Hopscotch Math

An Interaction Unit With Hopscotch Patterns for Learning Multiplication and Division Facts

![Interact logo — Learn Through Experience]

About the author

Paul Schroeder earned his B.S. degree in elementary education at Mayville State in Mayville, North Dakota. He currently teaches third-grade elementary students in Nevis, Minnesota, and he has also taught Chapter 1 and sixth-grade students. His varied teaching environments enabled him to develop this experiential unit. Paul would like to dedicate this work to all the students who struggled with multiplication and division facts in his elementary math classes over the years. These students are the ones who motivated and challenged him to find an easier way, a more enjoyable way, a "Hopscotch" way to learn math.

WELCOME TO HOPSCOTCH MATH!

Get students multiplying and dividing with this active participation unit. Each lesson teaches concepts through short stories, phrases, or an activity. Things get hopping as students have fun jumping through hopscotch patterns reciting their multiples. Reproducible Student Learning Logs provide a chance for students to reflect on how and what they have learned. Students keep a daily journal and take pre and post tests to chart their progress. As designed, the unit runs for 18 class periods; time varies based on practice time allotment.

TABLE OF CONTENTS
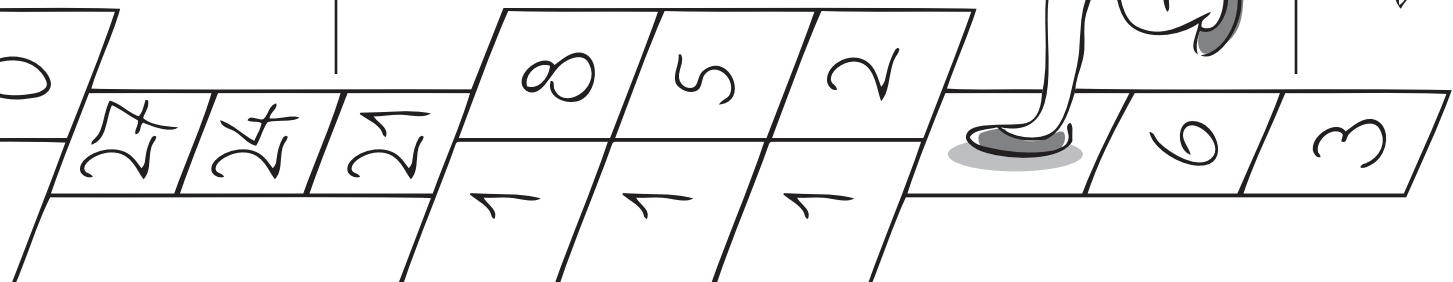
TABLE OF CONTENTS

TABLE OF CONTENTS

Purpose

Teaching multiplication and division can often be a frustrating experience. The concepts of multiplying and dividing seem to be difficult for young students to grasp. In addition, for some students memorizing multiplication and division facts can be next to impossible. *Hopscotch Math* is a new approach that assists in alleviating some of these barriers. Specifically your students should experience the following:

Knowledge

1. Signs for multiplication and division
2. Uses of multiplication and division
3. Strategies for learning multiplication facts
4. Reversibility of multiplication facts

Skills

1. Multiplying single digit numbers
2. Dividing with single digit divisors
3. Working cooperatively
4. Tutoring one's peers
5. Strategizing to find correct answers to multiplication and division problems
6. Writing summaries describing knowledge gained
7. Charting individual progress on multiplication facts

Attitudes

1. Feeling positive self-esteem because of ability to solve multiplication and division problems
2. Sensing the satisfaction gained while working cooperatively with classmates
3. Gaining confidence and satisfaction from peer teaching
4. Appreciating how a parent cares and helps with math work taken home for practice

Overview

Something special: At the moment others walk into your *Hopscotch Math* classroom, they will know there's something special going on. They will see hopscotch patterns taped on the floor or placed on the carpet. Visitors will feel the energy as students are hopping on the patterns and reciting their multiples at the same time. The room will be charged with excitement, and this is before the school day even begins!

Just as training wheels are a valuable tool for learning how to ride a bike, *Hopscotch Math* is a valuable tool for learning multiplication facts. Sure, they might be a little wobbly at first, but with some practice and time, they gain confidence and the skills they need and soon the training wheels come off. *Hopscotch Math* works the same way for students learning their multiplication facts. With some practice and time, students will no longer need *Hopscotch Math*, as they've gained the confidence and the skills to know all of their multiplication facts by sight.

Having students know their facts by sight should be your ultimate goal and should always be encouraged, just as a child's ultimate goal is to ride a bike without training wheels. With that said, *Hopscotch Math* will be there to help support and guide students until they are able to learn all of their multiplication facts by sight.

Consequences: *Hopscotch Math* is designed to add interest and stimulate students so that they will enjoy taking an active part in learning their multiplication and division facts. With help from this unit, students learn patterns, short stories, and/or phrases that directly relate to their comprehension of their multiplication facts—2 through 9. Students will transfer these skills and knowledge as they complete multiplication and division worksheets, use **Flash Cards**, and eventually do well on multiplication and division exams. They will also track their progress and their knowledge of their multiplication facts by filling out personal progress charts and writing journal pages in their Student Learning Log.

Lessons: *Hopscotch Math* has a total of 8 lessons (mini-lectures), each of which lasts approximately 1 hour:

1. What is multiplication?
2. Multiples of 3
3. Multiples of 4
4. Multiplying by 2
5. Multiplying by 5
6. Multiplying by 9
7. Multiplication of 6s, 7s, and 8s (the shortcut)
8. Division and *Hopscotch Math*

Amount of time: The number of days all lessons will take to complete will depend on the amount of time taken between the lessons for practice and peer tutoring. The Unit Time Chart offers a guideline for covering all multiplication and division facts, including extra review days. Decide how closely you will follow this Unit Time Chart, but feel free to add more time for practice as needed.

Having learned all their multiplication facts and the relationship between multiplication and division, students will not perceive division as a separate or difficult concept.

Other materials: Feel free to choose some appropriate textbook or other supplementary materials to use along with *Hopscotch Math*.

How does *Hopscotch Math* succeed?

- **Learning styles:** The unit effectively incorporates auditory, visual, and kinesthetic learning styles.

- **Mnemonics:** Using stories and phrases that complement the unit's pictures and patterns, students have a special way of remembering their multiplication facts.

- **It is fun!:** Students are learning their multiplication and division facts while hopping, but please do not tell them their hopping is a form of studying. They just think it is fun!

Test results: For me as a teacher *Hopscotch Math* has been an effective tool that has improved my students' test performances. We at Interact expect your students to have similar success. Good luck!

Teaching tip
Check out Interact's simulation *Lost Tribe of the Tocowans*: Third- to fifth-graders travel in jeeps searching for a lost tribe on the imaginary Bahacan Peninsula. They practice multiplication and division skills in order to decipher Pictographic Cards which give clues for solving an intriguing mystery.

Alone Or With Colleagues?

Alone or with colleague(s): You may use *Hopscotch Math* by yourself in your own classroom. Simply follow or modify the Set Up directions and the Unit Time Chart. However, I encourage you to consider using *Hopscotch Math* with a colleague(s) for the following reasons.

- Your communication with fellow teachers about math instruction increases, and many benefits result.

- A consistent approach to teaching multiplication and division facts will be encouraged.

- Increasing continuity between grade levels can enhance students' retention.

- The hopping patterns in areas accessible to all students—gym, sidewalk, playground—can be shared by all grade levels.

Should you choose to implement *Hopscotch Math* in your school or district, I recommend that you meet with the following individuals:

- Classroom teachers

- Special education teachers

- Chapter teachers

- Teacher aides

Enhancing the Unit

Many ways exist for you to enhance the effectiveness of *Hopscotch Math*. Here are seven suggestions for you to consider.

1. **Patterns Location:** Have patterns available in as many places as possible on your campus: gymnasium, classroom, sidewalk(s), playground, hallways, lobby area.

2. **Hopping/Reciting:** Students must say or attempt to say multiples while hopping through patterns or playing the game *Hopscotch Math*.

3. **Crowd Control:** Only one student should hop on a pattern at a time.

4. **Peer Tutoring:** After teaching a pattern, encourage students who understand the pattern to help students who are struggling.

5. **Multiplying by 0, 1, and 10:** Remember to teach multiplication by the numbers 0, 1 and 10. There are no patterns for these so they are not part of *Hopscotch Math* and are not directly addressed in the Daily Directions.

6. **Special Education Classrooms:** Both patterns should be displayed in special education classrooms.

7. **Parents' Night**
   a. Upon completion of all lessons, set up a night during which parents come in and watch their children hop through the patterns.
   b. Encourage parents to hop the patterns with their students' help.
   c. Students will also wish to challenge their parents to compete in a game of *Hopscotch Math*.
   d. Refreshments could be provided along with participation **Certificates** and **Awards**.

You users may have other suggestions to pass on to future *Hopscotch Math* teachers after you have used this unit.

Please send such suggestions to me at: **access@teachinteract.com**

Questions and Answers

What do I do with really bright students who memorize all the facts by sight right away? Will *Hopscotch Math* still help them, or will they simply be wasting their time hopping around?

> Actually *Hopscotch Math* will benefit all of your students. After eight easy lessons, all of your students will have the tools to find the answers to all of their multiplication and division facts. As a result, you will not have to spend weeks or even months waiting for all of your students to memorize all of their facts. This will actually benefit the students that can memorize them right away. With that said, you should always be encouraging students to memorize their facts. *Hopscotch Math* is like training wheels for learning multiplication facts. Eventually we want the training wheels to come off.

How do physically challenged children participate in *Hopscotch Math*?

> They participate in two ways:
>
> • **Finger Hopscotch:** Physically challenged students use their fingers to hop through patterns on paper while reciting their multiples. (Finger Hopscotch is explained in Day 2 of the Daily Directions.)
>
> • **Classmate hops:** Physically challenged students recite the multiples as friends hop through the patterns for them.

Should I use *Hopscotch Math* by myself, or should I try to find other teachers to do the program with me?

> You can have success with the program while doing it alone, but I suggest you try to find a teaching partner. This is especially true when working within the same grade level. It's also a benefit if the teacher after you knows how the students were taught. They could then help support a student if a strategy needs review.

During the time I am teaching *Hopscotch Math*, is that the only math instruction I should be doing?

> *Hopscotch Math* is a very flexible program. If you choose to follow the Unit Time Chart, you will take an entire "period"—approximately one hour—for your math class for those days. However, you may wish to incorporate *Hopscotch Math* over a long period of time—even months—teaching a new lesson whenever you decide to do so. In this case, you would be teaching other math material and concepts during your math time and *Hopscotch Math* would be a regular on-going activity.

Is regular class time enough practice time for most students?

> Some students may need more time. However, if you have patterns on the playground or in your room, many students will hop before school and at recess. Some will even hop at home for more practice. (I've even had parents paint patterns on basement floors for older brothers and sisters to teach their younger siblings to hop and recite!)

Do I have to teach the lessons in the order given in this Teacher Guide?

> You can teach any lesson you want whenever you want to teach it. My sequence in this Teacher Guide is simply a sequence that I have found most effective during my teaching of *Hopscotch Math*.

If students use *Hopscotch Math* to learn their multiplication and division facts, could they be susceptible to always relying on counting multiples and never know a math fact by sight?

> You should encourage math facts by sight. Unfortunately, many students are unable to memorize that many problems. They are intimidated and overwhelmed. *Hopscotch Math* gives such students the confidence and the means to solve multiplication and division problems right away. As students become more comfortable with multiplication and division, facts by sight will follow.

How will I know when to teach the next lesson?

> Besides using the Unit Time Chart as a guide, use your judgment. If students seem to understand the lesson, go on. If they do not, they likely need to practice more.

I'm a little concerned about where to place the 3s and 4s patterns in our school. Could you give me any suggestions?

> There are many places—the school gymnasium, your classroom, sidewalk(s), playground, hallways, lobby area, patterns in the snow.

How do I put down the patterns?

> Placement ideas are in the Setup Directions on page 10, #9. (On page 10 there is also a picture of a student placing a pattern in my classroom.)

> **Note:** If you come up with any suggestions on how to do the patterns differently—particularly if you sense your process is better than what I have explained, please send such recommendations to Interact so that they can be incorporated in this Teacher Guide. (See bottom of page 6 for e-mail address.)

How often should students review the patterns?

> There are only two patterns—the 3s and 4s. You will be amazed at how fast they learn and retain these patterns. Students absolutely love to play *Hopscotch Math*. My students play before school, at recess, and during free time.

How do students hop?

> Throughout the patterns, there are single boxes, and there are boxes placed side by side. When students hop in a single box, they hop on one foot. When students hop in boxes that are side by side, they hop with both feet, one foot in each box.

Setup Directions

Before beginning

1. ***Ensuring understanding:*** Carefully study this Teacher Guide so you understand *Hopscotch Math* before you carry out these Setup Directions.

2. ***Choosing optional supplementary materials:*** Decide which math worksheets and/or textbook pages you wish to use as supplementary activities for *Hopscotch Math*.

3. ***Duplicating miscellaneous materials***
    Here are some other items to duplicate for this unit.
    a. Multiplication Exam (class set)
    b. Division Exam (class set)
    c. All Certificates (as needed)

4. ***Duplicating Flash Cards:*** (see pages 28–33) The Daily Directions explain times when students are to "practice."
    a. Whether they practice their **Flash Cards** in pairs or in groups is your decision.
    b. Of course, if you wish your students to take **Flash Cards** home for practice, you must duplicate a set for each student. This is what I do with my students, and the suggestion I recommend.

5. ***Completing Flash Cards:***
    a. Cut out each **Flash Card**.
    b. Cut out colored tag board pieces that are approximately half-inch larger all around than the **Flash Cards**.
    c. Glue each flash card to a piece of tag board
    d. Be sure to place the answer on the back of each **Flash Card** before laminating it.
    e. Laminate all **Flash Cards**.

6. ***Organizing Flash Cards***
    a. Having specific **Flash Cards** placed in a special place and ready to hand out as explained in the Daily Directions for a certain day will expedite the lesson.

7. ***Another Option:*** You might chose to have students make their own flash cards from blank white cardstock (flash card size and cut out by you or an aid prior to instruction). After each lesson simply have students write the problem on one side in crayon and the answer very small on the back right-hand corner in pencil. In doing it this way, you can actually have two problems on each card. An added bonus is that the cards become personalized.

