duplicated and passed out to students, or viewed online as an email or document posted to a website.

Potential Hurdle

It is essential that the entire class be able to read and comprehend the Entry Document. If necessary, employ usual literacy-building strategies.

Potential Hurdle: As this memo sets up the scenario and the problem to be solved, it is essential that the entire class be able to read and comprehend the text. If necessary, employ the same literacy-building strategies you would normally use for this kind of reading material.

Synopsis of memo: Faculty advisor Ronnie Johnson's first memo congratulates his students in Avocado High School's School-Based Enterprise (SBE) for receiving an award from the Secretary of the U.S. Department of Education. Johnson notes the need to expand production and profits and asks students to prepare a one-minute "elevator talk" to a venture capitalist. They will need to explain "the economics behind our prices, costs, and profits over the past two years," and to "predict revenue and profit for the next year." Students are cautioned that "venture capitalists have strong backgrounds in economics and will expect your explanations to be grounded in demand and supply."

Economics Content Note

Do not at this point explain to students the meaning of the economic terms in the memo. They will do this for themselves once they begin working to solve the problem.

Economics Content Note: The memo contains a number of economic terms (demand, competition, production, profits). It is assumed that students will either not fully understand these terms or have misconceptions regarding their meanings. **Do not,** at this point, explain to students the meaning of these terms. This is something they must do for themselves (with your monitoring and guidance) once they begin working to solve the problem.

Framing the inquiry

2. Students develop the initial Know List with you (whole-class discussion).

Students must now assess what they already know about the problem posed in the Entry Document. This should be done as a whole-class by creating a "What Do We Know?" list on chart paper or a computer projector. Ask students to carefully review the Entry Document and offer items for the list, making sure to *only record what is in the text, not what might be inferred*. Students should be coached to identify all of the information that the Entry Document provides. They should conclude that this information is insufficient to solve the problem, and they need to know (learn) additional things.

Although each class generally produces a unique Know/Need-to-Know List, an example of the type of items that might appear on the first Know List follows.

What do we know?

- We belong to a School-Based Enterprise
- We produce and sell low-calorie avocados
- Ronnie Johnson is our faculty advisor

- We want profits to pay for scholarships
- We got a national award from the U.S. Secretary of Education
- Our goal is to expand profit
- We are the first in the market (we created it)
- Increased demand for low-fat avocados increased our profit
- We need money from a venture capitalist to build more facilities
- Venture capitalists don't usually meet with high school students
- We have one minute in an elevator to convince a venture capitalist that we're profitable
- We need to write a summary before giving our elevator talk

3. Students develop the initial Driving Question (whole-class discussion).

After students have discussed the memo from Ronnie Johnson, and you are satisfied that students understand it, lead students in drafting an initial Driving Question. This is generally done as a whole-class discussion.

A Driving Question is a succinct declaration of the general problem students are to solve. It takes the following form:

> How can we, as… **[the role(s) being assumed by the students]**, do… **[the specific task(s) students must complete]**, so that… **[the specific result or goal(s) to be accomplished]**.

The initial Driving Question may be quite different from the Driving Question that will emerge as students think about and work on the problem. This is to be expected. The Driving Question generally evolves as students gain more insight and knowledge into the problem and its underlying issues. The initial question may look something like:

> How can we, as **students at Avocado High School's SBE**, write and present **a one-minute summary explaining our prices, costs, and profits**, so that **a venture capitalist will give us the money to increase production and profits?**

At this point, it is fine to keep the Driving Question ill-defined. It is not necessary for the Driving Question to contain economic terms or, if it does, use the economic terms correctly. The Driving Question will become more refined

as students learn more, and as new developments in the scenario unfold.

4. Students develop the initial Need-to-Know List with you (whole-class discussion)

Students must now assess what they already know about the problem posed in the Driving Question. This should be done as a whole-class by creating a "What Do We Know?" list on chart paper or a computer projector. Ask students to carefully review the Driving Question and offer items for the list, making sure to *only record what is in the text, not what might be inferred*. Students should be coached to identify all of the information that the Driving Question provides. They should conclude that this information is insufficient to solve the problem, and they need to know (learn) additional things.

Review the Need-to-Know List soon after it is written and think about how you will answer students' questions. Some may be answered right away, or while coaching small groups. Some will require a more formal clarifying lesson for the whole class. Other questions will be answered through independent research and thought by students. As the problem unfolds, coach students to see that some "needs to know" will never be answered and are not actually necessary for developing a reasonable solution to the problem.

Although each class generally produces a unique Know/Need-to-Know List, an example of the type of items that might appear on the first Need-to-Know List follows. *Remember, this should only be drawn from the memo, not the data tables, at this point.*

Example of initial Need-to-Know List

What do we need to know?

- What is an avocado?
- What is "revenue"?
- How much money are we going to make?
- How long does it take to grow an avocado?
- Why is the school named AHS?
- What's the U.S. Department of Education?
- Does the taste of low-calorie and regular avocados differ?
- Can we get a patent?
- Are we growing the product on campus?
- How much profit do we need to fund scholarships?

- How big is the market for a low-calorie avocado?
- Do students get paid for this?
- What makes us profitable?
- Will we have competitors?
- Is our profit enough?
- What percent of profit will venture capitalists take?
- Why do costs change?
- How can we summarize this and convince the venture capitalist in only one minute
- Will the venture capitalist want to be bothered in the elevator?

Problem-solving and learning activities

5. Guide students in analyzing 2008–2009 production data tables (as a whole class).

To create the summary and the elevator talk, students first must analyze the tables that accompany Ronnie Johnson's memo. Although the memo tells the students that profits have increased dramatically with the increase in demand for avocados, the attached tables show the numerical basis for this statement. Each table provides students with benchmark data on price, quantity, and cost. One table shows the quarterly data for 2008 and one shows data for 2007. Both the 2008 and 2009 tables should be used as information to help guide students toward gaining knowledge of how price and quantity are determined in markets.

Potential Hurdle: Start analyzing these tables with students by walking them carefully through what is shown on each table. Do not go too fast or let the quickest students jump to conclusions before other students have had a chance to think. To prevent confusion, have students look only at the tables for one year before moving to the next year. Ask questions—again allowing time for *all* students to think—to guide the class in understanding what the data show.

Potential Hurdle
To allow all students a chance to think, have students look only at the tables for one year before moving to the next.

- How does the quantity of avocados sold vary with the price?
- How did demand for avocados change between 2008 and 2009?
- How did the demand change between 2008 and 2009 affect profit?

Economics Content Note: The information in the tables can be used in a number of ways:

Economics Content Note

Information in the tables can be used to illustrate how demand varies with price, as well as how costs may vary over the course of a year.

Information on sales can be used to illustrate a demand curve—how the quantity demanded for avocados varies with price. Charts constructed (or those provided) can be used to show growth in demand for avocados between 2008 and 2009 (as shown in increased quantity sold at a given price—at $0.89 the sales went from 100 thousand in 2008, to 200 thousand in 2009) and how (for example) profit increased with increased demand and stable costs. Students should be challenged to describe the changes that occur over time in order to help them gain a perspective on revenue, sales, costs, and profit.

The charts also show that costs vary over the course of the year, as they do in farming (e.g., natural harvesting occurs once a year with more expensive hydroponics or greenhouse gardening techniques used to harvest avocados the rest of the year). Students should not worry about why the costs vary. Instead they should realize that variations in the cost of production produce variations in prices. When production costs are higher (in the first and fourth quarter), prices are higher and when costs are lower (third quarter), prices are lower.

Students should be coached to think about why costs (and hence price) fluctuate between the quarters. They should be able to identify such reasons as: 1) the ripening season affects the cost of producing an avocado (i.e., it's cheaper to get avocados during their natural ripening season than in other seasons), 2) bugs are more prevalent in some seasons than others (thus money must be spent to exterminate them), and 3) trees freeze in the colder months (thus incurring costs to prevent this). These forces of nature mean that the costs are higher in the first and fourth quarter and lowest during harvest (third quarter).

Students should calculate total revenue, total cost, and profit in each quarter using the information provided in the table. Total revenue is simply the price times quantity in the sales grid. Total cost is per unit cost ("cost" in the tables) times sales, and profit is total revenue minus total cost.

Perhaps the easiest way for students to follow market processes is to chart profit, price, costs, and sales over time. Line and bar charts showing activities during all four years are provided in the **Student Materials.** Students can construct these charts as they proceed through the unit either by plotting points from each memo as it is received or as a summary using the last memo to show trends.

6. Give Clarifying Lesson #1 on *demand*.

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See "Economics Review" for background information for this lesson.

Economics Content Note: In this lesson, emphasize the following principles, concepts, and processes:

- The relationship between total revenue and price
- The relationship between total revenue, total cost, and profit
- The opportunity cost of producing avocados
- The incentives created by profit
- How a competitive market adjusts to an increase in demand the long term

Economics Content Note
Emphasize the relationships between total revenue and price; total revenue, total cost, and profit; opportunity cost; incentives created by profit; and how a competative market adjusts to increased demand, in the long term.

7. Students individually write first Project Log entry, answering the following questions:

How would producing a low-calorie avocado change the demand for avocados? What impact would this change have on the market for avocados?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

Potential Hurdle: The charts also show that costs vary over the course of the year, as they do in farming (e.g., natural harvesting occurs once a year with more expensive hydroponics or greenhouse gardening techniques used to harvest avocados the rest of the year). Students should not get hung up on why the costs vary. Instead they should realize that variations in the cost of production produce variations in prices. When production costs are higher (in the first and fourth quarter), prices are higher, and when costs are lower (third quarter), prices are lower.

Potential Hurdle
Students should not get hung up on why costs vary throughout the year, but should realize that variations in production costs cause variations in prices.

8. Review individual Project Log entries to assess understanding of economic concepts.

For tips on reviewing Project Logs, see "Use Formative Assessments" in Chapter Two discussion of ***Teaching Strategies for Project Based Economics****.*

Economics Content Note: The Project Log is designed to ensure that students understand the market processes that accompany a change in demand. Students should be able to see that the introduction of the low-calorie avocado will increase the demand for avocados. The increase in demand will increase the quantity sold *at any given price* but, more importantly, will push up price. This process can be described in words (i.e., increase in demand means more people want the avocados and some

Economics Content Note
The Project Log is designed to ensure the students understand the market processes that accompany a change in demand.

people will pay a higher price to obtain them), through graphs (i.e., a shifting outward of the demand curve), or in the tables provided (i.e., at $0.89, 100 avocados are sold prior to the introduction of the low-calorie avocado; afterwards 200 are sold).

9. Students write summaries and present "elevator talk" to venture capitalist (in small groups or pairs).

Once you are sure all students are ready, tell them it's time to write their summaries and plan their elevator talks. Form students into groups of three or at most four (or pairs, if you have a small class). Allow them time to write a summary of what the data show about prices, costs, and profits in the low-calorie avocado market, then plan how to present this in one minute. You may tell students that everyone in the group or pair is required to speak for part of the time, or you could tell them you will randomly select one student from each group to speak for the whole minute.

When presenting the elevator talks, have each individual, pair, or group come up to the front of the class. You or another adult who has been prepared could play the role of the venture capitalist, and may react or ask very brief questions but otherwise not interfere with the presentation. You can enhance this exercise by simulating an actual elevator using tape on the floor, a cardboard refrigerator box, or curtains. To keep the problem's scenario realistic, it is extremely important that students are held to a one-minute presentation. Use a stopwatch or timer—adding a "ding" sound effect when the elevator doors open and the venture capitalist exits.

After the talks are presented, collect the summaries if you wish to assign credit or grade them.

10. Students read second memo from Ronnie Johnson and analyze the accompanying 2010 production data tables (as a whole group).

*The second memo from Ronnie Johnson and 2010 production data tables may be found in the **Student Materials**.*

Synopsis of second memo: The second memo informs students that SBEs at three other high schools—Buchanan, Fillmore, and Pierce—are now producing and selling similar avocados. The memo points out that, while consumers appreciate the lower prices and increased availability of avocados, the entrance of new producers into the market causes profit for the SBE at AHS to fall, even though sales are still robust. The tables accompanying the second memo show the drop in prices and profits in 2010. Additionally, a mite that destroys avocado trees is threatening their crop. Students are told

they will have two minutes to make another presentation to the venture capitalist. They need to explain why profits have fallen but also why they should get further investment to help develop a method for getting rid of the mites.

Economics Content Note: The 2010 tables should be used to illustrate how prices, profits, sales, and revenue change when competition increases. While sales are reduced for the SBE, they are increased in the market overall (remember that four firms now produce avocados). For AHS, the amount sold is stable, even if costs still fluctuate. Of course, the reductions in sales and price (from increased competition) decrease the SBE's total revenue and profits. In fact, in the first and fourth quarters—when costs are highest—profits are negative, although the school still has positive profits if viewed over a year-long period. The charts illustrate the total growth in market sales and the fall in profits and prices between 2009 and 2010, when new firms entered the market. Now is a good time to discuss profits in a free market economy. Students should understand that economic profits are zero in a competitive market, although firms receive a normal profit.

Economics Content Note
The 2010 tables illustrate how profits, sales, and revenue change when competition increases. Now is a good time to discuss profits (normal and economic) in a free-market economy.

Potential Hurdle: Students may be frustrated because they have no decisions to make. Rather, external events create changes and students merely react to those changes. This effect is intentional. This frustration reflects what happens in a market economy, in which prices fluctuate as firms enter and exit. The firms remaining in the market react to the price changes by altering production—as our SBE is trying to do with additional dollars from venture capitalists. Students should be coached to see that the drop in price and profits stems from the entrance of firms into the market.

Potential Hurdle
Students may be frustrated by having no decisions to make, and by having to merely react to changes. The effect is intentional. Coach them to see that the drop in price and profits stems the entrance of firms into the market.

11. Students revise Driving Question with you (whole-class discussion).

Students should revise their Driving Question at this point. The new Driving Question should resemble:

> How can we, as **students at AHS,** prove **we will be profitable in the competitive market,** so that **venture capitalists will give us the money we need to develop a method for getting rid of the mites?**

12. Students revise the Know/Need-to-Know List with you (whole-class discussion).

The additional information gained from the second memo and accompanying tables can be used to revise the Know/Need-to-Know Lists. The revised lists could include:

What do we know?

- (*previously listed items)*
- Competitive forces mean no (little) profit
- We still need venture capital money
- We must show why changes have occurred
- We have a mite problem
- Our Biochemistry Club needs money so it can develop a way to get rid of the mites
- Price stays at $0.79
- Profits have fallen
- Costs are the same as before
- We have to make a two-minute presentation to a venture capitalist

What do we need to know?

- (*previously listed items*)
- How did the other schools suddenly develop the low-calorie avocado (was there a spy, or did one of us sell out?)
- How can we get profit to increase in competitive markets?
- Why don't firms in competition make a profit?
- Why is the price not changing?
- Why are costs the same?
- Are persea mites really a threat to avocado trees?
- Is this the same venture capitalist?
- How do we make the presentation?

13. Give Clarifying Lesson #2 on *competition*.

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See "Economics Review" for background information for this lesson.

Economics Content Note: In this lesson emphasize the following economic processes:

- Characteristics of a competitive market
- Outcomes from a competitive market
- Processes that lead to the outcomes of competitive markets
- How firms respond to profit and losses in an industry
- The advantages and disadvantages of competitive markets.

Economics Content Note
Emphasize the characteristics of, outcomes from, and pros and cons of a competitive market, processes that lead to these outcomes, and how firms respond to profit and losses.

14. Students individually write second Project Log entry, answering the following question:

> ***How (and why) did price, profit, and quantity produced change with competition? Draw the changes 2009–2010 on a supply/demand graph.***

15. Review individual Project Log entries to assess understanding of economic concepts.

> *For tips on reviewing Project Logs, see "Use Formative Assessments" in Chapter Two discussion of* ***Teaching Strategies for Project Based Economics****.*

As with the previous Project Log entry, you should use the Project Log to assess students' understanding of the forces that change prices and profit. Because all students must know about price setting in a market economy before continuing through the unit, check to see how well students understand these basic economic principles.

16. Students plan and make a two-minute presentation to venture capitalists (in small groups).

Keep students in the same groups as before or, if they were in pairs, combine them into groups of four.

Each small group of students should use information from the memo and clarifying lesson to prepare their two-minute presentation. Once again, you or another adult who has been prepared should play the role of the venture capitalist. To help engage students, the environment in which presentations are made should simulate a workplace. Have students wear professional attire (e.g., jeans would not be worn when asking for money). Other ideas include aligning desks to simulate a boardroom; creating "props" such as nameplates, memo pads, and coffee cups; and having other students or outside audience members ask questions as additional "venture capitalists."

Remember that the students are to *hold their presentation to two minutes*.

Since they are ultimately to be successful in procuring money, you could inform them after their presentation that they have funding; but only offer this reward if the presentation is sound. Otherwise, have them come back the next day to answer more questions.

Economics Content Note
Presentations should reveal students' understanding of demand and supply forces to demonstrate why prices, revenue, and profits changed over the years.

Economics Content Note: Students' presentations should reveal an understanding of the role of prices and profit in the processes and outcomes of competitive markets. That is, students must use demand and supply forces (i.e., prices and profits) to demonstrate why prices, revenue, and profits changed over the years. This knowledge lies at the core of this unit and if students are not yet able to place the problem within this framework, **Clarifying Lesson #2** should be revisited.

17. Students read third memo from Ronnie Johnson and analyze the accompanying 2011 production data tables (as a whole group).

*The third memo from Ronnie Johnson and 2011 production data tables may be found in the **Student Materials**.*

Synopsis of third memo: In this final memo, students learn that they hold patents for a pesticide and genetic engineering process, developed by the AHS Biochemistry Club, which eliminates the persea mites that damage avocado trees. Because Buchanan, Fillmore, and Pierce High Schools did not have access to the patented pesticide, production at their SBEs was halted by their persea mite infestation, leaving the SBE at AHS with a monopoly of the market. Students also learn that Mega Avocado Corporation (MAC) purchased patents from their school and has offered to make students Junior Executives in the company once they graduate from high school. Each student is asked to decide whether or not they want to accept MAC's offer. Additionally, their school principal wants them to debate the ethics of their decision at an assembly. Those students who decide to become Junior Executives are asked to write a position paper explaining why they think "monopoly profits are a just reward for innovation and efficiency gains." Students who want to decline the job are asked to write a position paper making an economic argument against monopolies.

Economics Content Note
Information in the memo may lead astute students to ask how price might be lower under a monopoly than under competition.

Economics Content Note: The memo provides students with critical information that is needed to explain the tables. First, it tells students about the pesticide that eliminates the persea mite. By eliminating the mite, AHS costs fall dramatically (Table 4C). Second, it tells students about a patent that AHS has received. This patent leads to a monopoly, which will increase prices over competitive levels. In analyzing the charts, astute students may point out that price is actually lower than it was under competition. This question provides a wonderful "teachable moment" to explain how dramatically costs have fallen with the pesticide. Remind students that in competition, price

would fall to the level of cost, which is now $0.30. In a monopoly, price stands at $0.69. It is this difference between price and per unit cost—profit—that exists in monopoly markets but will be eliminated with the entry of firms in competitive markets. Changes over the years that accompany changes in market forces and structures can be seen most dramatically in the charts showing all four years of data.

Potential Hurdle: Some students may want to know why AHS did not adopt an organic-farming approach to the persea mite infestation. Although ladybugs can be used as natural predators to rid trees of the mite, the expense in using this approach is large and would greatly increase costs over those borne using the pesticides alongside genetic alteration.

Potential Hurdle
Students may ask why AHS didn't adopt an organic-farming approach to the mite infestation. Explain that this method would have greatly increased costs..

18. Students finalize the Driving Question with you (whole-class discussion).

Students should now write their final Driving Question. The final Driving Question should resemble:

> How can we, as **students at AHS**, decide **if monopoly power is beneficial or not**, so that **we can write a position paper on our decision about becoming Junior Executives at MAC and debate the issue at an assembly?**

19. Students finalize the Know/Need-to-Know List with you (whole-class discussion).

The additional information gained from the second memo and accompanying tables can be used to revise the Know and Need-to-Know Lists. The revised lists could include:

What do we know?

- *(previously listed items)*
- The Biochemistry Club developed a pesticide and genetic-engineering process that kills persea mites
- AHS got a patent
- Our competitors' trees were destroyed
- We now have a monopoly with big profits
- Avocado prices are lower now
- Our total sales are up
- Our costs are down

- MAC bought our patent and offered to make us Junior Executives after we graduate
- We'll get a big salary and can get a college BA degree
- Mr. Johnson wants us to write a position paper explaining our decision about becoming Jr. Executives, using economic arguments
- Our principal wants us to debate the ethics of our decision at an assembly
- We have to explain whether we think monopoly profits are justified

What do we need to know?

- (*previously listed items*)
- What is a patent and how did we get one?
- What is a monopoly?
- What exactly will our salary be?
- Do we have to move to our new job?
- What are the arguments for and against a monopoly?
- What happened to Buchanan, Fillmore, and Pierce High Schools?
- What are "ethics"?
- What will the debate be like? How long will it be?

20. Give Clarifying Lesson #3 on *monopolies*.

A clarifying lesson should be used to help coach students toward knowledge about monopolies. This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See "Economics Review" for background information for this lesson.

Economics Content Note
In this lesson, students should see that monopolies increase price and profits by decreasing output, that patents are how the government stimulates innovation, and that prices are higher and output lower under a monopoly than under competition.

Economics Content Note: In this lesson make sure students see that:

- Monopolies increase price and profits by decreasing output of the good. These actions are made possible because entry into the market is restricted, in our case with patents.
- The incentive to create patents that block the entry of competing firms into the market is how the government stimulates innovation. Without patents, and resultant monopoly profits, less research and development, which leads to innovation, would occur.

- Monopoly prices are higher and output is lower than they would be in competitive markets where free entry into the market forces prices to their lowest possible level.

21. Students write final Project Log entry, answering the following question:

What happens to price, quantity, and profit when a competitive market becomes a monopoly market with a patent?

22. Review individual Project Log entries to assess understanding.

For tips on reviewing Project Logs, see "Use Formative Assessments" in Chapter Two discussion of ***Teaching Strategies for Project Based Economics****.*

Economics Content Note
The Project Log helps determine whether students understand monopoly markets, by having them compare and contrast processes and outcomes from the two types of markets.

Economics Content Note: The Project Log is designed to determine if students understand monopoly markets. Furthermore, the Log should reveal whether or not students can reflect upon and express their understanding of competitive markets by comparing and contrasting processes and outcomes from the two types of markets. This knowledge is necessary in order for students to defend or oppose monopolies in their position paper.

23. Share supplied rubric with students to guide their work (whole-group discussion).

A rubric for the position paper and debate may be found in "Assessment Tools" in the ***Teacher Materials****.*

Give a copy of the rubric to each student, or display it so every student can read it. Discuss the rubric with students to be sure they understand that they will be assessed primarily on their knowledge of economics. Their writing and debating skills, while important, are given less weight on the rubric. If you are altering the rubric's point scheme to conform to your own grading system, be sure to maintain the emphasis on knowledge of economics.

Presentation, assessment, and debrief

24. Students write position paper on joining a monopoly (as individuals).

Have students individually write their position papers, following the guidelines in the final memo and the rubric. Remind students to stay focused on the pros and cons of monopolies from an economic point of view—not just to base their decision on the promise of a high-salaried job.

Potential Hurdle

To help students organize their thoughts, you may have them create a two-column chart listing just the pros of monopoly vs. competition, and use the chart to faciliate class discussion of both the pros and cons of each.

Economics Content Note

Patents, which create monopolies, exist as an incentive for firms to invest in costly research and development.

Potential Hurdle: Students may need help organizing their thinking about the benefits and costs of competitive and monopoly markets. To jump-start the thinking process, you could divide students into groups and have them create a two-column chart, listing the benefits of monopolies on one side and the benefits of competition on the other. You can then use their ideas as a springboard for a whole-class discussion of the benefits and costs of market economies.

Economics Content Note: This exercise is designed to show students that patents, which create monopolies, exist to provide an incentive for firms to undertake research and development (R&D). Without patents and the profit incentive provided by the monopoly that it grants, firms will not undertake costly R&D. Without the barriers to entry created by patents, any profits that a firm could reap (e.g., by the lower costs that the pesticide brings) will be eliminated because other firms (e.g., Buchanan, Fillmore, and Pierce High Schools) could start producing low-calorie avocados using the pesticide AHS developed. As a result, the firm investing in R&D faces large investment costs without payoff since low prices would come with other firms using the innovation (i.e., competition would lower price as other firms used the pesticide). If firms had to bear large R&D costs for developing innovations and other firms could use the innovation without bearing these costs, few, if any, firms would engage in R&D. Patents provide the incentive to engage in R&D by granting firms a monopoly for the innovation. The potential for monopoly profits with a new innovation provides firms with an incentive to engage in R&D.