Important!
Choose one of these duplication options:
- one set per student;
- one set for every two students; or
- one set per group.

Teaching tip
If your school's paper budget has not been stretched too far, I really recommend that you give each student a set of **Flash Cards** to take home.

Teaching tip
If you do choose this method, make sure students put their initials in the top right corner in pencil.

8. ***Knowing when to place hopping patterns***
   a. The Daily Directions indicate which patterns are needed for particular days.

9. ***Knowing where to place hopping patterns***
   a. For daily instruction the classroom is best.
   b. **Optional:** Gymnasium, sidewalk(s), hallways, lobby area, and playground (My students have even made patterns in the snow to use during the winter! Then they often practice together or alone.)

10. ***Choosing materials and placing hopping patterns:*** You can use different materials for patterns. Use the method most appropriate for your situation (carpet, tile, sidewalk, etc.).
    a. One-inch vinyl floor-marking tape can be found in athletic catalogs. Check with your school's friendly PE teacher or contact this company:

    > Gopher Sport
    > 2929 West Park Drive
    > Box 998
    > Owatonna, MN 55060
    > (800) 533-0446 … FAX (800) 451-4855

    b. Purchase small carpet samples or make one foot carpet squares.
    c. Paint the patterns on concrete or asphalt with acrylic paint. Mark out squares that are approximately one foot × one foot to create your pattern.

11. ***Making overlay transparencies for teacher use***
    (See pages in this Teacher Guide for overhead transparencies you should make in advance.)

12. ***Using certain overlay transparencies in other ways***
    a. Enlarge patterns onto tagboard to display on walls in your classroom, in special education classrooms, and in upper grades' classrooms for review.
    b. Using **Overhead Transparency 4**, you can create a colorful poster for the classroom bulletin board. Enlarge image onto tag board, then color and laminate.

13. ***Preparing for the physically handicapped***
    a. No special setup instructions are needed for the handicapped student.
    b. The only adjustment you will make for handicapped students is when you ask your students to hop. At this moment a classmate will hop for any handicapped student while the handicapped student recites his/her multiples.

14. ***Preparing to use the Student Learning Log***
    The preparation for this important part of *Hopscotch Math* is detailed on pages 12–13.

15. ***Recognizing students' achievements***
    Duplicate and give to each student one or more of the three **Certificates** found on pages 44–46. Notice that each **Certificate** is honoring a student for a particular achievement.

Using the Student Learning Log

The **Student Learning Log** (SLL) is a central part of *Hopscotch Math*. Follow the suggestions below as you prepare and use the SLL notebook.

The Student Learning Log (following page 46 in this Teacher Guide)

If you chose the option to purchase the SLL separately from Interact, skip the duplicating directions in the next paragraph.

Duplicating the Student Learning Log

If possible, duplicate the SLL on back-to-back sheets in order to save paper and space in the SLL notebook referred to in the next paragraph. Of course, if your school duplicating machine does not duplicate back-to-back, duplicate the SLL one side only.

Creating the Student Learning Log three-ring notebook

With school or parental financial support, obtain three-ring notebooks for all students. Once they have their individual notebooks, help them place their SLL inside their notebooks.

Using the Student Learning Log three-ring notebook

Teaching tip
Do not cover all these suggestions on the day your students begin using this program. Present these ideas about the SLL over time as your class becomes increasingly familiar with *Hopscotch Math*.

1. **Coloring the cover:** After your students have placed their SLL pages into their three-ring notebooks, call their attention to its cover. Suggest that they consider coloring its title page with colored pens or crayons. Later other pages' illustrations will attract students to use color to accent their work.

2. **Learning Log?:** Ask them to speculate on why the SLL has been named a "learning log." Ask them to speculate on definitions of the word. Lead them to understand that a learning log is a place where they will record what and how they learned about multiplication and division skills over a certain time period.

3. **Highlighter pens:** Hold up in front of your students yellow (or other colored) highlighter pens. Then demonstrate how to use these pens to emphasize key points. Stress that the SLL will become *theirs* if they personalize it with their own markings.

4. **Parents:** In a special letter—or during your Open House presentation— explain to parents your desire for a school-home connection with *Hopscotch Math*. Point out how the SLL can be a means to achieve this goal. Examples you might point out as you go over the SLL in detail appear on the next page.

Parents, students, and the Student Learning Log

1. **Reflecting on the SLL:** Students can place pages in their SLL upon which they write about difficulties and successes they are having. Later they can go over these thoughts with a parent, classmate, or teacher.

2. **Completed work:** Obviously students should keep assigned and extra work in their SLL. If they begin getting quite a few pages, have students set up tab sections in which they can organize their work.

3. **Tests and certificates:** Students will want to keep both here as evidence of their success or as motivation to work harder.

4. **Time spent with family:** Parents and students will be proud if students log the amount of time they spend on *Hopscotch Math* activities. Possibly you will wish to reward students some way for time spent working at home with a mom, dad, or sibling.

5. **Photographs:** Snapshots will enhance #4 above.

6. **Progress Charts:** Have students fill in these charts—page 27 in their SLL—on review days. (See the Unit Time Chart on the next page.)

7. **Working with younger brothers and sisters:** Anyone who has grown up in a family with several children knows how much younger siblings learn from older brothers and sisters. Encourage students to do such teaching. A proud student could even bring in a short video of a precocious 6-year-old happily hopping and shouting his/her knowledge of patterns. Encourage students to draw the 3s and 4s pattern in the dirt, on a sidewalk, or even in the snow. Suggest they start hopping outside their home with a younger sibling or neighbor. Guess who will soon be hopping!

8. **Keeping the SLL for the future:** Be sure you encourage students to keep their SLL as something they will enjoy looking at and then showing to their children some day when they have become parents.

9. **Ideas from you:** I would appreciate your sending me c/o Interact other examples of ways your students and their parents have used their SLL.

Important!
Make certain students place on all their work the dates when they completed the work. By dating every SLL Item, they will have an accurate record of their learning progress.

Teaching tip
My students have been imaginative in placing hopping patterns in several environments.

Unit Time Chart

Week 1

Day 1:
- Hand out the **Student Learning Log**
- What is multiplication?

Day 2:
- 3s Pattern
- Activity for 3s
- Finger Hopscotch for 3s
- Hopping 3s
- **Flash Cards** for 3s
- Assign **3s Worksheet**

Day 3:
- 4s Pattern
- Picture/phrase for 4s
- Optional: Finger Hopscotch for 4s
- Hopping 4s
- **Flash Cards** for 4s + 3s
- Assign **4s Worksheet**

Day 4:
- Review
- Hopping 3s and 4s
- **Flash Cards** for 3s + 4s
- **Journal Pages** for 3s and 4s
- Students record on **Progress Charts**
- Grade SLL

Day 5:
- Multiplication facts containing a 2
- **Flash Cards** for 5s + 2s, 3s, 4s
- **Journal Page** 2s
- Assign **2s Worksheet**

Week 2

Day 6:
- Multiplication facts containing a 5
- Trick for 9s
- **Flash Cards** for 9s + 2s, 3s, 4s, 5s
- **Journal Page** 5s
- Assign **5s Worksheet**

Day 7:
- Trick for 9s
- **Flash Cards** for 9s + 2s, 3s, 4s, 5s
- Assign **9s Worksheet**

Day 8:
- Review
- Hopping 3s + 4s
- **Flash Cards** for 2s, 3s, 4s, 5s, 9s
- **Journal Page** 9s
- Students record on **Progress Charts**
- Grade SLL

Day 9:
- Teach "Shortcut" lessons for remaining multiplication problems
- Assign **6s Worksheet 7s Worksheet 8s Worksheet**

Day 10 (and on):
- Practice multiplication facts with the aid of patterns, phrases, pictures, **Flash Cards**, and peer tutoring until all students are having success

Week 3

Day 11:
Multiplying by 0, 1, and 10:
- Remember to teach multiplication by the numbers 0, 1, and 10s as they are not directly addressed in the Daily Directions for obvious reasons

Day 12:
Optional day
- Introduce and play the **Hopscotch Math Game**

Can be introduced as early as Day 3

Day ?
When students know their multiplication facts well, introduce:
- What is division?
- Assign **Division Facts Worksheet**

Throughout the next several days:
- Continue to review
- Practice multiplication and division with the aid of patterns, phrases, pictures, **Flash Cards**, and peer tutoring as needed

When you feel students are ready:
- Test on multiplication and division facts
- Repeat testing as needed

# Daily Directions

Day 1: What Is Multiplication?

Before implementing *Hopscotch Math* into your curriculum, it is important to teach students what multiplication is and why it is used. Follow these steps:

1. ***Introduce the multiplication sign (×).***

   a. Remind students that they have already learned other math signs (+, −).
   b. Reinforce that the students know what these (+, −) signs mean and what has to be done when they see them.
   c. Put the multiplication sign (×) on the chalkboard.
   d. Explain that it does not mean you add (+) or subtract (−). It means something completely different.

2. ***What does multiplication mean?***

   a. Put the problem 6 × 3 on the chalkboard.
   b. Show students through a drawing similar to this drawing that 6 × 3 means six groups of 3 or that you have 3 six times.
   c. Repeat this exercise until students can draw what a multiplication problem looks like.
   d. Emphasize that the students are not to be concerned with the answer at this time (just drawing the problem).
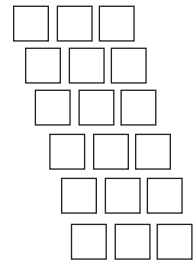
3. ***Why do we use multiplication?***

   a. Show that it is easier to write 6 × 3 than it is to write 3 + 3 + 3 + 3 + 3 + 3 (even though they mean the same thing and have the same answer).
   b. Prove that this is true.

4. ***Multiplication facts are reversible.***

   a. Point out that a multiplication problem will have the same answer if you switch the numbers around—they just look different.
   b. Prove that this is true by putting an example, similar to one below, on your whiteboard or chalkboard.
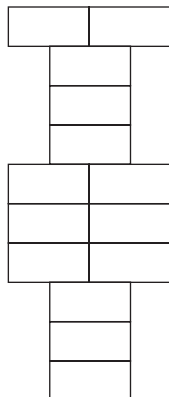
   6 × 3 looks like this:
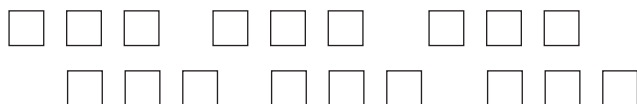
   3 × 6 looks like this:
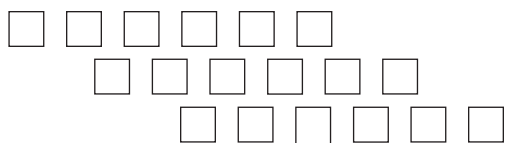
Teaching tip
When students draw a multiplication pattern, they improve their understanding of the concept.

c. Have students demonstrate through drawings that they know what 4 × 7 looks like compared to 7 × 4.

d. Remind students again that knowing the answers is irrelevant at this time except for the purpose of proving that you do get the same answer.

Day 2: Multiplying by 3

Preparation

Put the 3s pattern on the classroom floor. (See Choosing materials and placing hopping patterns in Setup Directions.)

Teaching the multiples of 3 for **Hopscotch Math**

1. List the multiples of 3 vertically on the board from 3 to 30 or use **Overhead Transparency 1** on page 34.

2. Ask students to look for a pattern in the numbers. See if they notice the following:

   a. The first three numbers are all single digit numbers (3, 6, 9).
   b. The next three numbers all start with "1" (12, 15, 18).
   c. The next three numbers all start with "2" (21, 24, 27).
   d. The last number starts with a "3" (30).
   e. The 3s are in groups of three.

3. Draw the 3s pattern on the chalkboard or whiteboard and put the multiples of 3 inside the squares, or use **Overhead Transparency 2** on page 35. Lead students to notice that the pattern reinforces the three groups of three.

OVERHEAD TRANSPARENCY 1

Multiples of 3

30
27
24
21
18
15
12
9
6
3

OVERHEAD TRANSPARENCY 2

3s Pattern

3	0
	27
	24
	21
1	8
1	5
1	2
	9
	6
	3

4. Do the following short activity:
    a. Have the students close their eyes and repeat exactly what you say.
    b. You and your students speak the activity as follows:

    Teacher: "3, 6, 9"
    Students: "3, 6, 9"
    Teacher: "3, 6, 9"
    Students: "3, 6, 9"
    Teacher: "3, 6, 9—12, 15, 18"
    Students: "3, 6, 9—12, 15, 18"
    Teacher: "3, 6, 9—12, 15, 18"
    Students: "3, 6, 9—12, 15, 18"
    Teacher: "3, 6, 9—12, 15, 18—21, 24, 27"
    Students: "3, 6, 9—12, 15, 18—21, 24, 27"
    Teacher: "3, 6, 9—12, 15, 18—21, 24, 27"
    Students: "3, 6, 9—12, 15, 18—21, 24, 27"
    Teacher: "3, 6, 9—12, 15, 18—21, 24, 27—30"
    Students: "3, 6, 9—12, 15, 18—21, 24, 27—30"
    Teacher: "3, 6, 9—12, 15, 18—21, 24, 27—30"
    Students: "3, 6, 9—12, 15, 18—21, 24, 27—30"

Teaching tip
Remember: three groups of 3 (how convenient).

Note about this activity: The dash (—) indicates a short pause between the groups three.

5. **Finger Hopscotch**
    Practice saying the multiples of 3 while hopping with their fingers using the pattern in their SLL.

    a. Instruct students to use one finger on single boxes and two fingers when the boxes are side by side.
    b. The 3s pattern is found on page 3 of the SLL.

6. Explain that each student is going to try to hop through the pattern on the floor as he/she says the multiples of 3. Students hop "hopscotch" style. Where there is a single box, he/she hops on one foot and where there are two boxes side by side, he/she lands with one foot in each box.