Of course, monopolists increase prices, decrease quantity, and increase profit over competitive markets, an outcome many believe is unjust. Many individuals argue that it is not fair for a monopolist to cut back on production and raise price because some individuals will not be able to purchase the good at the same time that individuals with a monopoly are making profit.

25. Students prepare their arguments and debate the ethics of joining a monopoly.

The debate can be handled in several ways, depending on how much time you want to take and what is best for your students:

- The class can be divided in half, either arbitrarily or consistent with their position paper, with one half preparing the pro-monopoly side and the other preparing the pro-competition side.
- The class could be divided into two groups (which may not be exact halves) based on their position on the debate resolution, and informally present and discuss their views.

- Individuals with the strongest position papers could serve as the debate teams with the remaining students judging the debates.
- For a more formal, traditional debate, see the handout illustrating one typical debate procedure in the **Teacher Materials**, "Lincoln-Douglas Style Debate Procedure."

26. Use supplied scoring guide to assess position papers and (optional) the debate.

*The rubric for the position paper and debate may be found in "Assessment Tools" in the **Teacher Materials**.*

As you read students' position papers and listen to the debate, use the rubric to help you note any areas of weakness that reveal incomplete or incorrect understanding of key economic concepts. Clarify these during the debrief to follow.

27. Conduct debrief to clarify and consolidate students' understanding of key economic concepts.

It is critical that the debrief phase of the project not be ignored. This is the time when students, as a whole class, reflect on and receive feedback on both the economic content of the project and the process of solving the problem presented in the scenario. The debrief is in two stages: the first focuses on economics content, and the second focuses on the process of learning in PBL.

Begin the content-focused part of the debrief by discussing how the project helped students better understand economics. The discussion could be guided by questions such as:

- After listening to other students' solutions to the problem presented in the scenario, is there anything that you think you left out or would have done differently?
- What new ideas or economic concepts did you learn in this project?
- What economic concepts do you still not understand?

The economics content-focused debrief is a vital opportunity for clarifying any remaining conceptual misunderstandings evident in student work, or correcting inaccurate statements made during presentations.

Economics Content Note: This unit is designed to deepen students' understanding of how competitive markets operate and to learn about monopoly markets. Students should finish the unit with a solid knowledge about market economies, as exemplified by competitive markets, and about

Economics Content Note
Critical to the understanding of competitive markets vs. monopolies are the incentives provided by prices and profits in all markets.

how monopolies interfere with the forces that produce the efficiency and low prices of competitive markets. Critical to this understanding are the incentives provided by prices and profits ***in all markets***. Students must understand how profit spurs entrepreneurship, how price and production are determined in competitive and monopoly markets, and the benefits and costs of government-created monopolies. Reinforcement of the concepts and principles that underlie these forces should occur during the debriefing. Corrections to erroneous economic logic must be made during the debriefing or students will internalize incorrect knowledge.

28. Manage student reflection on the 21st-century skills practiced, and the process of learning in PBL.

Students should have a chance to discuss the process of learning in PBL, and to reflect on their use of 21st-century skills such as critical thinking, collaboration, and presentation. This part of the debrief could be done with a series of questions, for example:

- Did you find it to be difficult when there are several possible "right answers" to the Driving Question? Why?
- How does it feel to go through some parts of the project without specific directions, to make some of your own decisions?
- How much do you think you learned in terms of skills like working as a team and making a presentation?

Finally, ask students for feedback on how the project was structured, with questions such as:

- Did you need more resources to help you solve the problem—more lecture time, more readings, more time on the computer?
- Did you need more help in learning how to work together in your group?
- Did you have enough time for each step of the unit?
- Are there any suggestions you would make for improving how the unit is taught?

29. Use supplied multiple-choice test to assess individual students' knowledge of key economic concepts.

The multiple-choice test for this unit may be found in "Assessment Tools" in the ***Teacher Materials.***

30. Make notes on adjustments to the unit to improve student learning for the next time the unit is taught.

Teachers inevitably recognize how to make **Monopoly's Might** more effective after they have taught it. We encourage you to note these thoughts quickly, so you can review your ideas for improvement the next time you teach the unit.

Teaching Tips

Before a *Project Based Economics* unit is published, it is taught numerous times by experienced high school economics teachers. We include their advice below.

- It may appear this problem could be enhanced by making the numbers simpler or by reducing the reliance on the tables. Unfortunately, this is not the case. The numbers were carefully designed to illustrate pricing and production outcomes under competition and monopolies. Altering them may distort the presentation of market operation. Ignoring them would reduce most of the lesson's value, since it is the change in price and output that is at the heart of the unit.
- If time allows and you want students to practice debating skills, the debates can also be structured as round-robins. Groups can be paired for debates, with the winners advancing to the next round. This procedure continues until the final two teams debate. At this point the class can vote on the group who "wins" the debate.

Extensions to the Unit

- This unit is a good complement to a discussion of different types of economies. For example, the incentive to innovate in a market economy comes from profit. In a command economy, this incentive is missing.
- Teachers can easily integrate a lesson on Excel into this unit by replacing tables with worksheets to illustrate its ease in computations. Excel can also be used to help students predict future prices and production.

Economics Review

Markets

One of the main strengths of economic theory is its ability to provide a general explanation for the way in which price and output are determined in our economy, even though each industry has specific idiosyncrasies that underlie pricing and production.

In general, economists describe four distinct market types:

1. Pure competition
2. Monopolistic competition
3. Oligopoly
4. Pure monopoly

The table below briefly describes the characteristics of each of these four markets, which reflect a continuum rather than discrete markets. In general, two key characteristics underlie the movement from the competitive end of the market spectrum to the monopoly end: ease of entry into the market, and ease of substituting the firm's product with another's. In pure competition, no obstacles prevent firms from entering the market, and each firm's product is identical to other firms' products. In pure monopoly, absolute barriers exist to entry, and the firm's product is unique and has no close substitutes. As a firm moves from a purely competitive market to a monopolistic market (as our avocado company does) its control over price and profit potential increases.

Characteristic	Pure Competition	Monopolistic Competition	Oligopoly	Pure Monopoly
Number of firms	A very large number	Many	Few	One
Type of product	Homogeneous with other firms	Differentiated	Homogeneous or differentiated	Unique—no close substitutes
Control over price	None	Very limited	Mutual dependence between firms	Considerable
Conditions of entry	No obstacles	Relatively easy	Significant obstacles	Absolute barriers
Nonprice competition	None	Considerable (advertising)	Usually considerable, if product differentiation	Mostly public relations
Typical examples	Agriculture	Apparel	Automobiles	Local utilities

General Characteristics of Firms in Each Type of Market

Pure Competition

Firms operating in a perfectly competitive market face *a large number of firms, all of which have identical products.* However, because so many firms operate in this market, each operates independently of the others. All firms in the industry produce a standardized (homogeneous) product, and the consumer is indifferent to which products s/he buys, making all products in the market perfect substitutes (e.g., fresh corn). In addition, nonprice competition does not exist among the firms (e.g., no advertising to differentiate products), and all firms are price takers. Because each individual firm is a small and insignificant part of the market, it has no influence on price and can sell all it wants at the going market price. If it tries to raise the price of its good, no one will buy it. Instead, consumers will purchase the identical product at a lower price from another firm. No incentive exists for a firm to lower the price because it can sell all it wants at the going market price. Lowering price would simply decrease total revenue, since the same amount can be sold at the higher price. Firms face no constraints to either entering or leaving a perfectly competitive market. No legal, technological, or financial obstacles exist in creating new firms or eliminating firms currently in the market.

Monopolistic Competition

Firms operating in a monopolistically competitive market face competition from *a large number of firms, all of which offer similar but not identical products.* While the "large number of firms" might not be as large as in the competitive market, each firm must have only a small percent of the market (defined as similar products). With a relatively small market share, firms have little control over market price and cannot collude with other firms on pricing or quantity produced. As a result, firms are not mutually interdependent, and each firm determines its policies without considering or knowing the possible reactions of rival firms.

Oligopoly

Firms operating in an oligopolistic industry face *market domination by only a few firms.* "Few" means that the firms are mutually interdependent because each firm considers the potential reactions of its rivals to its price, advertising, and production activities. Firms in an oligopolistic market may produce either a homogeneous (e.g., steel) or differentiated (e.g., automobile) product. The critical element is the mutual interdependence among firms in the industry, not the nature of the product.

Pure Monopoly

A firm operating in a pure monopoly market is *the only firm in that industry and produces a specific product with no close substitutes*. Thus, the firm and the industry are synonymous. Because the monopolist's product is unique, the buyer sees no alternative to purchasing the good and must buy the good from the monopolist or go without it. This uniqueness allows the firm to exert a great deal of control over price (i.e., it is a price maker). As the only firm operating in the market, the monopolist is responsible for setting the total quantity of the good supplied and setting the selling price so all of the quantity produced is sold. It can change the product's price by manipulating the quantity of the product supplied, but it is constrained in setting a price by the down-sloping demand curve for its product. Economies of scale and technological or legal barriers must completely block entry into the industry for monopoly power to exist. Although a monopolist faces no competition from other firms, it still could have an interest in advertising. For example, a monopolist selling a unique product might advertise to stimulate demand (e.g., diamonds), or it might advertise to create good will or enhance its image in the community.

Pricing and Output in Markets

No matter what the market's structure, general principles of market operation apply that determine equilibrium price and quantity. In developing these general principles, we assume firms maximize profits, and that entry into and exit from a market is relatively easy.

A market is an institution or mechanism that brings together "buyers" (those who want the good) and "sellers" (those who make the good). Markets come in all forms. A farmer's roadside stand, retail stores, and the New York Stock Exchange are all examples of firms operating in different types of markets. In fact, any situation that links potential buyers and sellers constitutes a market. Markets can be local, national, or international. Some markets are highly personal, while others are highly impersonal.

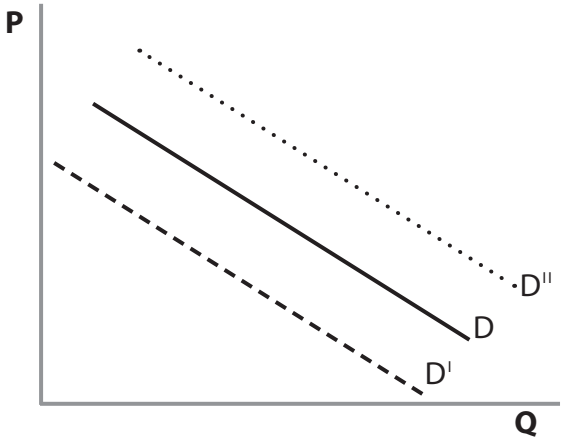
One of the most important activities in markets is the setting of the price of goods bought and sold. To understand the determination of prices, we must understand the mechanics underlying the decisions of consumers (demand) and producers (supply).

Demand

A demand schedule shows the various amounts of a product consumers are willing and able to purchase at each price (from a series of possible prices) during a specified period of time. We generally look at demand from the vantage point of price. That is, we are interested in how much individuals are *able and willing* to purchase at a given price. Remember that a demand schedule does not tell us

which price will actually exist. For that, we must combine information from the demand schedule with information from the supply schedule.

The fundamental characteristic of demand is summarized in the law of demand: All else equal, as price falls, the quantity demanded rises (or all else equal, as the price rises, the quantity demanded falls). This law is illustrated in the demand curve (D) on the graph at right, in which Price (P) is plotted with Quantity (Q).



What "all else" must be equal in order to graph the demand curve (D)? Basically, there are five determinants of demand (i.e., the "equals"), or factors that can shift the demand curve. Notice that when demand is shifted out by one of these factors (D^{II}), more will be sold at each price. When demand is shifted in (D^{I}), less will be sold at each price. Factors that determine demand are:

1. ***Change in buyer tastes.*** A favorable change in how buyers perceive the product will increase demand (i.e., shift the curve out). A negative change will reduce demand (i.e., shift the curve in).

2. ***Change in number of buyers.*** An increase in the number of buyers in the market (e.g., people move into an area) will increase demand for the good, while a decrease in the number of buyers will decrease demand.

3. ***Change in income.*** The impact of income on demand is not straightforward. If a positive relationship between income and demand exists, increases in income will lead to increased demand. Goods exhibiting these characteristics are called "normal goods," and we buy more of them when our income goes up and less of them when our income goes down. Some goods are called "inferior goods" because an inverse relationship between income and demand exists. As income goes up, demand goes down, and as income goes down, demand goes up. Examples include things that people often buy only when their income is low, such as used clothing.

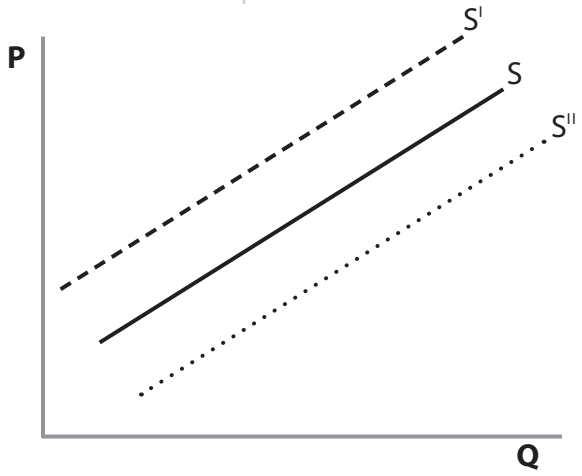
4. ***Change in prices of related goods.*** Whether a change in the price of another good increases or decreases a product's demand depends on whether the related good is a substitute or complement. A substitute good is one that can be used in place of another good, while a complement good is one that is used in conjunction with it. When goods are substitutes, as the price of one good rises (falls) demand for the other good rises (falls) because people switch from the good with the higher price to the one with the lower relative price. Air travel

on different airlines and things like butter and margarine are often viewed as substitutes. Conversely, when goods are complements, as the price of one good rises (falls), demand for the other good falls (rises) because people cut back on consumption of both (complement) goods with price increases. Peanut butter and jelly, tennis balls and tennis racquets, and CD players and CDs are often viewed as complementary goods.

5. ***Change in expectations.*** Consumer expectations about future prices, product availability, and future income can shift demand. Expectations of higher prices may prompt consumers to buy now to "beat" anticipated price increases, while an expected rise in income may induce consumers to spend more freely. Conversely, expectations of lower future prices or income may cause consumers to curtail spending in the current period.

Supply

A supply schedule shows the various amounts of a product that firms are willing and able to produce (in a series of possible prices) during a specified period of time. We generally look at supply from the vantage point of price. That is, we are interested in how much firms are *able and willing* to produce and make available for sale at a given price. The positive relationship between price and quantity produced arises because firms are willing to produce more of a good at higher prices than at lower prices. This contrasts to the behavior of consumers, for whom price serves as a deterrent to purchasing the good. All else equal, a firm will produce more of a good at a higher price because profit will be greater as price rises.



Remember, a supply schedule does not tell us which price will actually exist. For that we must combine information from the supply schedule with information from the demand schedule.

A fundamental characteristic of supply can be summarized in the law of supply: All else equal, as price increases, the quantity supplied increases (or all else equal, as the price falls, the quantity supplied falls). This law is shown in the supply curve (S) on the graph at right, in which Price (P) is plotted with Quantity (Q).

What "all else" must be equal in order to graph the supply curve (S)? Basically, there are six determinants of supply (i.e., the "equals"), or factors that can shift the supply curve. Notice that when supply is shifted out by one of these factors (S^{II}), more will be produced at each price. When supply is shifted in (S^{I}), less will be produced at each price. Factors that determine supply are:

1. ***Resource prices.*** The relationship between production costs and supply is a close one because a firm's supply curve is based on production costs. A firm must receive higher prices for additional units of output, since costs generally increase with increased production. It follows that a fall in the price of resources will lower production costs and increase supply, and that a rise in the price of resources will increase production costs and decrease supply.

2. ***Technology.*** A technological improvement generally means that fewer resources are used to produce a given quantity. As a result, production costs will decrease and supply will increase.

3. ***Taxes and subsidies.*** Firms treat most taxes as costs and most subsidies as revenues. An increase (decrease) in taxes, therefore, will increase (decrease) production costs and lower (increase) supply. Conversely, an increase (decrease) in subsidies will lower (increase) production costs and increase (decrease) supply.

4. ***Prices of other goods.*** Changes in the price of other goods can also shift the supply curve if the two products are related in production. For example, if the price of wheat increases, farmers may plant corn instead of wheat. In this case, the products are production substitutes.

5. ***Expectations.*** The future price of a product can affect a firm's willingness to supply that product. If price is expected to rise in the future, firms may withhold some of the product to take advantage of expected higher prices.

6. ***Number of sellers.*** The larger the number of suppliers, the greater the amount supplied in the market.

Equilibrium

By bringing together the concepts of supply and demand, we can see how the buying decisions of consumers and the selling decisions of producers determine the price of a product and the quantity actually bought and sold in the market. Let's examine the market for avocados in a given time period. The table below gives the schedule of quantity demanded and quantity supplied during the second quarter of 2006.[1]

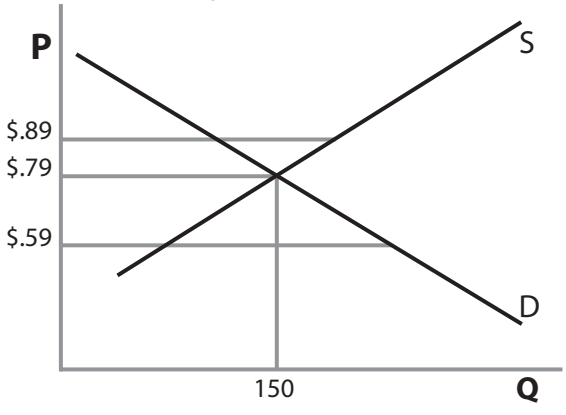
1 The demand and supply schedules were constructed for similarity in the information given to the students. During the second quarter 2006, the cost of producing an avocado is $0.70, which means that all prices lower than $0.70 result in a loss. The schedule indicates that some production will occur even at a loss because we assume that loss is only for the short run and that some inputs to production are fixed. As a result, production will not fall below 25 avocados before the firm exits from the industry.

We also assume AHS is the sole producer of avocados. As a teacher, you can either tell your students that AHS is a monopoly that can satisfy the market (with competing firms being free to enter), or you can tell them AHS is typical of all firms in the market. In the latter case, 100 firms could operate, and the quantity demanded and supplied can be multiplied by 100 to get market demand and supply.

Price	Quantity Demanded *(in millions)*	Quantity Supplied *(in millions)*	Shortage (+) or Surplus (–)	Pressure on Price
$0.99	50	275	–225	↓
$0.89	100	225	–125	↓
$0.79	150	150	0	0
$0.69	200	50	+150	↑
$0.59	250	25	+225	↑
$0.49	300	25	+275	↑

Of the six possible prices at which avocados might sell in this particular market, we see equilibrium will be reached when 150 avocados sell for a price of $0.79 each. How did we arrive at this price? Say the price started at $0.89 in the first quarter. What happens? 225 avocados cannot be sold—and so a surplus of avocados exists. To sell the avocados, as opposed to letting them rot and having to dispose of them, the firm will lower the price, knowing that a decrease in price will lead to an increase in quantity demanded. At any price above the market clearing price of $0.79, an excess supply of avocados (i.e., a surplus) exists, and as a result, pressure will force firms to lower the price.

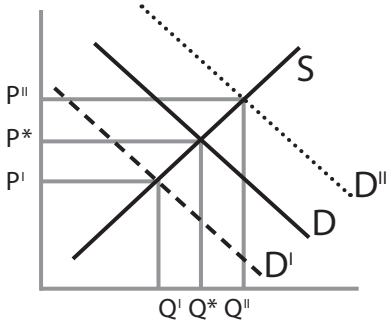
What if price falls below $0.79? At prices below $0.79, shortages exist—more people want avocados than are being produced. As a result, upward pressure on price occurs as people bid up the price of avocados. More simply, individuals are able and willing to pay a higher price for avocados (as the Quantity Demanded column indicates) and will bid up their price. As price rises, fewer people are able and willing to buy avocados and the shortage lessens.



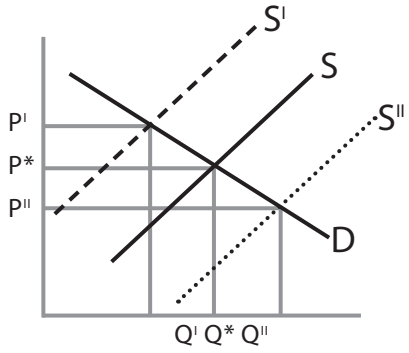
At the equilibrium price of $0.79, the number of avocados that consumers are able and willing to buy exactly equals the number of avocados that firms are able and willing to produce and sell. Neither shortages nor surpluses exist at this market clearing price. Price has served as the equilibrating mechanism to clear the market. This market is graphically illustrated at right.

Of course, the above graph can be used to illustrate only changes in quantity demanded or quantity supplied—movements along the demand or supply curve in response to changes in the price of avocados. In the graph, everything but price and quantity is held constant. Equilibrium price will change with changes in either demand or supply; that is, when either the demand or

supply curve shifts. When either the demand or the supply curve shifts, it is easy to predict how price and quantity will change.



1. ***Demand increase.*** Price and quantity will both increase (from P*Q* to $P^{II}Q^{II}$), as illustrated at right (in D^{II}).
2. ***Demand decrease.*** Price and quantity will both decrease (from P*Q* to $P^{I}Q^{I}$), as illustrated at right (in D^{I}).



3. ***Supply increase.*** Price will decrease and quantity will increase (from P*Q* to $P^{II}Q^{II}$), as illustrated at right (in S^{II}).
4. ***Supply decrease.*** Price will increase and quantity will decrease (from P*Q* to $P^{I}Q^{I}$), as illustrated at right (in S^{I}).

Competition

Remember the characteristics of pure competition:

1. Very large number of firms in the industry
2. Homogeneous product
3. Firms are price takers
4. Free entry and exit

Because each firm in a competitive market offers a negligible fraction of total industry supply, the individual firm cannot influence the market price, and the forces of supply and demand discussed in the preceding benchmark lesson establish equilibrium price. The firm in a competitive market can merely adjust its output to the market price. In other words, it will take the price set by the market (i.e., it is a "price taker") as a piece of information to establish levels of production. This means that the demand curve facing the firm in a competitive market is perfectly elastic at market price (i.e., a firm can sell all it wants at the going market price).

How much does the firm produce? It sets output levels at the point where profits are maximized—that is, where total revenue exceeds total cost by the largest amount. At this point, marginal revenue equals marginal cost. Should profits exist at this point, firms will enter the industry and market supply will increase. As we have seen in the preceding benchmark lesson, an increase in supply will lower price. The lowering of price will decrease the profits made

by the firm. Firms will continue to enter and drive down price as long as economic profit exists. The entrance of firms into the market and reduction of price will eventually eliminate all economic profits.

What if the price dictated by the market does not cover costs? That is, total revenue never exceeds total cost and losses ensue. In this case, firms will exit from the market. As firms exit and market supply decreases, price will rise and increase the total revenue for the remaining firms. As firms continue to exit and price continues to rise, losses will be reduced. The exit of firms and increase of price will eventually eliminate all losses.

The entry and exit of firms from the market will eliminate all profits and losses in the long run. As a consequence, firms in a competitive market will have neither profits nor losses in the long run, although in the short run, either could exist. We note that when we say no profit exists, we mean no *economic* profit exists. Remember, *normal* profit (i.e., accounting profit) exists because a normal return on investment is part of a firm's costs.