7. Students practice hopping through the 3s pattern on the floor for approximately 15 minutes.

Students practice for 15 minutes

8. Instruct students to return to their seats

9. Discuss what four 3s (4×3) would be, what seven 3s (7×3) would be, etc.

10. Hand out all multiplication **Flash Cards** that contain a 3. There are eight cards:
    2×3 3×3 4×3
    5×3 6×3 7×3
    8×3 9×3

11. Have students practice using these **Flash Cards**—either with partners or in small groups—whatever you decided. (See #4a in the Setup Directions on page 9.)

12. Put a rubber band around each set of **Flash Cards** and put them away for the next day's use.

13. Assign for homework **Worksheet: Multiplication Facts of 3** on pages 4–5 in the SLL.

Day 3: Multiplying by 4

Preparation

Put the 4s pattern on the classroom floor.

Teaching the multiples of 4 for Hopscotch Math

1. List the multiples of 4 vertically on the chalkboard from 4 to 40 or use **Overhead Transparency 3** on page 36.

2. Point out that if we could just get to 20 it would be easy for a little bit, because everyone knows that 20 + 4 = 24 and 24 + 4 = 28
   a. 20 - 24 - 28 should become known as "Easy Street" in your classroom

3. Show **Overhead Transparency 4** on page 37. (This picture + words are also found on page 6 in the SLL.)

4. Carefully go over the "Easy Street" picture and words to help children remember their multiples of 4.
   a. Explain the play on words.
   b. Encourage students to memorize the words and image.

5. Draw the 4s pattern on the chalkboard or whiteboard and put the multiples of 4 inside the squares or use **Overhead Transparency 5** on page 38. (The 4s pattern is also found on page 7 in the SLL.)
   a. Point out that the pattern is set up to support the numbers in the 10s column.

6. Finger Hopscotch
   (See Day 2, #5, on page 17, for instructions.)

7. Explain that each student is going to try to hop through the pattern on the floor as he/she says the multiples of 4.

> **Students practice for 15 minutes**

8. Students practice hopping through the 4s pattern on the floor for approximately 15 minutes.

Student practicing
Finger Hopscotch.

Teaching tip
Try these directed questions:

- Who ate? (4)
- What did 4 do? (ate—8)
- What did he/she eat? (12 …16)
- Where was she/he going? (down "Easy Street" 20 … 24 … 28)
- Who passed him? (32 … 36)
- How fast were they going? (40 mph)

9. Have students return to their seats.

10. Discuss what four 4s (4 × 4) would be, seven 4s (7 × 4), etc.

11. Pass out all multiplication **Flash Cards** that contain a 4.

12. Realize that multiplication problems are reversible:
(3 × 4 = 4 × 3). Thus, you will have only seven cards to pass out. In the following days, you will be passing out fewer and fewer cards.
   a. There are seven **Flash Cards**, which should be added to each set of 3s:

2 × 4	4 × 4	5 × 4
6 × 4	7 × 4	8 × 4
9 × 4		

13. Practice the 3s and 4s **Flash Cards**.

14. Rubber band each set of **Flash Cards** and put them away for the next day.

15. Assign for homework **Worksheet: Multiplication Facts of 4s** on pages 8–9 in the SLL.

Day 4: Review 3s–4s patterns

Preparation

Be sure the patterns for 3s and 4s are on the classroom floor.

1. Divide the class into two groups.

2. Instruct half of the class to practice hopping through the 3s and 4s patterns while saying the multiples. Have the other half practice the 3s and 4s **Flash Cards**.

Teaching tip
When you divide students into groups for review, make sure your groups have mixed abilities. Then use peer tutoring.

3. After 15 minutes have the two class halves switch tasks.

After 15 minutes, have students switch

4. After another 15 minutes, instruct students to return to their seats.

5. Writing
   a. Have students use **Journal Page for 3s Pattern** on page 10 in their SLL.
   b. Because this is their first time with this analysis, you may have to help individual students—or your whole class—write the answer to the question, "How does the 3s pattern help you remember the multiples of 3?"
   c. Have students use the **Journal Page for 4s Pattern** on page 11 in their SLL.

d. Tell students to write the answer to the question, "How does the 4s pattern, phrase, and picture help you remember the multiples of 4?"

6. Collect and correct students' SLL work:
    a. **Worksheets** for the 3s and 4s
    b. **Journal** entries for the 3s and 4s

7. Remind students to chart their success on their personal **Progress Charts** on page 27 of their SLL.

Day 5: Multiplying by 2

1. Teach this shortcut for multiplication facts containing a 2:
    a. Remind students that multiplication facts can be switched around, and you still get the same answer. (This was discussed on Day 1: What is Multiplication?)
    b. Discuss the problem 8 × 2: Would it be faster and easier to count eight 2s or simply double two 8s?
    c. Confirm that the latter is an easier and faster way to figure out the multiplication fact.
    d. Agree that any multiplication problem with a 2 in it would be much easier to solve by simply doubling the other number than counting by 2s.
    e. Give more examples if needed.

2. Hand out all multiplication **Flash Cards** that contain a 2.
    a. There are six of these **Flash Cards**:
        2 × 2   5 × 2   6 × 2
        7 × 2   8 × 2   9 × 2

    b. These six **Flash Cards** should be added to the **Flash Cards** sets for the 3s and 4s.

3. Practice **Flash Cards**.

Teaching tip
Multiplication by 2 is a lot like knowing your doubles.

4. Rubber band all sets of **Flash Cards** and put them away for the next day.

5. Writing
    a. Have students use the **Journal Page for Multiplying by 2s** on page 12 in their SLL.
    b. Have students write the answer to the question, "What do you know that helps you count by 2s?"

6. Assign for homework **Worksheet: Multiplication Facts of 2s** on pages 13–14 in the SLL.

Day 6: Multiplying by 5

1. Teach this shortcut for multiplication facts containing a 5.
    a. Have students review counting by 5s from 2nd grade. Point out that the last number always ends with a 5 or 0 as you count up. Thus, counting by 5s is usually very easy for students. (See **Overhead Transparency 6**).
    b. Once again, remind students that multiplication facts can be switched around, and you still get the same answer. (This was discussed on Day 1: What is Multiplication?)
    c. Discuss the problem 5×8: Would it be faster and easier to count five 8s or eight 5s?
    d. Confirm that the latter is an easier and faster way because it is simply easier to count by 5s than 8s.
    e. Give more examples if needed.
    f. Here's an added shortcut for multiplying by 5s. If students can remember that $5 \times 5 = 25$ they can start from there when trying to solve larger 5s like 8×5. Their thought process and your teaching should go something like this: If you already know five 5s is 25, you shouldn't have to count 5, 10, 15, 20, 25, 30, 35, 40, for 8×5. Simply start at five 5s which is 25 and continue up until you have counted 3 more 5s.
    g. Give more examples if needed.

2. Pass out all multiplication **Flash Cards** that contain a 5. There are five **Flash Cards**:
    5×5 6×5 7×5
    8×5 9×5

    The above five cards should be added to each **Flash Card** set of 2s, 3s, and 4s.

3. Have students practice with their **Flash Cards**.

4. Rubber band each set of **Flash Cards** and put them away for the next day.

5. Writing
   a. Have students use the **Journal Page for Multiply by 5s** on page 15 in their SLL.
   b. Have students write the answer to the question, "What do you know that helps you count by 5s?"
6. Assign for homework **Worksheet: Multiplication Facts of 5s** on pages 16–17 in the SLL.

Day 7: Multiplying by 9

1. Teach this trick for multiplication facts that contain a 9: Whenever you see a 9 in a multiplication problem, look at the other number. The answer will always start with one less than that number.

   Go over the following explanation and examples:

   Example:

   $3 \times 9 \leftarrow$ one less than 3; the answer starts with a 2.

   $9 \times 7 \leftarrow$ one less than 7; the answer starts with a 6.

   To figure out what the second number to the answer is, always remember that both of the numbers in the answer total 9.

   Example:

   $3 \times 9 = 27$ $(2 + 7$ totals 9$)$

   $9 \times 7 = 63$ $(6 + 3$ totals 9$)$

Teaching tip
Explain that this trick works only for the 9s. Then practice it with your students.

2. Pass out all multiplication **Flash Cards** that contain a 9.
   a. There are four **Flash Cards**:
      6×9 7×9 8×9 9×9
   b. The above four **Flash Cards** should be added to each set of 2s, 3s, 4s and 5s.

3. Practice the **Flash Cards**.

4. Rubber band each set of **Flash Cards** and put them away for the next day.

5. Assign for homework **Worksheet: Multiplication Facts of 9s** in the SLL on pages 18–19.

Day 8: Review 2s–5s, 9s

Preparation

Be sure the patterns for 3s and 4s are on the classroom floor.

1. Divide the class into two groups

2. Instruct half of the students to practice hopping through the patterns for 3s and 4s while saying the multiples. The other half will practice with the **Flash Cards** 2s–5s and 9s.

3. Tell groups to switch after 15 minutes. Those previously hopping now practice **Flash Cards**; those previously practicing **Flash Cards** now hop.

   > After 15 minutes, have students switch

4. After 15 minutes have students return to their seats.

5. Writing:
   a. Have students use the **Journal Page for 9s** on page 20 in their SLL.
   b. Have students write the answer to the question, "What do you know that helps you multiply by 9s?"

   Teaching tip
   Writing in the SLL reinforces retention of skills.

6. Collect and correct work in the SLL.
   a. Worksheets for the 2s, 5s, and 9s
   b. Journal entries for 2s, 5s, and 9s

7. Remind students to chart their progress on their personal **Progress Charts** on page 27 in their SLL.

Day 9: The Shortcut

Teach the "Shortcut" for remaining multiplication problems. Up to this point your students have learned how to find the answer to any multiplication problem that contains a 2, 3, 4, 5, or 9.

By process of elimination, this situation leaves only six multiplication facts that they would not have learned: 6×6, 6×7, 6×8, 7×7, 7×8, and 8×8. (Remember that 6×7 and 7×6, 6×8 and 8×6, 7×8 and 8×7 are reversible.)

With the "Shortcut" you will teach these six multiplication facts and your students would be able to solve any single digit multiplication problem.

Instructions for the "Shortcut"

1. Teach the last six multiplication facts problems with these tips:
   a. **6×6:** Tell the story of the two sixes who were walking across the desert. It was very hot! They were **thirsty** sixes (36).

   Bright Idea
   In my embellished version of this story, the two little sixes die of thirst. It's sad, but students never forget about the thirsty sixes!

    b. **7 × 7:** Explain that sevens are considered to be lucky. Which professional football team is the luckiest? **49ers** (49).

    c. **7 × 8:** Explain that whenever a student sees a multiplication problem with a 7 and an 8, they just count **5, 6, 7, 8** (56).

    d. **8 × 8:** Use this rhyme for 8 × 8:
       "8 and 8 fell on the floor,
       Picked them up
       and they were 64."

    e. **6 × 7 (42):** If they forget it, I tell the students that it must have leaked out of their head. 6 × 7 has become known as the "Leaker" in my classroom.

    f. **6 × 8:** A play on words from the 4s pattern and story.
       6 ate? (6 × 8) No!
       4 ate (48)

2. Hand out the remaining **Flash Cards** and put them with the others so that each set of **Flash Cards** is now complete.

3. Practice the **Flash Cards**.

4. Rubber band each set of **Flash Cards** and put them away for the next day.

5. Assign **Worksheet: Multiplication Facts of 6**, **Worksheet: Multiplication Facts of 7**, and **Worksheet: Multiplication Facts of 8**. All three are in the SLL.

Day 12: Optional—Hopscotch Math Game

Introducing the game Hopscotch Math

1. Have students turn to the page **Rules For Playing the Game— Hopscotch Math** on page 28 in their SLL.

2. Go to the pattern in your classroom or out on the campus where you wish your students to first play this game.

3. Starting with Rule #3, ask one student to read the rule and demonstrate it for his/her classmates.

4. Continue by having students read and act out Rule #4 through Rule #12.

5. Set up a time schedule so that all your students get to play a portion of a game within the amount of time you wish to allocate today for introducing this game.

6. Explain that playing the game *Hopscotch Math* will give them hours of enjoyment whether they play it during or outside the school year. Encourage students to play it with their parents, siblings, and others while at home.

Day ?: Introduction of Division

1. When students know their multiplication facts fairly well, introduce the division sign: ÷

2. Remind students that they have already learned other math signs (+, −, ×). Reinforce that they know what these (+, −, ×) signs mean and what they have to do when they see them.

3. Put the division sign ÷ on the chalkboard or whiteboard and teach the following:
    a. Explain that it does not mean you add (+), subtract (−), or multiply (×). Stress that it means something completely different.
    b. Ask students: "What does division mean?"
    c. Put a problem on the chalkboard such as 12 ÷ 3.
    d. Show students through a drawing similar to the drawing below, that 12 ÷ 3 means 12 of something is divided into groups of 3.

    ▢ ▢ ▢   ▢ ▢ ▢
    　▢ ▢ ▢   ▢ ▢ ▢
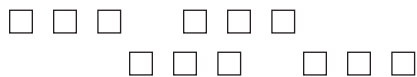
    e. Another way to say this problem that might make more sense to the students is, "How many 3s are there in 12?"
    f. Explain to students that since they already know how to count by 3s they can figure out how many 3s are in 12. For example:
        • How many threes are in 3? (one)
        • How many threes are in 6? (two)
        • How many threes are in 9? (three)
        • How many threes are in 12? (four)
        There are four 3s in 12. Thus, 12 ÷ 3 = 4.

4. Repeat this exercise until students understand how they can use their knowledge of multiples of 3s, 4s, and 5s to solve for division facts.

5. Explain dividing by 2. When students are being instructed on how to divide by 2, you can take two different approaches. Take the example 16 ÷ 2. (1) If the students know their doubles well, they can simply think 2 × __ = 16 because multiplication and division are related. (2) An even easier way for some to divide by 2 is to think of what is half of the number being divided. In the case of the example, half of 16 is 8 so 16 ÷ 2 = 8. Give more examples as needed.

Teaching tip
Knowing their multiples makes division easier for students.

6. Explain dividing by 9. Explain to students that you can use the 9s trick from multiplication to help when dividing by 9. Review with students that when multiplying by 9 the answer always starts with one less than the other number. Example: 6×9, the answer starts with a 5. When dividing by 9, just the opposite will happen. The answer will always be one more than the first digit of the other number. Example: $63 \div 9 =$ __, one more than 6 is 7. So, $63 \div 9 = 7$ and $7 \times 9 = 63$. They can even check their answer using multiplication. Give more examples as needed.