Bottom Line on Competition

Advantages

- In the long run, each competitive firm operates at optimum efficiency (i.e., lowest per unit cost). Resources could not possibly be arranged more efficiently.
- The consumer gets the product at the lowest possible price since competition eliminates all economic profit
- Resources could not be rearranged any better to produce goods and services that would give consumers more satisfaction

Disadvantages

- Competition may be efficient at a point in time but not over time. Since profits result in a normal rate of return, the competitive firm may not undertake research and development, which leads to a slower rate of technical progress.
- Perfect competition is efficient only if there are no social costs, no social benefits, and no economies of scale in the relevant range of production
- Competition may produce too much inequality

Monopoly

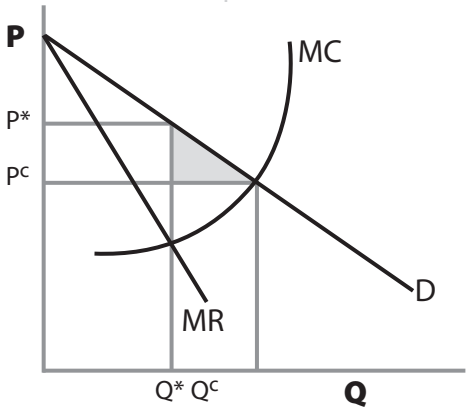
Remember the characteristics of a monopoly:

1. A single seller in the market
2. A unique product with no close substitutes
3. Entry into the market by other firms is completely blocked

Because only one firm operates in a monopoly market, the demand curve facing the firm is the market demand curve illustrated in the Benchmark Lesson on Markets. The demand curve of the industry and demand curve of the firm are the same, and the monopoly must lower price to increase sales, unlike a firm in the competitive market that can sell all it wants at the going market price.

Lowering price to boost sales means that the marginal revenue the firm brings in from selling additional units of a good is less than the price of the good. Why? Price reductions apply not only to the extra output sold, but also to all other units that could have been sold at a higher price.[2] As a result, the additional revenue brought in from additional units sold (with the reduction in price) is "offset" by the loss in revenue on units that could have sold at a higher price.

For example, in the graph at right, if price is lowered from P^* to P^C to increase production from Q^* to Q^C, the firm must lower the price for all individuals who originally paid P^*. As a result, the marginal revenue (MR) from the additional units sold is less than the new price. A numeric example might help. Say P^* equals \$0.70 and Q^* equals 5000. When price falls to \$0.60 (P^C), quantity increases to 6000 (Q^C). Total revenue increases by 100 and marginal revenue $((TR^* - TR^C)/(Q^* - Q^C))$ is 10, which is less than the \$0.60 price (note: $TR = P \times Q$).



How much output does a monopolist produce? Because monopolists want to maximize profits, they will set production at the point where total revenue exceeds total cost by the greatest amount—where marginal revenue (MR) equals marginal cost (MC). However, they will set the price in such a way that consumers will purchase only the profit-maximizing amount of the goods. Because price is above marginal revenue (which is equal to marginal cost), price will most likely exceed marginal costs, and profits will ensue. Phrased somewhat differently, monopolists will reduce output over that produced by all firms in a competitive market. Because quantity produced is reduced, prices can be raised and profits made. Unlike the competitive market, other

2 This assumes that the firm does not engage in price discrimination.

firms cannot enter the market to lower price and eliminate profit because entrance is blocked. As a result, monopolists can make profits in both the short run and the long run.[3] The inefficiencies created by a monopoly can be seen in the shaded triangle (the deadweight loss) on the graph above. Under perfect competition, price would be set at P^C with an output of Q^C (where supply equals demand). Under monopoly conditions, with price increased to P* and output reduced to Q*, consumers lose some of their surplus. Consumer surplus is the difference between what the consumer is able and willing to pay (as represented by the demand curve) and the actual price paid. Since most consumers are able and willing to pay more for a good than is actually paid, they get a "surplus." When monopolies decrease production and increase price, consumers lose some surplus, which is termed deadweight loss.

Even though a monopolist will decrease output and increase price as compared to firms in a competitive market with identical cost curves, these inefficiencies could be offset or lessened by economies of scale, technological progress, or innovations. Economies of scale simply means that the cost of producing additional units of a good decreases as a firm increases production. That is, the initial per-unit cost of operating the firm is high, but lessens as the firm grows in size. This might result in high initial fixed costs (i.e., high start-up costs), or in technology that can be used only with large-scale production, both illustrated by continuously declining marginal costs.

Monopoly profits are also used as an incentive to innovate. Copyrights and patents are legal ways of protecting profits by eliminating a firm's entrance into a specific market for a fixed period of time. As a result, firms have the incentive (economic profits) to undertake research that might produce an innovation that leads to a monopoly. Medical drugs are an example of expensive research that is done because monopoly profits can be achieved once new, effective drugs are discovered. If drug companies thought that their profits would be eaten away by firms entering the market (driving down price and profits) once the new drug hit the market, they would not undertake the costly research for innovation.

Bottom Line on Monopoly

Advantages

- Economies of scale can exist so that each unit is produced more efficiently (i.e., at a lower per-unit cost) in larger firms
- Monopoly profits provide the incentive (and funds) for the firm to engage in research and development

3 Because price is constrained by demand for a product, being a monopoly does not ensure profits. Losses result if demand is not sufficient to cover costs. For instance, holding a patent for making chocolate-covered roaches does not ensure a demand sufficient to cover the cost of production. With little demand, losses would follow and the Chocolate-Covered Roach Company would be forced to close shop and go out of business.

Disadvantages

- Monopolies increase prices and decrease quantity over competitive markets
- Deadweight losses indicate that monopolies are inefficient

Concept Definitions

The curriculum is designed to teach the following concepts:

Barrier to entry: Anything that prevents firms from coming into an industry

Change in demand: See *demand*

Change in supply: See *supply*

Competition (competitive market): A market in which 1) a very large number of firms sell a standardized product, 2) entry into the market is very easy, 3) the individual seller has no control over the price at which the product sells, 4) nonprice competition does not occur, and 5) a large number of buyers and sellers exists

Corporation: A type of firm that is a legal entity separate from the people who own, manage, and otherwise direct its affairs

Demand: Purchases of a good or service that people are actually able and willing to make given price and choices available to them. The **law of demand** states that a negative (or inverse) relationship exists between price and quantity demanded; that is, as price increases (decreases) the amount of a good purchased decreases (increases). Consumers' demand is determined by their tastes, their income, and by the price of other goods. The **demand schedule** is a table showing the quantities of a good that will be purchased at various prices. The **demand curve** is a curve that relates the price of a product and the quantity of the product that individuals are able and willing to purchase. **Aggregate demand** is the total demand for goods and services in the economy by households (for consumer goods), by firms and government (for investment goods), and by other countries (exports).

Entrepreneur: The human resource that combines other resources to produce a good, makes nonroutine decisions, innovates, and bears risks

Equilibrium price: The price in a competitive market where the quantity demanded and the quantity supplied are equal; the price where neither shortages nor surpluses exist and no incentive exists for prices to rise or fall

Equilibrium quantity: The quantity demanded and quantity supplied at the equilibrium price in a competitive market

Market: Any institution or mechanism that brings together the buyers (demanders) and sellers (suppliers) of a particular good or service

Market economy: An economic system (method of organization) in which only the private decisions of consumers, recourse suppliers, and producers determine how resources are allocated

Monopoly: A market in which one firm 1) sells a unique product, and 2) no close substitutes for the product exist, 3) entry is blocked, 4) the firm has considerable control over the price at which the product sells, and 5) nonprice competition may or may not be found

Opportunity cost: The real sacrifice involved in achieving something; the value of the next best opportunity that would be foregone in order to achieve a particular thing

Patent: A document granting an exclusive right to produce, use, sell, and profit from an invention, process, etc. In the U.S., patents are granted for 20 years from date of application or 14 years from date of issuance.

Price: See *equilibrium price*.

Profit: Total revenue minus total direct costs. This is distinguished from **economic profit**, which is the residual of total revenue minus total costs when a normal rate of return on investment is included as a part of a cost. In a competitive market economic profit is zero.

Quantity: See *equilibrium quantity*

Scarcity: A condition where less of something exists than people would like if the good had no cost. Scarcity arises because resources are limited and cannot accommodate all of our unlimited wants.

Supply: The amount of a good or service that firms are prepared to sell at a given price. The firm determines how much to supply using its marginal cost curve (the curve showing how much it costs to produce the next unit). **Industry supply** is the summation of individual firms' marginal cost curves (in a constant cost industry). The **supply schedule** is a table showing the amount of a product that will be produced at a given price. The **law of supply** dictates that the curve is upsloping, indicating that more will be produced as the price of a good increases. **Aggregate supply** is the total amount of goods and services available for consumption and consists of both domestically produced goods and services and imports.

Tradeoff: An exchange relationship denoting how much of one good (or resource) is needed to get another good (or resource).

Teachers can also demonstrate the following concepts using this lesson:

Corporation: A type of firm that is a legal entity chartered by a state or the federal government that is distinct and separate from the individuals who own, manage, and otherwise direct its affairs

Economies of scale: The reduction in the average total cost of producing a good as the firm expands the size of its plant (or its output)

Industry: A group of firms that produce identical or similar products

Lincoln-Douglas-Style Debate Procedure

This style of debate has two sides. The side that favors the proposition is called the **Affirmative Position** and the side that opposes the proposition is called the **Negative Position**. The style is very reliant on time and good decorum. As a teacher, you must moderate with authority and keep time to ensure that both are maintained. As the moderator, you will announce the debate and call the debate to order. As the timekeeper, you will keep speakers within time constraints.

Members of each debate team have specified roles, with each member of the team having at least one job.

Affirmative Position

Lead Debater — Presents the overall argument of the Affirmative Position

Question Asker — Asks the Negative Position team questions about its argument

Question Answerer — Must be able to answer questions about the team's position

Rebutter — Responds to the arguments raised by the questions

Closer — Sums up Affirmative Position, referring to new issues raised in the debate

Negative Position

Lead Debater — Presents the overall argument of the Negative Position

Question Asker — Asks the Affirmative Position team questions about its argument

Question Answerer — Must be able to answer questions about the team's position

Rebutter — Responds to the arguments raised by the questions

Closer — Sums up Negative Position, referring to new issues raised in the debate

The debate proceeds through a set of regimented steps. Make sure you hold the class to the steps and constraints so they understand the process of formal debating.

1. The moderator announces the proposition to be debated:

   "Monopoly profits are a just reward for innovation and efficiency gains. They are not an unfair payment to corporations who overcharge consumers and prevent firms from competing in the market."

2. The Moderator must introduce each speaker after the Timekeeper calls time

3. The Timekeeper must keep track of time, letting participants know when they have one minute left to speak and when their time is up
4. 5 minutes: Lead Debater for the Affirmative Position presents position
5. 3 minutes: Question Asker from the Negative Position team asks questions of Question Answerer from the Affirmative Position team
6. 5 minutes: Lead Debater for the Negative Position presents argument
7. 3 minutes: Question Asker from the Affirmative Position team asks questions of Question Answerer from the Negative Position team
8. 3 minutes: Affirmative Rebutter responds to the arguments raised by the questions
9. 3 minutes: Negative Rebutter responds to the arguments raised by questions
10. 5 minutes: Affirmative Closer sums up position, referring to new issues raised in the debate
11. 5 minutes: Negative Closer sums up position, referring to new issues raised in the debate

Assessment Tools

Rubrics

We have provided a rubric for each major product or performance required in this unit. All rubrics may be used as written, or adapted by the teacher to fit particular needs. Rubrics serve two major purposes. First, they provide guidance to students, describing the characteristics of good quality work—and because of this, rubrics should be shared with students while they are preparing how to demonstrate what they have learned. Second, rubrics provide teachers and others with a framework for assessment and feedback.

We have divided our rubrics into three levels of quality. If teachers wish to express these levels on a numeric point scale, we suggest that "Exceeds Standards" equals a 4 or 5, "Meets Standards" equals a 3, and "Does Not Meet Standards" equals a 1 or 2. We intentionally did not include a scoring system based on percentages or letter grades, since evaluation and reporting methods vary greatly among teachers. However, we have suggested what we believe to be the proper weight given to each category, with the emphasis on the application of content knowledge.

The rubrics for each unit do not include extensive detail about the qualities of a good oral presentation, or of good writing and other products such as electronic media. Rubrics for writing and other media products may be found in various print resources and websites, or developed by teachers, schools, and districts.