7. Explain dividing by 6, 7, or 8. Many students will start to recognize some of these by sight from some of the stories from the Daily Directions on Day 9: The Shortcut. Examples: $36 \div 6$, Thirsty Sixes, the answer is 6 because $6 \times 6 = 36$. $42 \div 6$, like "Leaker," the answer is 7 because $6 \times 7 = 42$. $56 \div 8$, just count 5, 6, 7, 8, the answer is 7 because $7 \times 8 = 56$.

8. Explain the "plug in the number" process for finding the answer to a problem that students don't recognize. The "plug the number" system works like this: Let's say that a student is looking at the problem $72 \div 8$ and has no clue what the answer is. Simply say, "plug in a number." Instruct the students that when you say "plug in a number," they would try the number they are dividing by. In this case they are dividing by 8 so they will plug in an 8. $72 \div 8 = 8$. Students will recognize this is wrong, as $8 \times 8 = 64$. Tell the students they need more. Plug in a 9. $72 \div 8 = 9$. Students should recognize this is correct because $9 \times 8 = 72$. Here is another example: $24 \div 6 =$ __. The students are dividing by 6 so plug in a 6. $6 \times 6 = 36$. That's too much, the students only need 24. Try something less. Okay, 5. Nope, $6 \times 5 = 30$. It is still too much but close. Try 4. $6 \times 4 = 24$. Yes, $24 \div 6 = 4$. One more example because it is a very important process to understand. $21 \div 7 =$ __. Plug in 7. $7 \times 7 = 49$. This is where the students should understand that this is not even close and trying a 6 or 5 is probably not going to work. A 4 still won't work ($7 \times 4 = 28$), but it is much closer. Try 3. $7 \times 3 = 21$, so $21 \div 7 = 3$. The point is students will learn with practice how to "plug in a number" and adjust the value to find the answer. It is hard work, but the better they know their multiplication facts the quicker they become at this effective process for learning their division facts. Do many examples over time to reinforce this process. Peer tutoring of this skill works excellently as well. Helpful hint: Students have to be able to find the answer to any multiplication problem in order to use this "plug the number" process effectively for learning their division facts.

9. Don't forget to teach dividing by 1 and 10. This is easy, of course, but needs to be covered.

10. Like multiplication facts, stress and encourage learning division facts that are known by sight. However, for now students have the means to find the answers for multiplication and division facts. Facts by sight will follow as they continue practicing their multiplication and division facts.

11. Assign for homework **Worksheet: Division Facts** on page 29 in their SLL. Use this worksheet with supplementary materials of your choice to practice division facts.

Review as Needed

1. Practice multiplication and division facts with the aid of patterns, phrases, pictures, **Flash Cards**, and peer tutoring.

2. Supplement the textbook materials and worksheets of your choice as needed.

3. **Note:** You may choose to go on with different material while students practice in short sessions during several sequential days. In this way, you are not spending your whole math period on only multiplication and division.

Multiplication and Division Exam

1. When you feel it is appropriate, give your students the **Multiplication Exam** (pages 40–41) and the **Division Exam** (pages 42–43).

2. Of course, you may wish to construct other such exams for later use during the school year to check on your students' retention.

Teaching tip
Assign peer tutors to students who are still struggling with a particular pattern.

FLASH CARDS

3 ×2 ___	3 ×3 ___	3 ×4 ___
3 ×5 ___	3 ×6 ___	3 ×7 ___

$$3 \\ \times 8 \over {}$$

$$3 \\ \times 9 \over {}$$

$$4 \\ \times 2 \over {}$$

$$4 \\ \times 4 \over {}$$

$$4 \\ \times 5 \over {}$$

$$4 \\ \times 6 \over {}$$

$$\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times\,7 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times\,8 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times\,9 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times\,5 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times\,6 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times\,7 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times\,6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times\,7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times\,8 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times\,6 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times\,7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times\,7 \\ \hline \end{array}$$

OVERHEAD TRANSPARENCY 1

Multiples of 3

30

27

24

21

18

15

12

9

6

3

OVERHEAD TRANSPARENCY 2

3s Pattern

3	0

27

24

21

1	8
1	5
1	2

9

6

3

OVERHEAD TRANSPARENCY 3
Multiples of 4

40

36

32

28

24

20

16

12

8

4

OVERHEAD TRANSPARENCY 4

4 ate twelve 16s going down "Easy Street"
when 32 and 36 passed him doing 40.

SPEED LIMIT 40

Easy Street

Dozen
16
"No Fat"

16 16 16
16 16 16
16 16 16
16 16 **16**
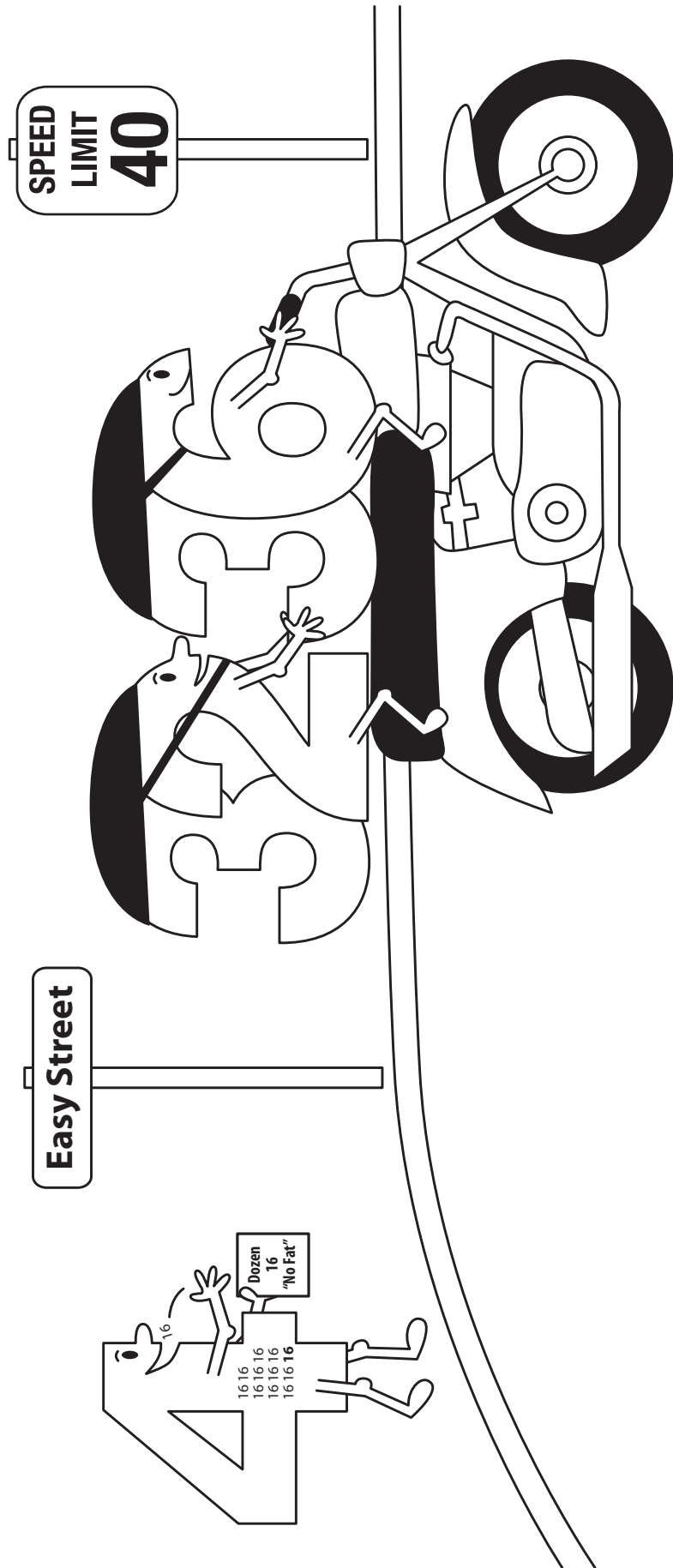
OVERHEAD TRANSPARENCY 5

4s Pattern

passed doing 40 mph | **40**

36 | **3** | **6**

32 | **3** | **2**

28 | **28**

going down "Easy Street" | 24 | **24**

20 | **20**

16s | **1** | **6**

twelve | **1** | **2**

ate | **8**

4 | **4**
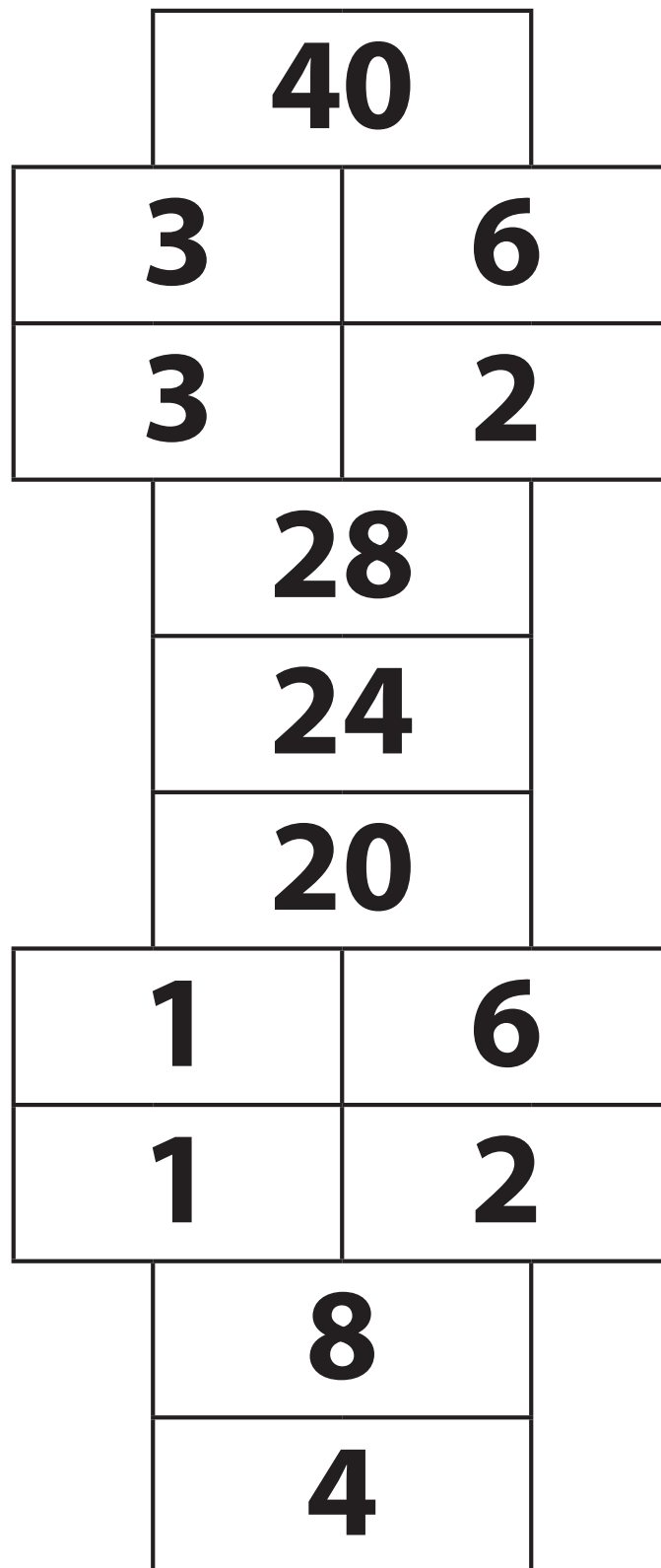
OVERHEAD TRANSPARENCY 6
Multiples of 5

50

45

40

35

30

25

20

15

10

5

Name: _____   Date: _____

MULTIPLICATION EXAM

1. $\begin{array}{r}6\\ \times 2\\ \hline\end{array}$	2. $\begin{array}{r}4\\ \times 4\\ \hline\end{array}$	3. $\begin{array}{r}6\\ \times 6\\ \hline\end{array}$	4. $\begin{array}{r}8\\ \times 8\\ \hline\end{array}$	5. $\begin{array}{r}10\\ \times 5\\ \hline\end{array}$
6. $\begin{array}{r}2\\ \times 3\\ \hline\end{array}$	7. $\begin{array}{r}7\\ \times 4\\ \hline\end{array}$	8. $\begin{array}{r}8\\ \times 6\\ \hline\end{array}$	9. $\begin{array}{r}3\\ \times 8\\ \hline\end{array}$	10. $\begin{array}{r}10\\ \times 9\\ \hline\end{array}$
11. $\begin{array}{r}5\\ \times 5\\ \hline\end{array}$	12. $\begin{array}{r}7\\ \times 7\\ \hline\end{array}$	13. $\begin{array}{r}8\\ \times 9\\ \hline\end{array}$	14. $\begin{array}{r}6\\ \times 3\\ \hline\end{array}$	15. $\begin{array}{r}5\\ \times 9\\ \hline\end{array}$
16. $\begin{array}{r}2\\ \times 2\\ \hline\end{array}$	17. $\begin{array}{r}9\\ \times 4\\ \hline\end{array}$	18. $\begin{array}{r}8\\ \times 7\\ \hline\end{array}$	19. $\begin{array}{r}4\\ \times 3\\ \hline\end{array}$	20. $\begin{array}{r}7\\ \times 9\\ \hline\end{array}$
21. $\begin{array}{r}5\\ \times 2\\ \hline\end{array}$	22. $\begin{array}{r}3\\ \times 5\\ \hline\end{array}$	23. $\begin{array}{r}10\\ \times 6\\ \hline\end{array}$	24. $\begin{array}{r}2\\ \times 4\\ \hline\end{array}$	25. $\begin{array}{r}6\\ \times 7\\ \hline\end{array}$