Monopoly's Might: Rubric for Position Paper on Joining a Monopoly

Component and the Recommended Value	Exceeds Standards (score 4–5)	Meets Standards (score 3)	Does Not Meet Standards (score 1–2)
Definition of the Problem (10%) ***Key Aspects:*** • The need to decide whether or not to join the monopoly as a Junior Executive • The need to consider all aspects of the decision and use persuasive economic arguments	Describes the problem clearly, accurately and completely in terms of all key aspects Solution to the problem is completely consistent with the scenario as presented; the parameters of the problem have not been altered and/or facts "made up" to avoid grappling with key aspects of economics	Describes the problem clearly and accurately in terms of most key aspects Solution to the problem is generally consistent with the scenario as presented; the parameters of the problem have not been altered significantly and/or facts "made up" to avoid grappling with key aspects of economics	Describes the problem clearly and accurately in terms of most key aspects Solution to the problem is generally consistent with the scenario as presented; the parameters of the problem have not been altered significantly and/or facts "made up" to avoid grappling with key aspects of economics
Understanding of Economics (80%) ***Key Points:*** • Characteristics of a monopoly • How prices and profits are determined in monopolistic and competitive market economies • Advantages and disadvantages of monopolies	All key points are clearly, accurately and completely discussed using sound economic thinking and vocabulary Specific, accurate data from tables in the unit are used to support the decision to accept or decline the position with the monopoly	All key points are clearly and accurately discussed while attempting to use accurate economic thinking and vocabulary Accurate data from tables in the unit are used, at least in a general way, to support the decision to accept or decline the position with the monopoly	All key points are clearly and accurately discussed while attempting to use accurate economic thinking and vocabulary Accurate data from tables in the unit are used, at least in a general way, to support the decision to accept or decline the position with the monopoly
Quality of Writing (10%)	Writing is well organized and highly persuasive; it defends the decision with precise and relevant evidence Writing is free of significant errors in mechanics and grammar; ideas are well organized and clearly understandable	Writing is organized and persuasive; it defends the decision with relevant evidence Writing has few significant errors in mechanics and grammar; ideas are for the most part organized and understandable	Writing is organized and persuasive; it defends the decision with relevant evidence Writing has few significant errors in mechanics and grammar; ideas are for the most part organized and understandable

Monopoly's Might: Rubric for Debate Monopolies

Component and the Recommended Value	Exceeds Standards (score 4–5)	Meets Standards (score 3)	Does Not Meet Standards (score 1–2)
Understanding Economic Terms and Concepts (60%) ***Key Points:*** • Characteristics of a monopoly • How prices and profits are determined in competitive markets and under monopolies • Advantages and disadvantages of monopolies	Clear and accurate economic thinking and vocabulary are used; all key points are discussed	Clear and accurate economic thinking and vocabulary are used; most key points are discussed	Economic thinking and vocabulary, if used, are unclear and/or inaccurate; most or all key points are not discussed
Discussion of Ethics (20%) ***Key Points:*** • Fairness of high profits and elimination of competitors • Just rewards for innovation and efficiency gains	Ethical aspects of the decision are discussed thoughtfully and in detail	Ethical aspects of the decision are discussed in some detail	Ethical aspects of the decision are not discussed, or are discussed in a casual, general or vague way
Participation in and Quality of Debate (20%)	Opening statement and closing summary are organized and clear, thoroughly address key points, and are highly persuasive in their use of evidence and logic	Opening statement and closing summary are organized, clear, and address most key points	Opening statement and closing summary are not organized and/or clear, and/or may omit key points
	Questions focus on important points and are targeted at the weakest parts of opponent's arguments	Questions focus on important points in opponent's arguments	Questions are not asked, are few, and/or do not focus on important points in opponent's arguments
	Rebuttal responds to specific and most important points in opponent's arguments	Rebuttal responds to specific points in opponent's arguments	Rebuttals do not respond to specific points in opponent's arguments

Test for *Monopoly's Might*

Answer Key

The following questions are taken from John C. Soper and William B. Walstad, *Test of Economic Literacy* (2nd edition) 1987. NY: Joint Council on Economic Education.

1. Which of the following is most essential for a market economy?
   - A effective labor unions
   - B good government regulation
   - C responsible action by business leaders
   - (D) active competition in the marketplace

2. In a market economy, the public interest is likely to be served even when individuals pursue their own private economic goals, because of:
   - (A) the operation of competitive markets
   - B the social responsibility of business leaders
   - C careful planning and coordination of market activity
   - D individuals' understanding of what is in the public interest

3. A newspaper reports, "COFFEE GROWERS' MONOPOLY BROKEN INTO SEVERAL COMPETING FIRMS." If this is true, we would expect the coffee-growing industry to:
   - (A) increase output and decrease prices
   - B decrease output and increase prices
   - C use more capital goods and hire fewer workers
   - D use fewer capital goods and hire fewer workers

4. If you saw a headline that read, "ACME WIDGET CORPORATION RAISES PRICES: REST OF WIDGET INDUSTRY EXPECTED TO FOLLOW," it is likely that Acme Widget Corporation is an industry that has:
   - (A) few sellers
   - B many sellers
   - C many buyers
   - D few buyers

The following questions are from Matthew Marlin, Turley Mings and Diane Swanson, *Teaching and Testing from the Study of Economics: Principles, Concepts and Applications* (5th edition) 1995. Guilford, Connecticut: Dushkin Publishing Group/Brown and Benchmark Publishers.

5. In a market economy, the opportunity to make a profit for providing a good or service is called:
   - A an inducement
   - B a reinforcement
   - (C) an incentive
   - D a motive

6. Which of the following causes competitive markets to *move away* from an equilibrium price?
   - A supply changing to meet demand
   - B consumers switching to complements and substitutes in reaction to price changes
   - (C) government price controls
   - D buyers and sellers reacting to shortages and surpluses

7. Which of the following is closest to being a purely competitive market?
   (A) agriculture
   B automobile manufacturing
   C fast-food restaurants
   D public utilities

8. Which of the following is *not* a characteristic of a purely competitive market?
   A Firms have no control over the prices they charge.
   (B) There are a wide variety of different products.
   C There are a large number of firms in the market.
   D It is easy for new firms to enter the market.

9. Which of the following is *not* a characteristic of a purely competitive market?
   A There are a significant number of firms entering and exiting the market.
   (B) There are a significant number of different prices being charged by different firms in the market.
   C There are a large number of firms in the market.
   D Firms in the market produce a fairly standardized product.

10. Which of the following is the main production choice a purely competitive firm must make?
    A what price to charge
    B how to differentiate its product from the product of its rivals
    (C) how much to produce at a given price
    D how much to produce at different prices

11. When can a purely competitive firm earn economic profits?
    A in the long and short runs
    B only in the long run
    (C) only in the short run
    D never

12. What attracts new firms to competitive markets that have experienced an increase in demand for their products?
    A normal rates of return
    B lower costs
    (C) economic profits
    D marginal revenues

13. Why can't firms in purely competitive markets earn economic profits in the long run?
    A Long-run costs increase due to diminishing returns.
    B The long-run normal rate of return is less than the short-run of return.
    C Demand returns to equilibrium in the long run.
    (D) Economic profits attract new firms to the market.

14. Which of the following does *not* occur in the long-run equilibrium in a purely competitive market?
    - A The firm minimizes production costs per unit.
    - B The firm earns a normal rate of return.
    - (C) New firms will have an incentive to enter the market.
    - D Economic profits equal zero.

15. Which of the following is the correct order of changes resulting from an increase in demand in a purely competitive market?
    - (A) price increases, profit increases, supply increases
    - B supply increases, price increases, profit increases
    - C profit increases, price increases, supply increases
    - D supply increases, profit increases, price increases

16. Which of the follow describes the long-run effect of short-run profits in a purely competitive market?
    - A Producers will be able to sell their goods for considerably more than it cost to produce them.
    - (B) The level of output will increase and economic profit will fall back to zero.
    - C The level of output will decrease and prices will increase.
    - D Output will remain constant and prices will rise.

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    - C oligopoly
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    - C capitalist economy
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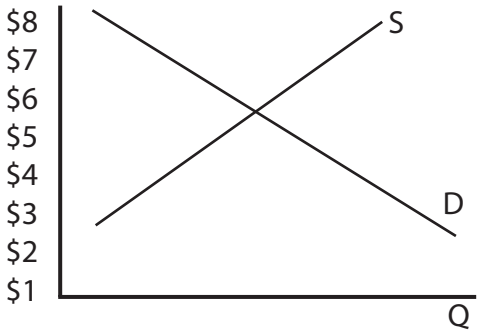
    - (D) an increase in the number of firms producing microcomputers.

24. In the figure below, if the price is $3, which of the following is *true*?
    - A A shortage exists, and eventually the price will fall.
    - (B) A shortage exists, and eventually the price will rise.
    - C A surplus exists, and eventually the price will fall.
    - D A surplus exists, and eventually the price will rise.



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    - A higher prices
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29. Which of the following is the most important determinant of resource allocation in market economies?
    - A producer spending decisions
    - B government spending decisions
    - C the average propensity to save
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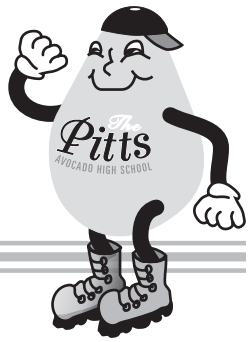
AVOCADO HIGH SCHOOL

Horace H. Hass, Principal



MEMORANDUM

Date: January 15, 2010

To: School-Based Enterprise Students
Avocado High School

From: Ronnie Johnson, Faculty Advisor

Subject: Congratulations on becoming "National SBE of the Year"

The award we recently received from the Secretary of the U.S. Department of Education is a source of pride for Avocado High School. It brings our School-Based Enterprise (SBE) much-deserved recognition for the hard work and entrepreneurial spirit that created the low-calorie avocado we now grow. People love avocados but want to watch their weight — two facts that have led to the profits we're seeing as demand increases.

The Secretary hoped we would remain strong, despite the possibility of competition from other firms in the future. The Secretary suggested, and I agree, that we find ways to expand production and profits, so we can continue to fund college scholarships for students in the SBE. To do this, we must build additional facilities, but we need funding from venture capitalists. Venture capitalists, as you know, provide money to entrepreneurs who show the worth of their "venture." Unfortunately, most venture capitalists will not meet with high school students. However, I have learned that the venture capitalist who is most likely to give us money leaves work promptly at 8:00 PM every night. If we take the elevator with her from her office to the parking garage, we will have about one minute to show her how much we know about the avocado market.

To prepare for this, please write a one-page summary that explains the economics behind our prices, costs, and profits over the past two years. I have attached two sets of tables, one each for 2008 and 2009, which track sales, revenue, profit, and cost numbers for each quarter. Venture capitalists will want to know why demand, prices, and profit changed between 2008, when were still selling high-calorie avocados, and 2009, when we began selling the low-calorie avocado. As you know, most venture capitalists have strong backgrounds in economics and will expect your explanations to be grounded in demand and supply. They will also expect you to use this information to predict revenue and profit for next year.

Use your summary to develop a one-minute "talk" for the elevator ride. Be creative about how you could persuade her of the worth of our enterprise!

Production of Avocados at Avocado High School

2008–2009

Avocados

Table 1A: Sales (in thousands), 2008

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$0.49	0	0	0	0
$0.59	0	0	0	0
$0.69	0	0	200	0
$0.79	0	150	0	0
$0.89	100	0	0	0
$0.99	0	0	0	50
$1.09	0	0	0	0

Table 1B: Total Revenue (in thousands), 2008

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$0.49	0	0	0	0
$0.59	0	0	0	0
$0.69	0	0	$138	0
$0.79	0	$118.5	0	0
$0.89	$89	0	0	0
$0.99	0	0	0	$49.5
$1.09	0	0	0	0

Table 1C: Costs (per avocado), 2008

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$0.8	$0.7	$0.6	$0.9

Table 1D: Profit (in thousands), 2008

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$9	$13.5	$18	$4.5

Low-calorie Avocados

Table 2A: Sales (in thousands), 2009

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$0.49	0	0	0	0
$0.59	0	0	0	0
$0.69	0	0	0	0
$0.79	0	0	250	0
$0.89	0	200	0	0
$0.99	150	0	0	0
$1.09	0	0	0	100

Table 2B: Total Revenue (in thousands), 2009

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$0.49	0	0	0	0
$0.59	0	0	0	0
$0.69	0	0	0	0
$0.79	0	0	$197.5	0
$0.89	0	$178	0	0
$0.99	$148.5	0	0	0
$1.09	0	0	0	$109

Table 2C: Costs (per avocado), 2009

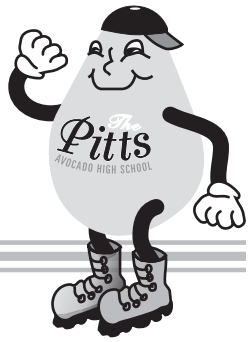
1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$0.8	$0.7	$0.6	$0.9

Table 2D: Profit (in thousands), 2008

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$28.5	$38	$47.5	$19

AVOCADO HIGH SCHOOL

Horace H. Hass, Principal



MEMORANDUM

Date: January 15, 2011

To: Avocado School-Based Enterprise
Avocado High School

From: Ronnie Johnson, Faculty Advisor

Subject: Competitors in our market!

When I wrote you last year we had soaring profits and were seeking funding to expand production of our low calorie avocados. I wish the future could remain so rosy.

Our rivals on the football field—Buchanan High School, Fillmore High School, and Pierce Academy—noticed our soaring profits and began to grow and market similar avocados. Consumers enjoy the lower price of avocados that competition created. AHS, however, saw its profits fall, even though sales remained strong. The attached table provides all the data you need to see that our profits have dropped to nothing, since we could have made as much had we invested our money in the bank instead of growing avocados.

The increased competition could not have come at a worse time. That nasty bug that eats the leaves of the avocado tree—the dreaded persea mite—is starting to destroy our trees in much the same way the boll weevil worked its way through cotton crops in the South. Venture capitalists are now questioning whether our School-Based Enterprise will remain in the market. They argue that since other high schools have the same price and sales figures, our SBE will be forced out of business with too many producers in the market. They say our declining profits is evidence that our business will fold. Of course, we know that competition in market economies eliminates economic profit. But we believe that our rivals do not know about the persea mite and will fold due to their lack of preparation for the infestation. In the long run, our SBE will survive as we conquer the mite with our research.

Once again I must call on you to explain why our sales, revenue, and profit numbers are consistent with competition in market economies. Venture capitalists do not care about the mites, per se. They only care about profit and want to be assured that we will regain ours. We need their confidence, and their money, to finance the Biochemistry Club's research to develop a method for getting rid of the mite.

We have managed to squeeze in a two-minute meeting with the most promising venture capitalist tomorrow morning. Please develop a presentation about the economic viability of our firm despite declining profits.

Production of Low-Calorie Avocados at Avocado High School

2010

Table 3A: Sales (in thousands), 2011

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$0.49	0	0	0	0
$0.59	0	0	0	0
$0.69	0	0	0	0
$0.79	120	120	120	120
$0.89	0	0	0	0
$0.99	0	0	0	0
$1.09	0	0	0	0

Table 3B: Total Revenue (in thousands), 2011

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$0.49	0	0	0	0
$0.59	0	0	0	0
$0.69	0	0	0	0
$0.79	94.8	94.8	94.8	94.8
$0.89	0	0	0	0
$0.99	0	0	0	0
$1.09	0	0	0	0

Table 3C: Costs (per avocado), 2011

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$0.8	$0.7	$0.6	$0.9

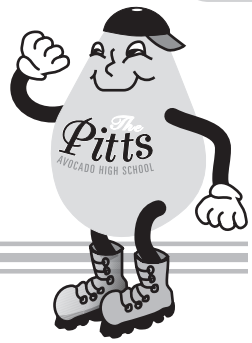
Table 3D: Profit (in thousands), 2011

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$-1.2	$10.8	$22.8	$-13.2

Note: Production numbers are for AHS only. Buchanan High School, Fillmore High School, and Pierce Academy have the same production.

AVOCADO HIGH SCHOOL

Horace H. Hass, Principal



MEMORANDUM

Date: January 15, 2011

To: School-Based Enterprise Students
Avocado High School

From: Ronnie Johnson, Faculty Advisor

Subject: Congratulations on your new job—but is it ethical?

What a senior year you have had! As you know, your work helped the Biochemistry Club get the funding to develop a pesticide and genetic-engineering process that work together to eliminate the persea mites. AHS immediately applied for and obtained patents, and this quick action allowed us to become the sole producer of the key ingredient of the pesticide and the DNA for the pest-resistant, genetically engineered avocado tree.

Because the pesticide works only on the genetically altered trees, the avocado trees at Buchanan, Fillmore, and Pierce High Schools were destroyed by the persea mite. These schools stopped production of low-calorie avocados, leaving us with a monopoly of the market and soaring profits (and less production!), as the attached table for 2011 shows. Mega Avocado Corporation (MAC) saw these high profits, and purchased our patents for a handsome price. MAC also offered to make you Junior Executives in their firm after you graduate from AHS, and enroll you in a while-you-work Bachelor's Degree program they have set up.

If you accept the job as a Junior Executive, you must become a loyal member of MAC's corporate family, an obligation that brings you a nice salary and the burden of defending their monopoly. Of course, some of you may not want to become loyal executives in a monopoly firm. You may feel uneasy about eliminating Buchanan, Fillmore, and Pierce High Schools from the market and joining a monopoly for your own personal gain. The decision to accept MAC's offer is one you should take time to consider seriously.

Our school principal, Mr. Hass, is serious about this too and would like you to hold a debate at a school assembly, so everyone can think about the ethics of your decision. This is the resolution to be debated:

> *Monopoly profits are a just reward for innovation and efficiency gains. They are not an unfair payment to corporations who overcharge consumers and prevent firms from competing in the market.*

To prepare for the debate, I'd like each of you to write a position paper on your decision. If you are going to accept MAC's offer, you must use economic arguments and the 2010 and 2011 price, sales, and profit data to persuade me that it is ethical to join a monopoly because you agree with the resolution above. If you decline the offer, you should use economic arguments to persuade me that joining a monopoly would be unethical, because you disagree with the resolution above.

Production of Low-Calorie Avocados at Avocado High School

2011

Table 4A: Sales (in thousands), 2010

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$0.49	0	0	0	0
$0.59	0	0	0	0
$0.69	300	300	300	300
$0.79	0	0	0	0
$0.89	0	0	0	0
$0.99	0	0	0	0
$1.09	0	0	0	0

Table 4B: Total Revenue (in thousands), 2010

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$0.49	0	0	0	0
$0.59	0	0	0	0
$0.69	$207	$207	$207	$207
$0.79	0	0	0	0
$0.89	0	0	0	0
$0.99	0	0	0	0
$1.09	0	0	0	0

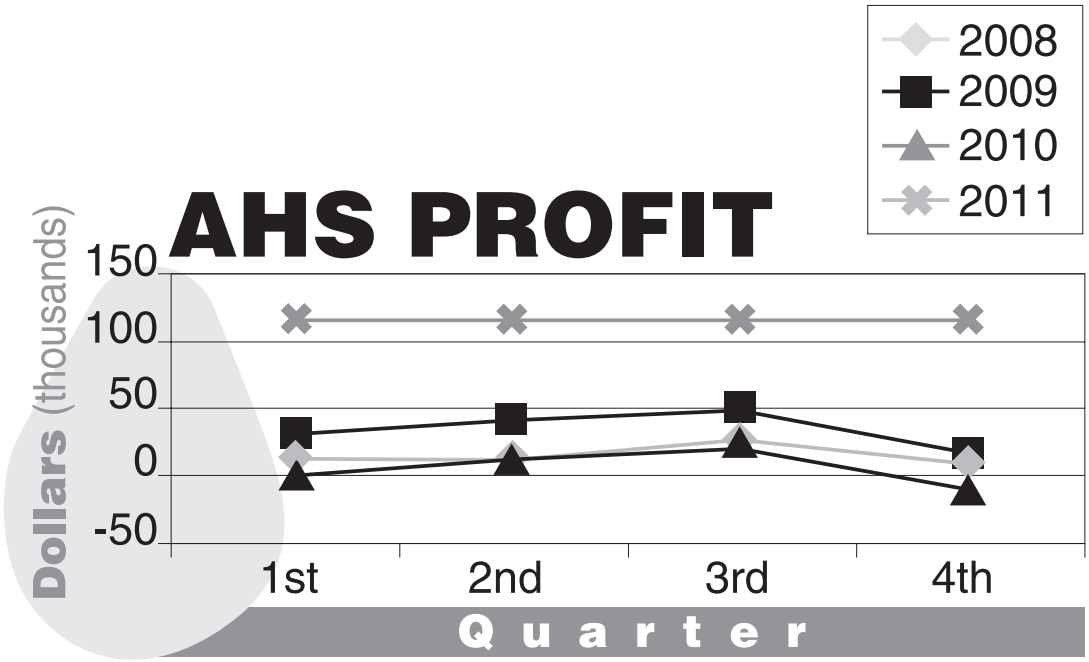
Table 4C: Costs (per avocado), 2010

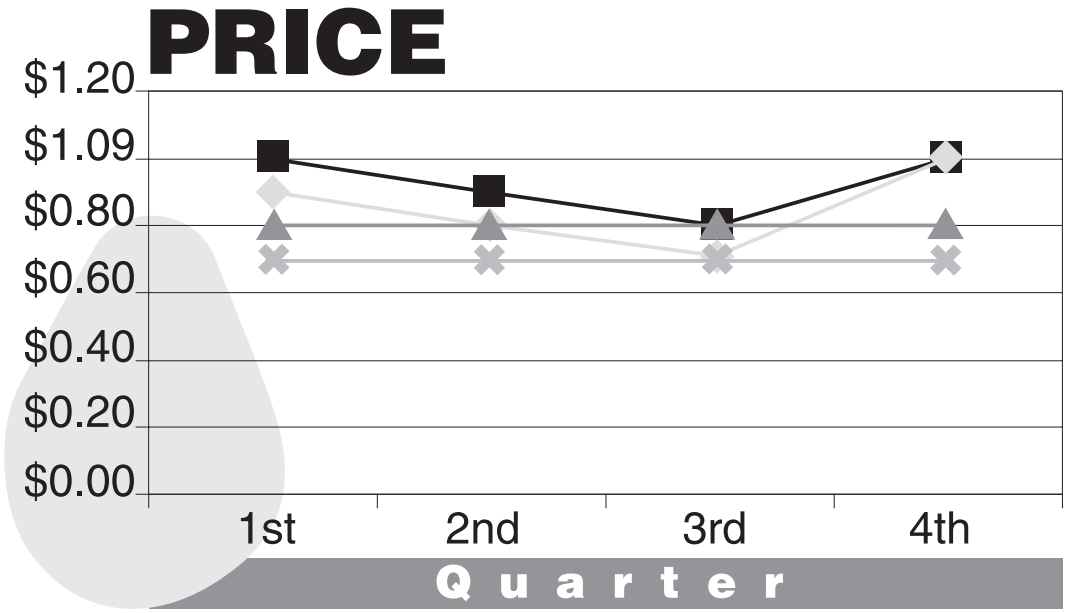
1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$0.3	$0.3	$0.3	$0.3