26.
$$8$$
$$\times 1$$

27.
$$4$$
$$\times 7$$

28.
$$9$$
$$\times 9$$

29.
$$6$$
$$\times 8$$

30.
$$3$$
$$\times 3$$

31.
$$8$$
$$\times 3$$

32.
$$5$$
$$\times 10$$

33.
$$5$$
$$\times 5$$

34.
$$2$$
$$\times 2$$

35.
$$7$$
$$\times 6$$

36.
$$9$$
$$\times 5$$

37.
$$4$$
$$\times 2$$

38.
$$3$$
$$\times 10$$

39.
$$5$$
$$\times 7$$

40.
$$6$$
$$\times 4$$

41.
$$4$$
$$\times 6$$

42.
$$9$$
$$\times 2$$

43.
$$1$$
$$\times 7$$

44.
$$10$$
$$\times 2$$

45.
$$3$$
$$\times 2$$

46.
$$3$$
$$\times 6$$

47.
$$5$$
$$\times 8$$

48.
$$9$$
$$\times 7$$

49.
$$3$$
$$\times 4$$

50.
$$4$$
$$\times 1$$

Name: _____   Date: _____

DIVISION EXAM

1. 12
÷ 2
_____

2. 40
÷ 5
_____

3. 35
÷ 7
_____

4. 18
÷ 9
_____

5. 90
÷ 10
_____

6. 21
÷ 3
_____

7. 36
÷ 6
_____

8. 48
÷ 8
_____

9. 3
÷ 1
_____

10. 36
÷ 4
_____

11. 20
÷ 10
_____

12. 81
÷ 9
_____

13. 24
÷ 4
_____

14. 6
÷ 2
_____

15. 16
÷ 8
_____

16. 5
÷ 5
_____

17. 48
÷ 6
_____

18. 24
÷ 4
_____

19. 6
÷ 3
_____

20. 16
÷ 8
_____

21. 49
÷ 7
_____

22. 12
÷ 3
_____

23. 8
÷ 1
_____

24. 45
÷ 9
_____

25. 18
÷ 6
_____

26. $18 \div 2$

27. $60 \div 10$

28. $25 \div 5$

29. $8 \div 4$

30. $56 \div 8$

31. $28 \div 7$

32. $15 \div 5$

33. $16 \div 4$

34. $9 \div 3$

35. $36 \div 9$

36. $40 \div 10$

37. $14 \div 2$

38. $42 \div 6$

39. $14 \div 7$

40. $27 \div 9$

41. $24 \div 8$

42. $63 \div 7$

43. $6 \div 6$

44. $35 \div 5$

45. $16 \div 2$

46. $80 \div 10$

47. $7 \div 1$

48. $27 \div 3$

49. $32 \div 4$

50. $4 \div 1$

CERTIFICATE OF PARTICIPATION

This certifies that

_____

has participated and completed the *Hopscotch Math* program

_____
Teacher

_____
Date

CERTIFICATE OF APPRECIATION

This certifies that

_____

has contiually helped classmates to learn *Hopscotch Math*

_____   _____

Teacher   Date

CERTIFICATE OF CONGRATULATIONS

This certifies that

_____

has demonstrated and mastered all
multiplication facts 0–10

_____
Teacher

_____
Date

Hopscotch Math

An Interaction Unit With Hopscotch Patterns for Learning Multiplication and Division Facts

STUDENT LEARNING LOG

_____
Student name

_____
Parent name

_____
Teacher name

LETTER TO PARENTS

Dear Parents,

We are starting *Hopscotch Math*, an exciting, effective new unit which I believe your son or daughter will enjoy. This Student Learning Log belongs to your child, and it will become a study guide over the next few weeks. After this unit has been completed, I recommend that your child keep this Student Learning Log for future years. It can be used to help review the math skills that he or she has learned.

Hopscotch Math will help your child learn multiplication and division facts. Over the next weeks, encourage your child to show you what all of us have been studying in this Student Learning Log at school about multiples and patterns.

Follow along as your child fills in the personal Progress Chart (page 27) on his or her progress through the multiples. Check to see if your child's chart reflects growing knowledge of the multiples.

You may even wish to brush up on your own multiples at home while playing with your son or daughter in a game of *Hopscotch Math*. Directions for playing the game are found in this Student Learning Log. Not only will this quality time be fun, but your child will be learning as well.

Happy hopping!

Sincerely,

Your child's teacher

3s PATTERN

Directions: To use the **3s Pattern** for **Finger Hopscotch**, use one finger when "hopping" in single boxes and use two fingers when "hopping" in boxes that are side by side. When "hopping" in boxes that are side by side, place one finger in each box.
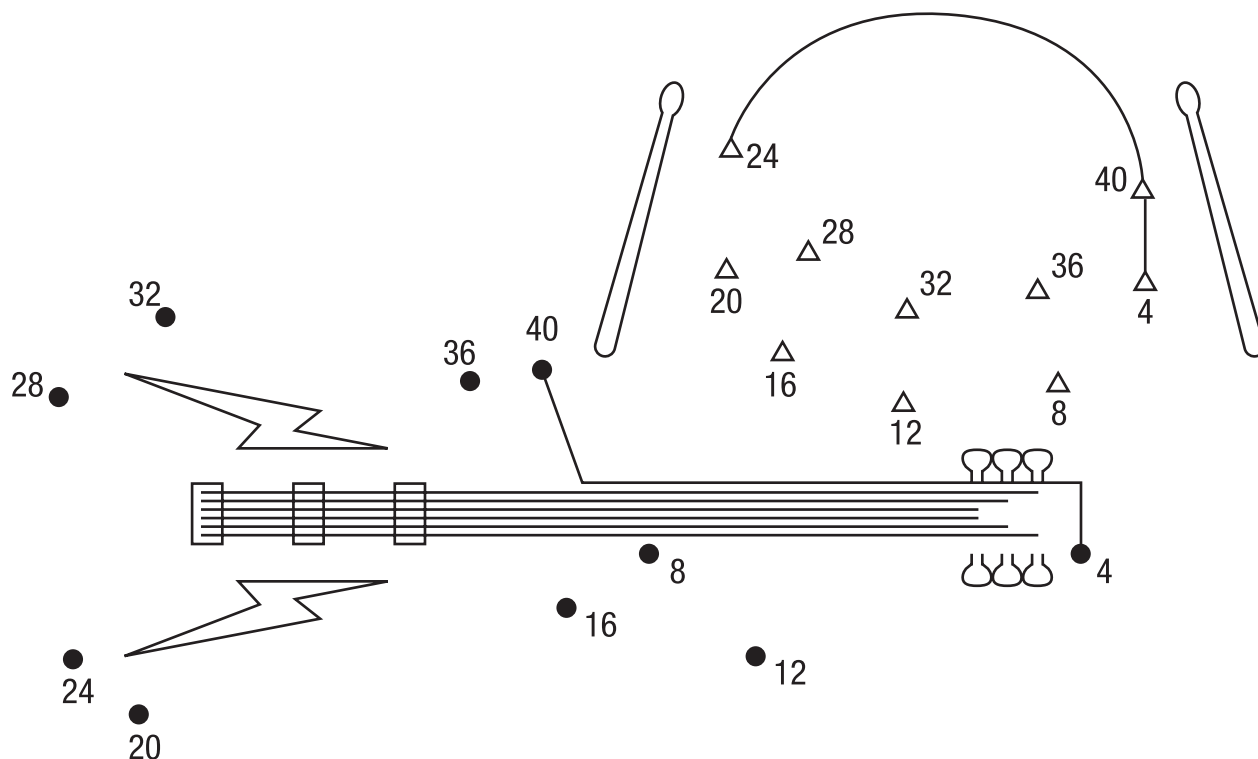
Learning tip
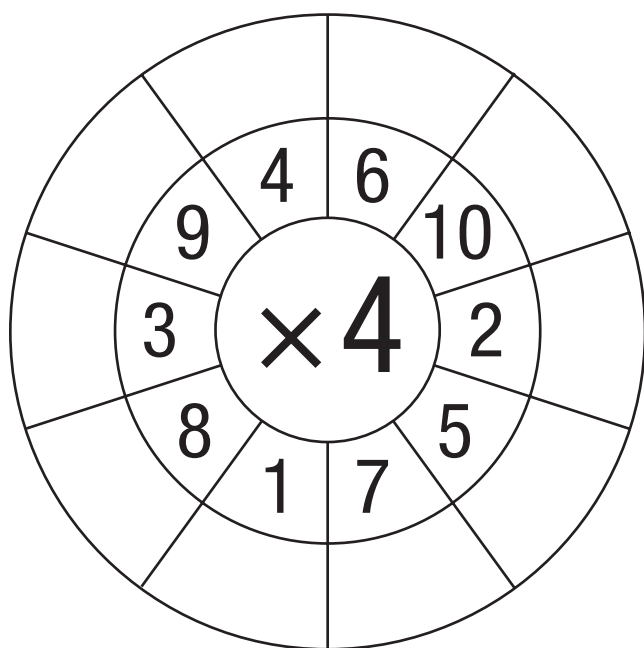Do **not** write numbers
in the boxes.

WORKSHEET: MULTIPLICATION FACTS OF 3s—1

Activity 1 Directions: Count by 3 and connect each symbol with a line—as in this example:
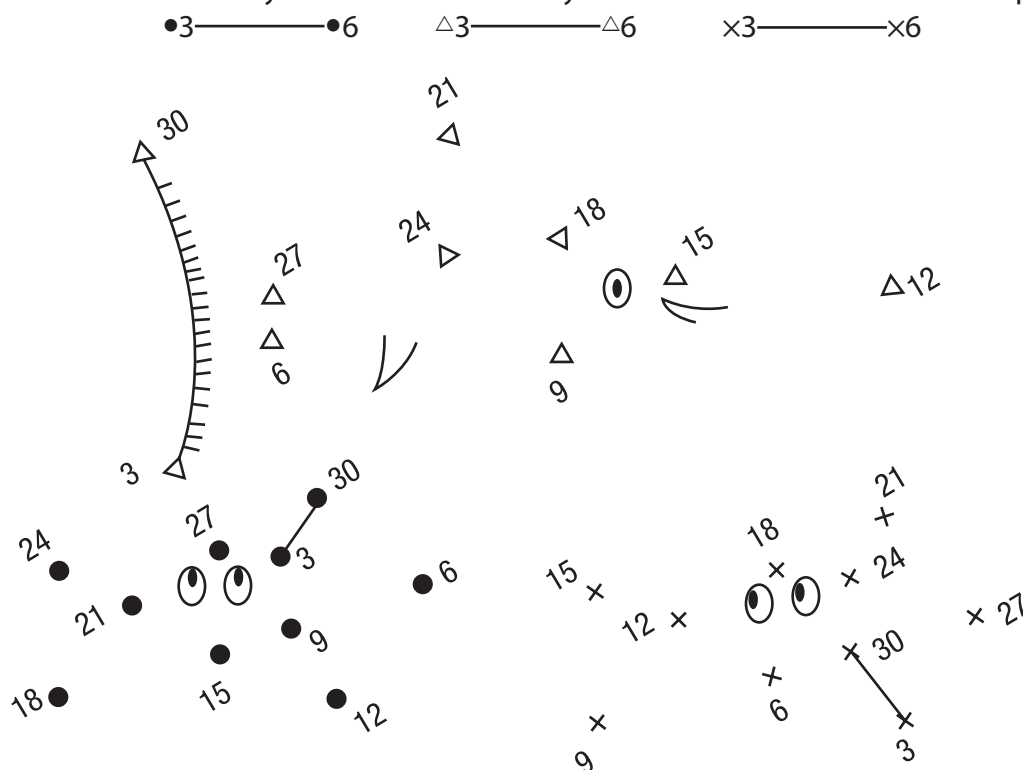
•3————•6   △3————△6   ×3————×6

Activity 2 Directions: Multiply the middle number by each number around the circle. Then write each answer in the outside ring.

Activity 3 Directions: Solve all nine problems.

3 ×7	5 ×3	3 ×2
8 ×3	3 ×3	3 ×9
4 ×3	3 ×6	3 ×10
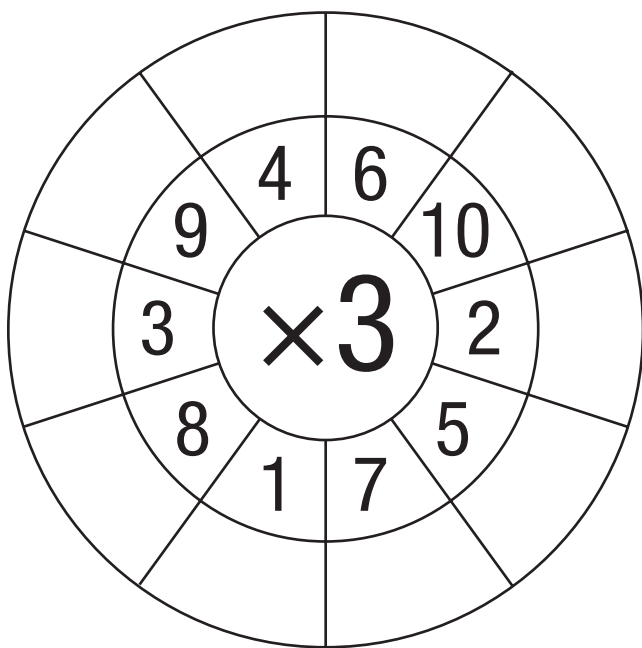
WORKSHEET: MULTIPLICATION FACTS OF 3s—2

Activity 4 Directions:
Color as follows:
- 3–6 yellow
- 9–12 green
- 15 light green
- 18–21 purple
- 24–27 blue
- 30 black

$$4 \times 3$$

$$3 \times 7$$

$$2 \times 3$$

$$8 \times 3$$

$$3 \times 4$$

$3 \times 5 =$

$$3 \times 10$$

$3 \times 1 =$

$$3 \times 9$$

$6 \times 3 =$

$5 \times 3 =$

$$3 \times 8$$

$8 \times 3 =$

$3 \times 2 =$

$$4 \times 3$$

$$6 \times 3$$

$$7 \times 3$$

$3 \times 3 =$

$$9 \times 3$$

$$3 \times 6$$

$$5 \times 3$$

$$3 \times 8$$

$$3 \times 3$$

$$1 \times 3$$

$3 \times 4 =$

$3 \times 6 =$

$7 \times 3 =$

$3 \times 9 =$
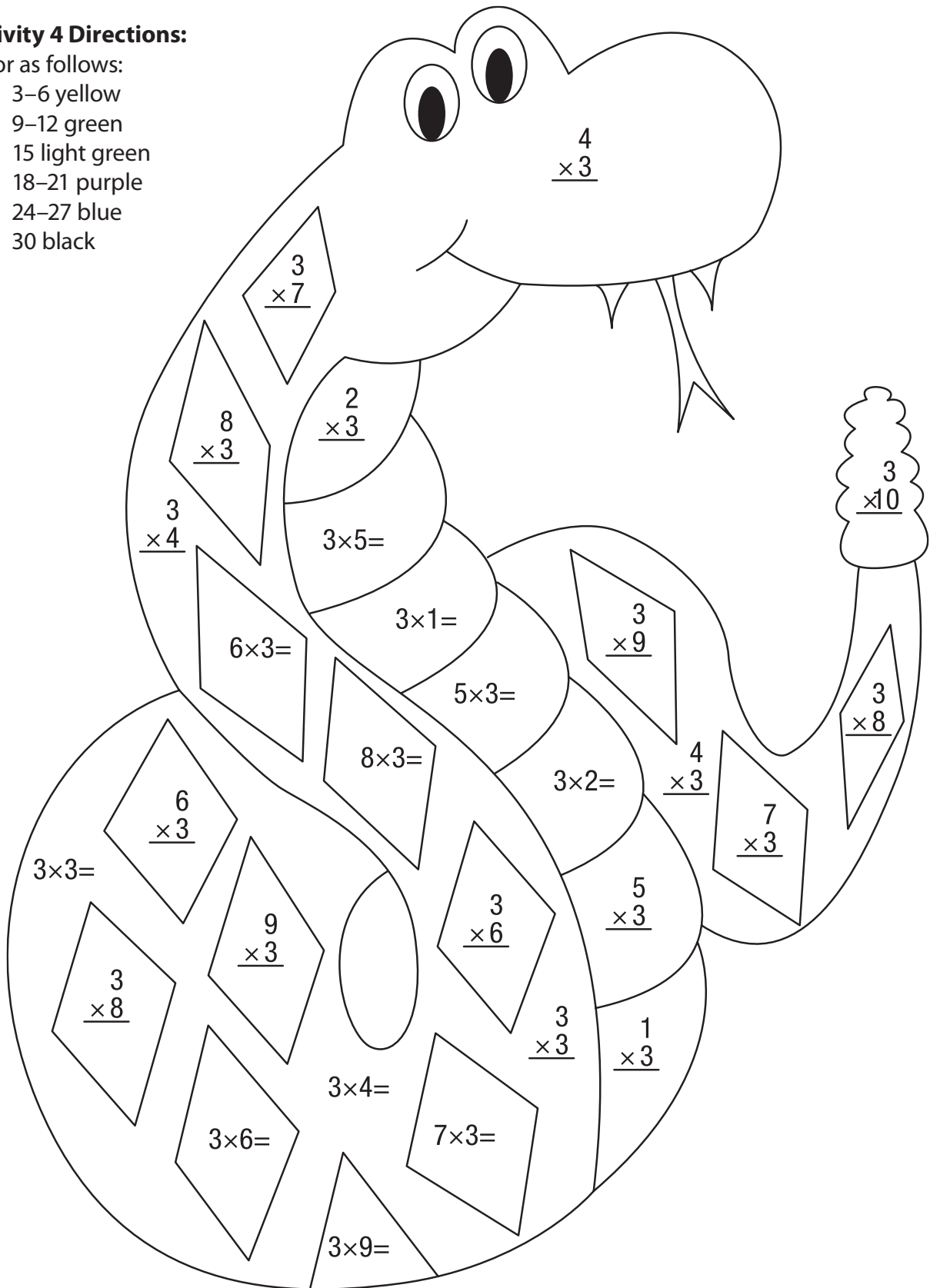
EASY STREET

4 ate twelve 16s going down **"Easy Street"** when 32 and 36 passed him doing **40.**
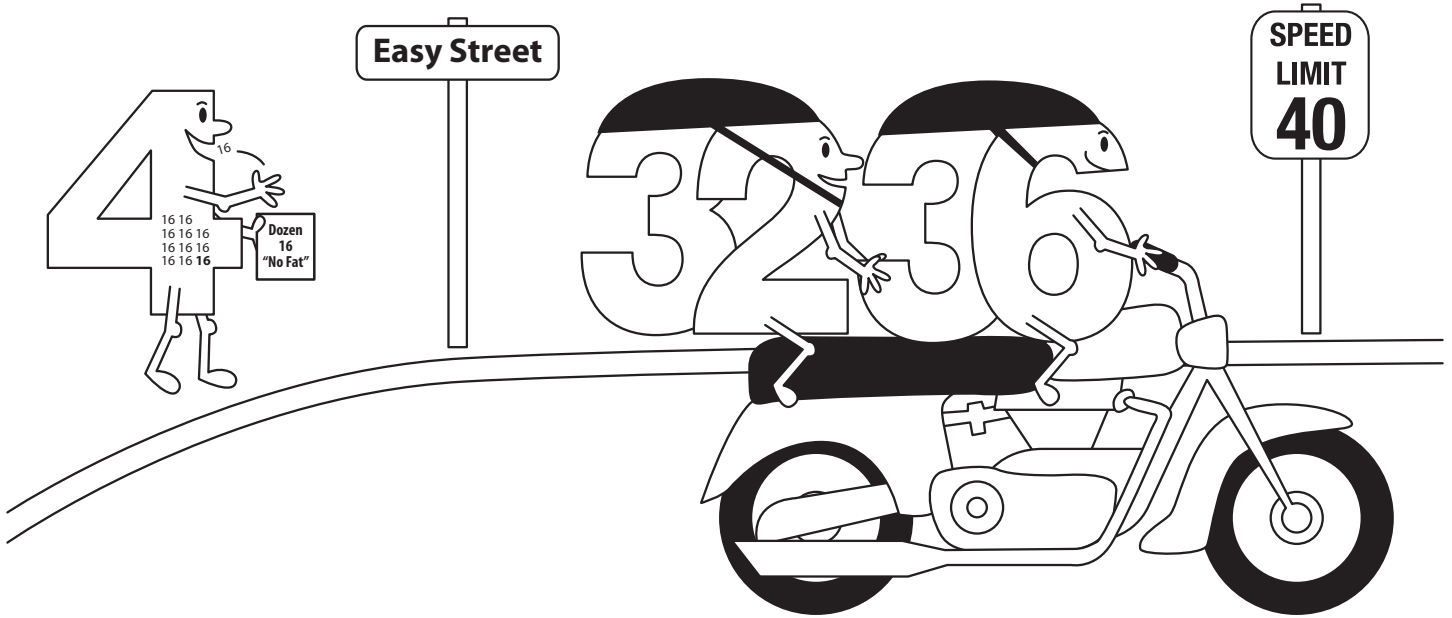
4s PATTERN

Directions: To use the **4s Pattern** for **Finger Hopscotch**, use one finger when "hopping" in single boxes and use two fingers when "hopping" in boxes that are side by side. When "hopping" in boxes that are side by side, place one finger in each box.

Learning tip
Do **not** write numbers in the boxes.

WORKSHEET: MULTIPLICATION FACTS OF 4s—1

Activity 1 Directions: Count by 4 and connect each symbol with a line—as in the example on page 4.

△24
40△
△28
△20
32
△36
△4
32●
△16
36● 40
28●
△12 △8
24●
8●
20●
16●
4
12●

Activity 2 Directions: Multiply the middle number by each number around the circle. Then write each answer in the outside ring.

4 6
9 10
3 ×4 2
8 5
1 7

Activity 3 Directions: Solve all nine problems.

4 ×7	5 ×4	4 ×2
8 ×4	4 ×3	4 ×9
4 ×4	4 ×6	4 ×10

WORKSHEET: MULTIPLICATION FACTS OF 4s—2

Activity 4 Directions: Color as follows:

- 8–12 red
- 16–20 orange
- 24–28 yellow
- 32–36 purple
- 40 blue
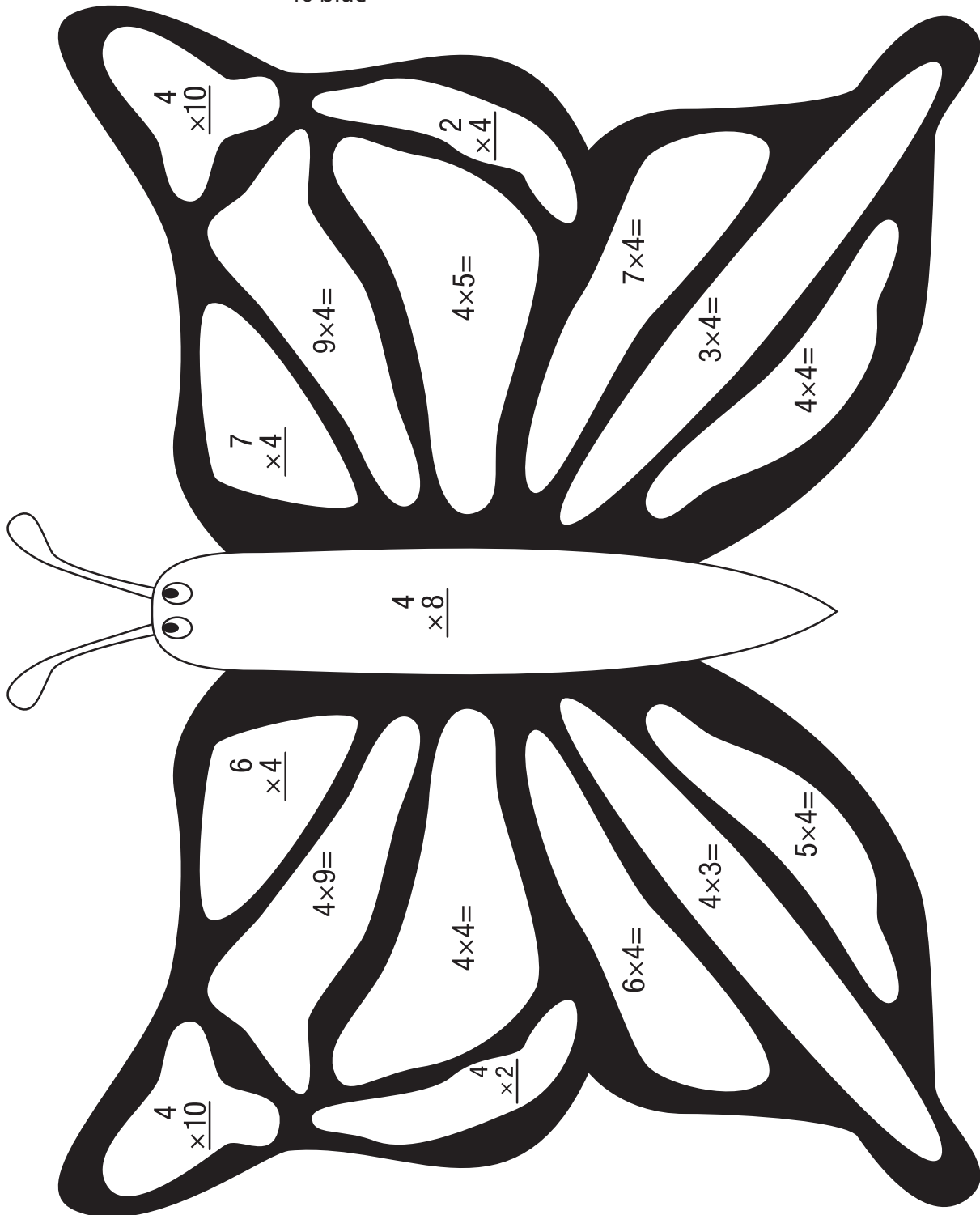
JOURNAL PAGE FOR 3s PATTERN

Directions: On the lines below, write your answer to this question: "How does the **3s Pattern** help you remember the multiples of 3?"

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

JOURNAL PAGE FOR 4s PATTERN

Directions: On the lines below, write your answer to this question: "How does the **4s Pattern**, phrase, and picture help you remember the multiples of 4?"

_____

_____
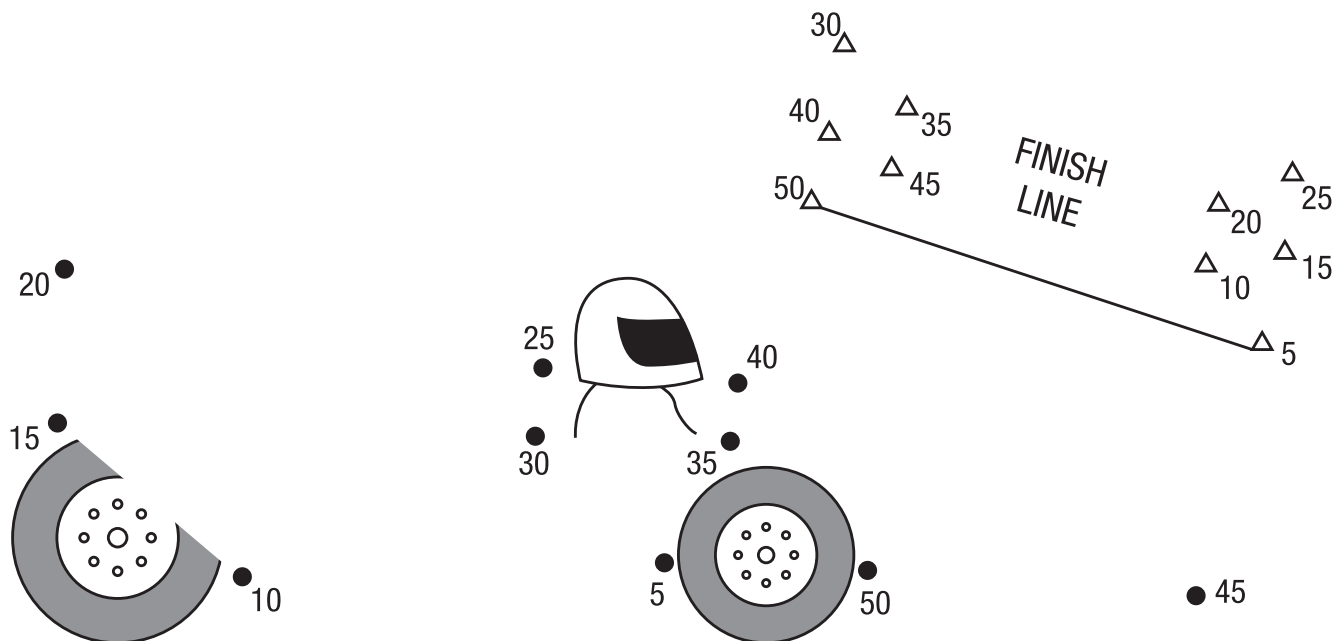
_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

JOURNAL PAGE FOR 2s PATTERN

Directions: On the lines below, write your answer to this question: "What do you know that helps you to multiply when there's a 2 in the problem?