Table 4D: Profit (in thousands), 2010

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
$117	$117	$117	$117

Four-Year Data Line Charts





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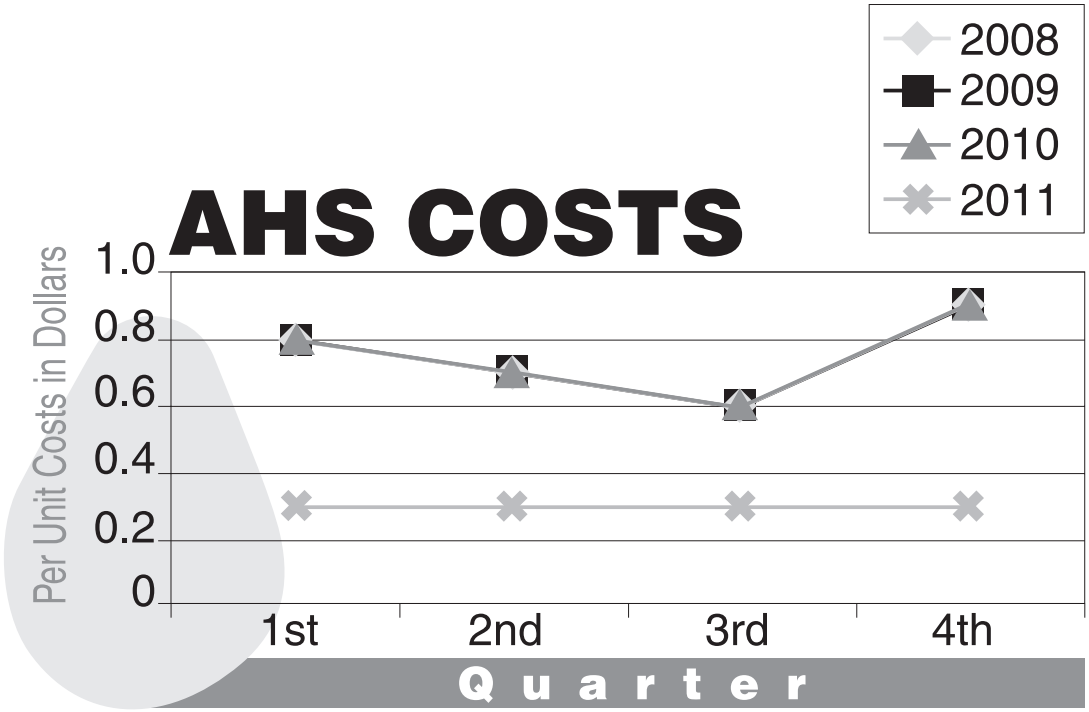
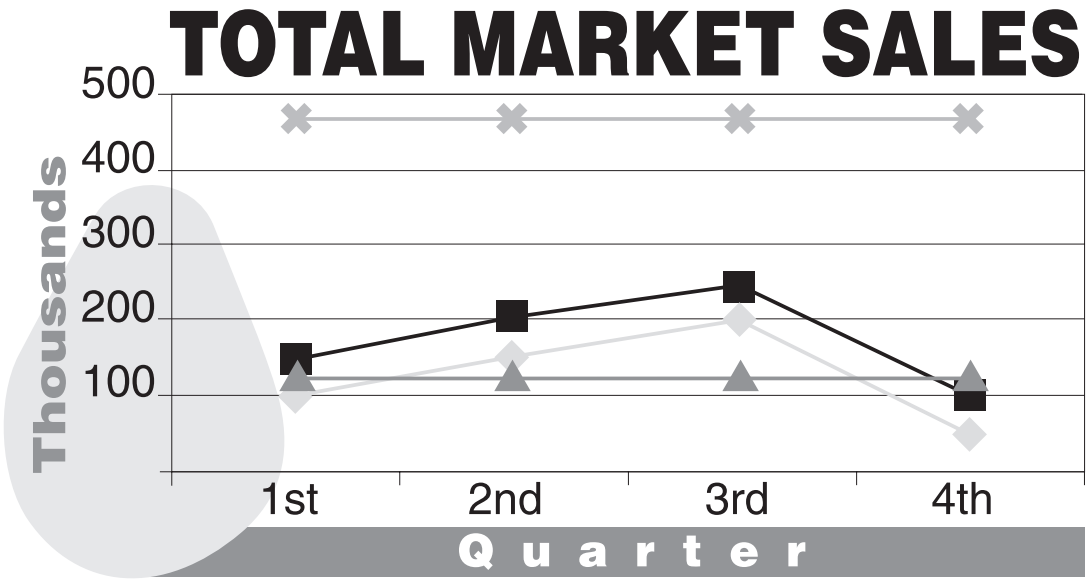
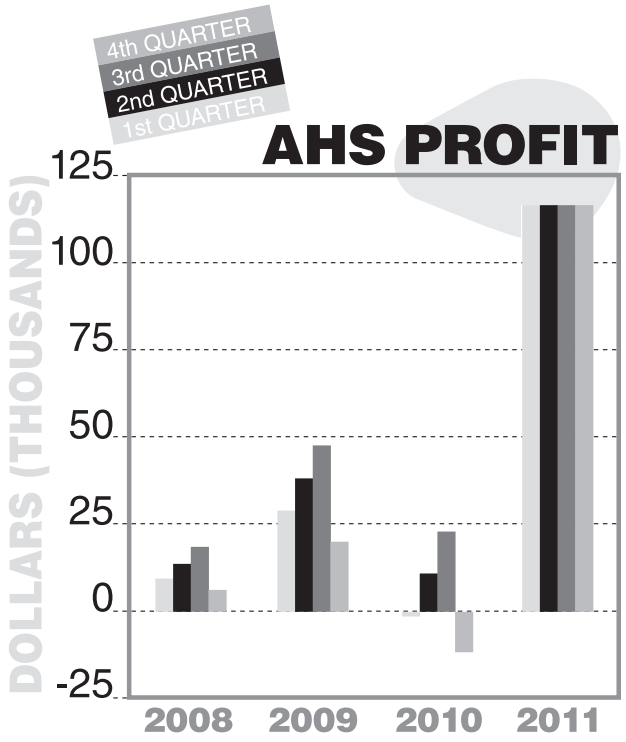
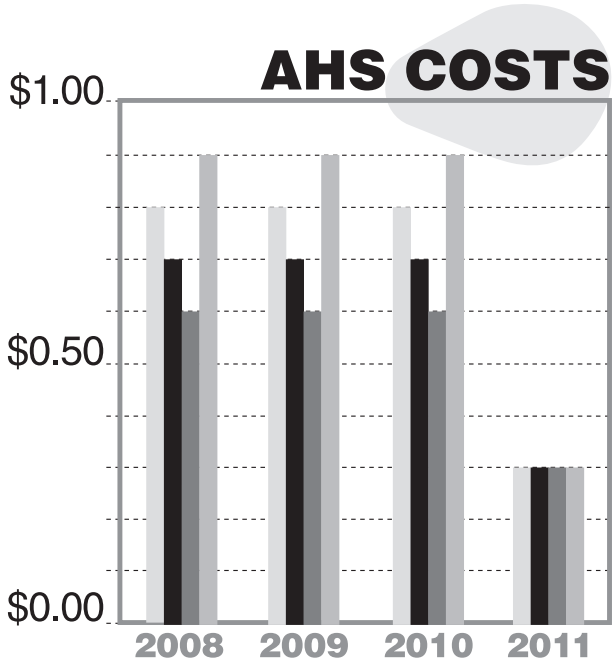
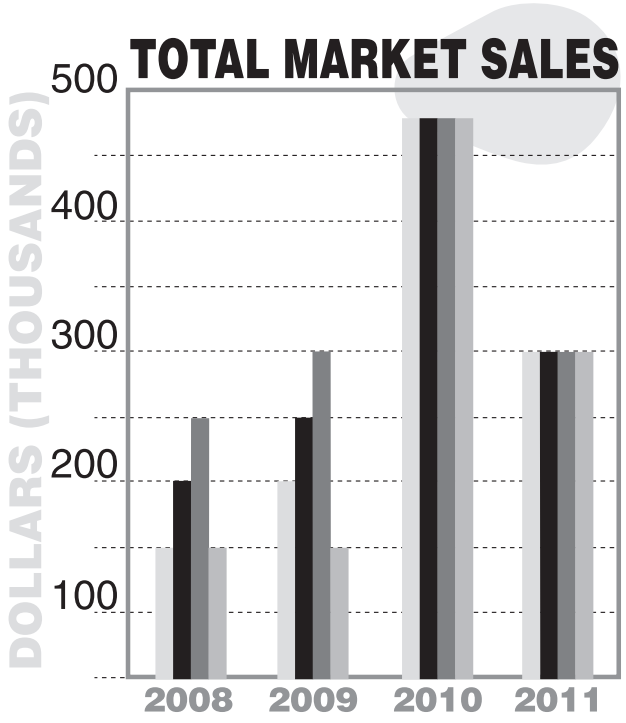


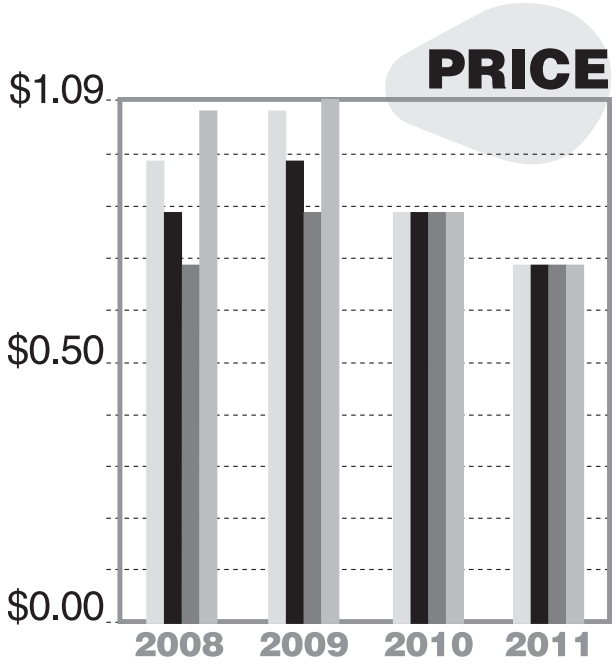


Four-Year Data Bar Charts









Name: _____ Date: _____

Test for *Monopoly's Might*

Please circle the letter of your answer.

1. Which of the following is most essential for a market economy?

   A effective labor unions
   B good government regulation
   C responsible action by business leaders
   D active competition in the marketplace

2. In a market economy, the public interest is likely to be served even when individuals pursue their own private economic goals, because of:

   A the operation of competitive markets
   B the social responsibility of business leaders
   C careful planning and coordination of market activity
   D individuals' understanding of what is in the public interest

3. A newspaper reports, "COFFEE GROWERS' MONOPOLY BROKEN INTO SEVERAL COMPETING FIRMS." If this is true, we would expect the coffee-growing industry to:

   A increase output and decrease prices
   B decrease output and increase prices
   C use more capital goods and hire fewer workers
   D use fewer capital goods and hire fewer workers

4. If you saw a headline that read, "ACME WIDGET CORPORATION RAISES PRICES: REST OF WIDGET INDUSTRY EXPECTED TO FOLLOW," it is likely that Acme Widget Corporation is an industry that has:

   A few sellers
   B many sellers
   C many buyers
   D few buyers

5. In a market economy, the opportunity to make a profit for providing a good or service is called:

   A an inducement
   B a reinforcement
   C an incentive
   D a motive

6. Which of the following causes competitive markets to *move away* from an equilibrium price?

   A supply changing to meet demand
   B consumers switching to complements and substitutes in reaction to price changes
   C government price controls
   D buyers and sellers reacting to shortages and surpluses

7. Which of the following is closest to being a purely competitive market?

   A agriculture
   B automobile manufacturing
   C fast-food restaurants
   D public utilities

8. Which of the following is *not* a characteristic of a purely competitive market?

   A Firms have no control over the prices they charge.
   B There are a wide variety of different products.
   C There are a large number of firms in the market.
   D It is easy for new firms to enter the market.

9. Which of the following is *not* a characteristic of a purely competitive market?

   A There are a significant number of firms entering and exiting the market.
   B There are a significant number of different prices being charged by different firms in the market.
   C There are a large number of firms in the market.
   D Firms in the market produce a fairly standardized product.

10. Which of the following is the main production choice a purely competitive firm must make?

    A what price to charge
    B how to differentiate its product from the product of its rivals
    C how much to produce at a given price
    D how much to produce at different prices

11. When can a purely competitive firm earn economic profits?

    A in the long and short runs
    B only in the long run
    C only in the short run
    D never

12. What attracts new firms to competitive markets that have experienced an increase in demand for their products?

    A normal rates of return
    B lower costs
    C economic profits
    D marginal revenues

13. Why can't firms in purely competitive markets earn economic profits in the long run?

    A Long-run costs increase due to diminishing returns.
    B The long-run normal rate of return is less than the short-run of return.
    C Demand returns to equilibrium in the long run.
    D Economic profits attract new firms to the market.

14. Which of the following does *not* occur in the long-run equilibrium in a purely competitive market?

    A The firm minimizes production costs per unit.
    B The firm earns a normal rate of return.
    C New firms will have an incentive to enter the market.
    D Economic profits equal zero.

15. Which of the following is the correct order of changes resulting from an increase in demand in a purely competitive market?

    A price increases, profit increases, supply increases
    B supply increases, price increases, profit increases
    C profit increases, price increases, supply increases
    D supply increases, profit increases, price increases

16. Which of the follow describes the long-run effect of short-run profits in a purely competitive market?

    A Producers will be able to sell their goods for considerably more than it cost to produce them.
    B The level of output will increase and economic profit will fall back to zero.
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    B a traditional economy
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21. One socioeconomic goal that must be achieved in order for a market economy to work well is:

A an equitable distribution of income
B job security
C economic freedom for people to choose what they want to buy
D full employment

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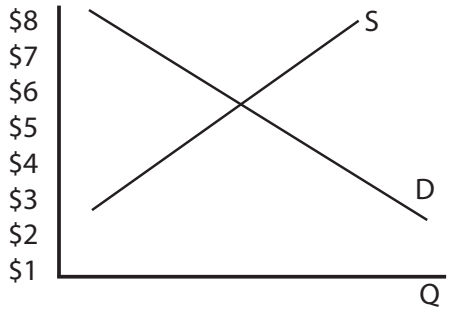

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B government spending decisions
C the average propensity to save
D consumer spending decisions

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