_____

_____

_____
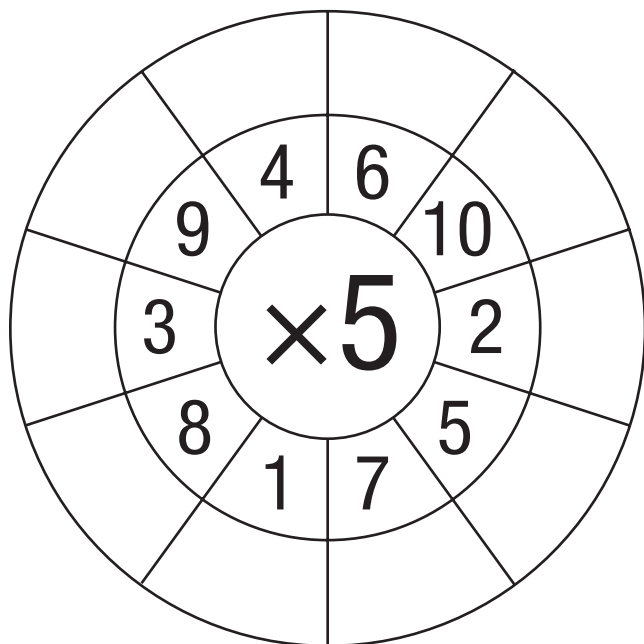
_____

_____

_____

_____

_____

_____

_____

_____

_____

WORKSHEET: MULTIPLICATION FACTS OF 2s—1

Activity 1 Directions: Count by 2 and connect each symbol with a line—as in the example on page 4.
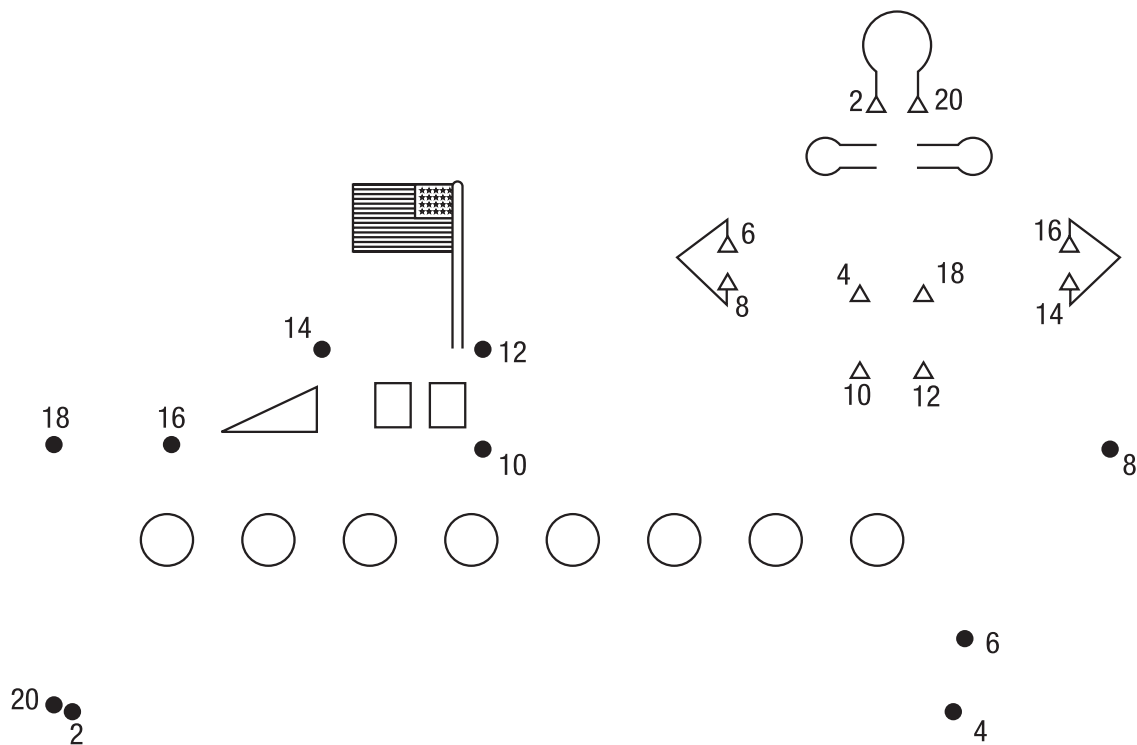
2   20

6
8

4   18

16
14

10   12

14   12

18   16   10   8

6

20   4
2

Activity 2 Directions: Multiply the middle number by each number around the circle. Then write each answer in the outside ring.

4   6
9   10
3   ×2   2
8   5
1   7
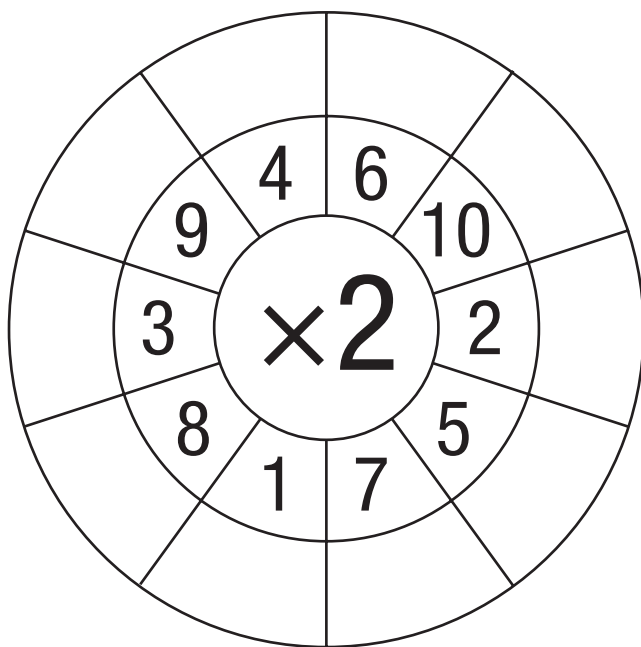
Activity 3 Directions: Solve all nine problems.

$$\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array} \qquad \begin{array}{r} 5 \\ \times 2 \\ \hline \end{array} \qquad \begin{array}{r} 2 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array} \qquad \begin{array}{r} 2 \\ \times 3 \\ \hline \end{array} \qquad \begin{array}{r} 2 \\ \times 9 \\ \hline \end{array}$$

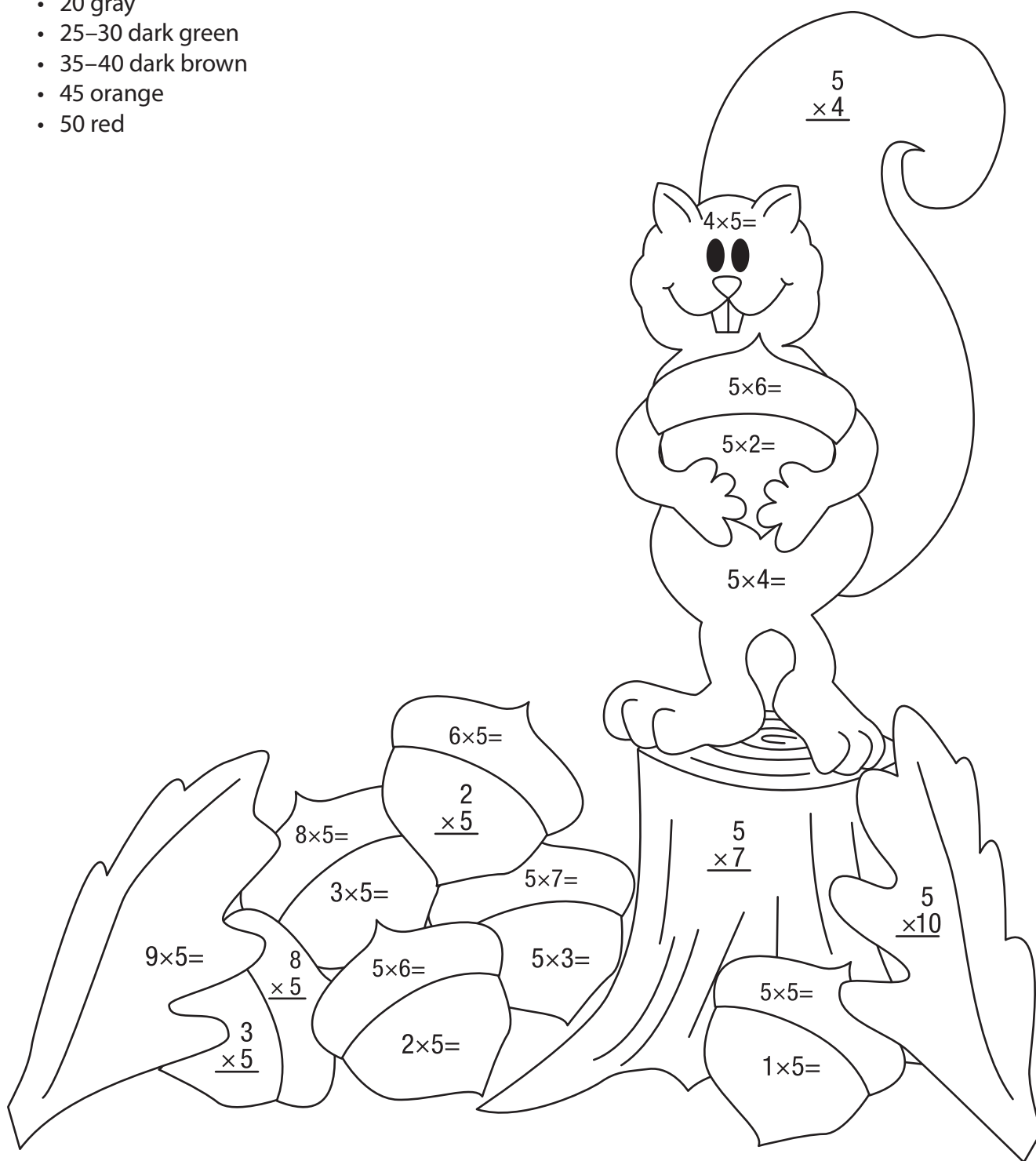$$\begin{array}{r} 4 \\ \times 2 \\ \hline \end{array} \qquad \begin{array}{r} 2 \\ \times 6 \\ \hline \end{array} \qquad \begin{array}{r} 2 \\ \times 10 \\ \hline \end{array}$$

WORKSHEET: MULTIPLICATION FACTS OF 2s—2

Activity 4 Directions: Color as follows:

- 4–6 green
- 8–10 blue
- 12–14 pink
- 16 red
- 18–20 yellow

$2 \times 9 =$

$9 \times 2 =$

$2 \times 3 =$

$3 \times 2 =$

$2 \times 4 =$

$5 \times 2 =$

6
$\times 2$

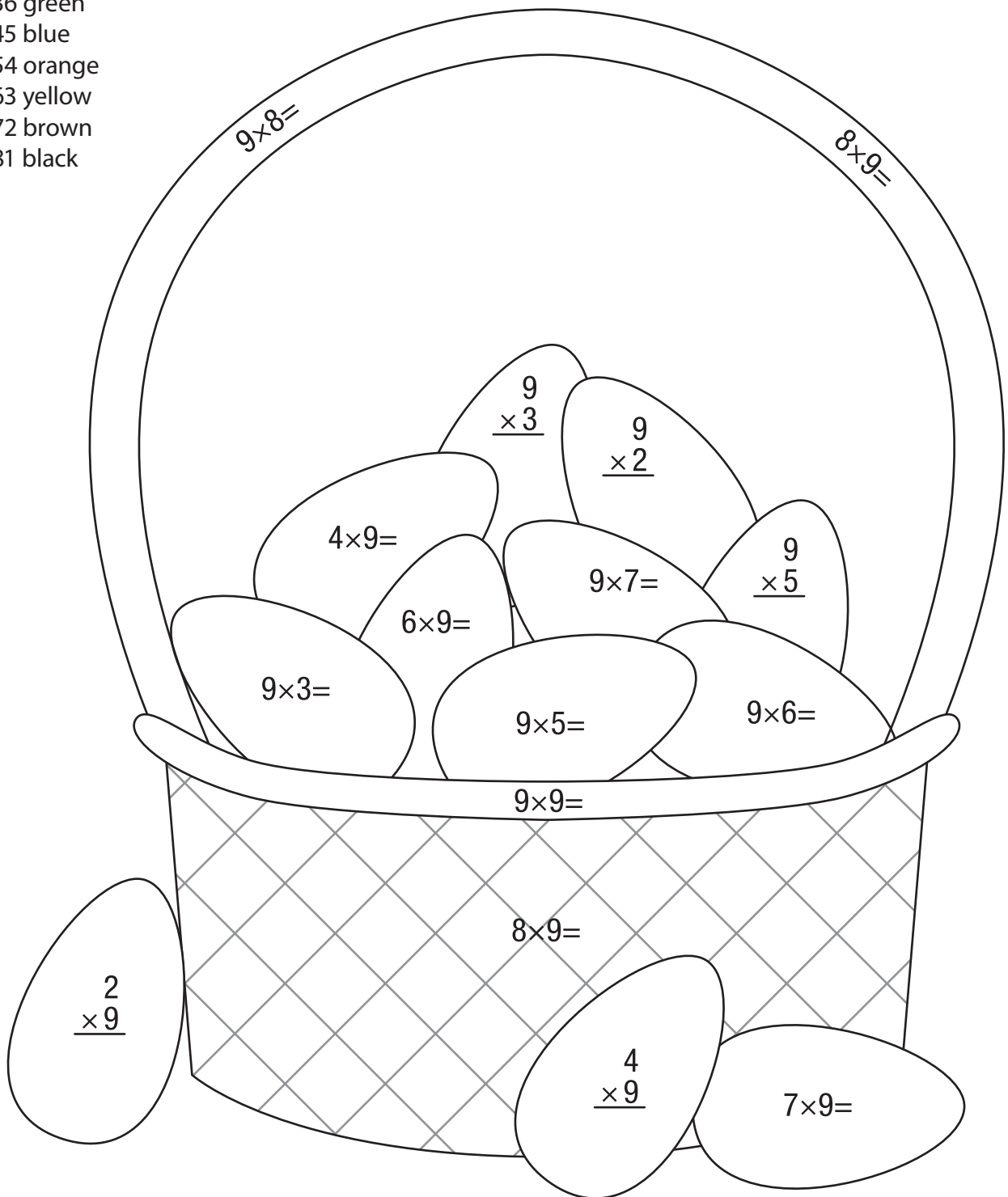$\begin{array}{r} 2 \\ \times 2 \\ \hline \end{array}$

$\begin{array}{r} 2 \\ \times 2 \\ \hline \end{array}$

$\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array}$

$\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array}$

$10 \times 2 =$

$8 \times 2 =$

$2 \times 10 =$
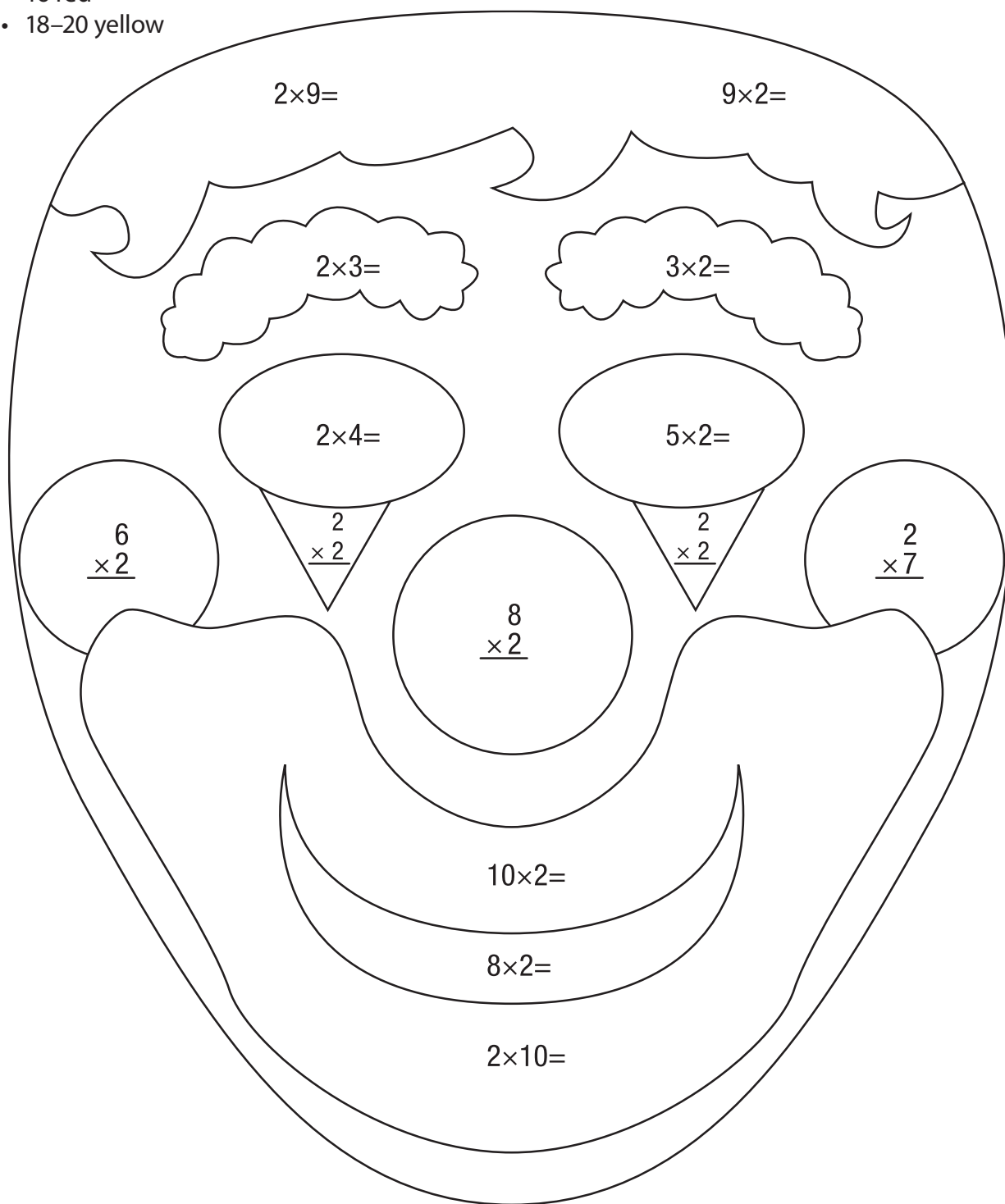
JOURNAL PAGE FOR 5s PATTERN

Directions: On the lines below, write your answer to this question: "What do you know that helps you count by 5s?"

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

WORKSHEET: MULTIPLICATION FACTS OF 5s—1

Activity 1 Directions: Count by 5 and connect each symbol with a line—as in the example on page 4.

30 △

40 △   △ 35

50 △   △ 45   FINISH LINE   △ 25   △ 20   △ 15   △ 10   △ 5

20 ●

25 ●   40 ●

15 ●   30 ●   35 ●

10 ●   5 ●   50 ●   45 ●

Activity 2 Directions: Multiply the middle number by each number around the circle. Then write each answer in the outside ring.

4 6
9   10
3 ×5 2
8   5
1 7

Activity 3 Directions: Solve all nine problems.

5 ×7	5 ×5	5 ×2
8 ×5	5 ×3	5 ×9
4 ×5	5 ×6	5 ×10

WORKSHEET: MULTIPLICATION FACTS OF 5s—2

Activity 4 Directions:

Color as follows:

- 5–10 light green
- 15 light brown
- 20 gray
- 25–30 dark green
- 35–40 dark brown
- 45 orange
- 50 red

$\begin{array}{r} 5 \\ \times 4 \\ \hline \end{array}$

4×5=

5×6=

5×2=

5×4=

6×5=

$\begin{array}{r} 2 \\ \times 5 \\ \hline \end{array}$

8×5=

3×5=

5×7=

$\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$

$\begin{array}{r} 5 \\ \times 10 \\ \hline \end{array}$

9×5=

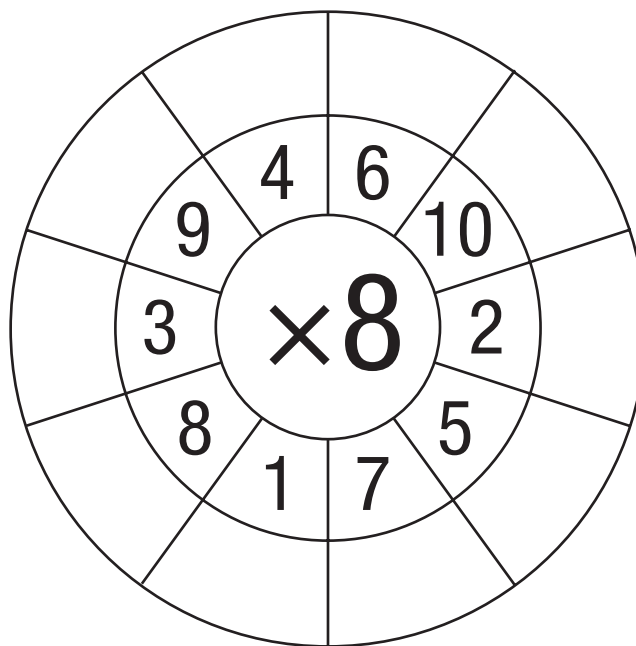$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$

5×6=

5×3=

5×5=

$\begin{array}{r} 3 \\ \times 5 \\ \hline \end{array}$

2×5=

1×5=

WORKSHEET: MULTIPLICATION FACTS OF 9s—1

Activity 1 Directions: Count by 9 and connect each symbol with a line—as in the example on page 4.

63 ×   × 81

72

36 ×

× 54   × 27   × 90

36 •   • 9

18 •   9 ×

27 •   90 △   × 45   SPELLING

90 •   × 18   SCIENCE

45 •   63 △   △ 81   △ 36

SPANISH   81 •   72 △   MATHEMATICS   △ 27

54 •   △ 54   45 △

△ 9   72 △

63   72 •   △ 18

Activity 2 Directions: Multiply the middle number by each number around the circle. Then write each answer in the outside ring.

```
      4   6
   9          10
 3    ×9    2
   8          5
      1   7
```
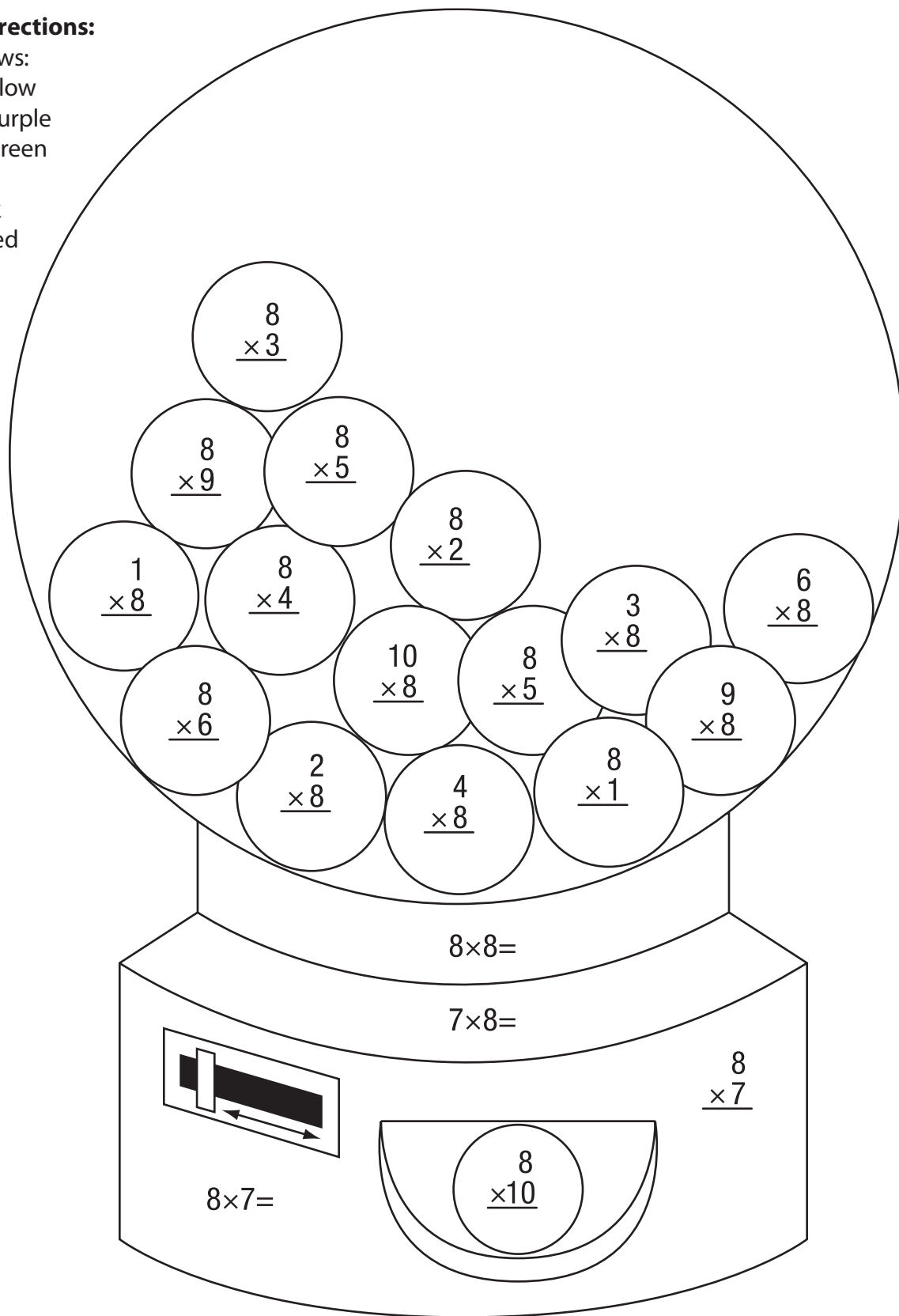
Activity 3 Directions: Solve all nine problems.

$$9 \times 7 \qquad 5 \times 9 \qquad 9 \times 2$$

$$8 \times 9 \qquad 9 \times 3 \qquad 9 \times 9$$

$$4 \times 9 \qquad 9 \times 6 \qquad 9 \times 10$$

WORKSHEET: MULTIPLICATION FACTS OF 9s—2

Activity 4 Directions:
Color as follows:
- 18 red
- 27 purple
- 36 green
- 45 blue
- 54 orange
- 63 yellow
- 72 brown
- 81 black

$9 \times 8 =$

$8 \times 9 =$

9×3

9×2

$4 \times 9 =$

$9 \times 7 =$

9×5

$6 \times 9 =$

$9 \times 3 =$

$9 \times 5 =$

$9 \times 6 =$

$9 \times 9 =$

$8 \times 9 =$

2×9

4×9

$7 \times 9 =$

JOURNAL PAGE FOR 9s PATTERN

Directions: On the lines below, write your answer to this question: "What do you know that helps you to multiply if there is a 9 in the problem?"

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

WORKSHEET: MULTIPLICATION FACTS OF 8s—1

Activity 1 Directions: Solve all of these problems.

$$
\begin{array}{cccccc}
8 & 5 & 2 & 8 & 3 & 8 \\
\times 7 & \times 8 & \times 8 & \times 8 & \times 8 & \times 6
\end{array}
$$

$$
\begin{array}{cccccc}
8 & 8 & 10 & 9 & 8 & 7 \\
\times 4 & \times 9 & \times 8 & \times 8 & \times 5 & \times 8
\end{array}
$$

$$
\begin{array}{ccccc}
8 & 6 & 8 & 4 & 8 \\
\times 10 & \times 8 & \times 3 & \times 8 & \times 2
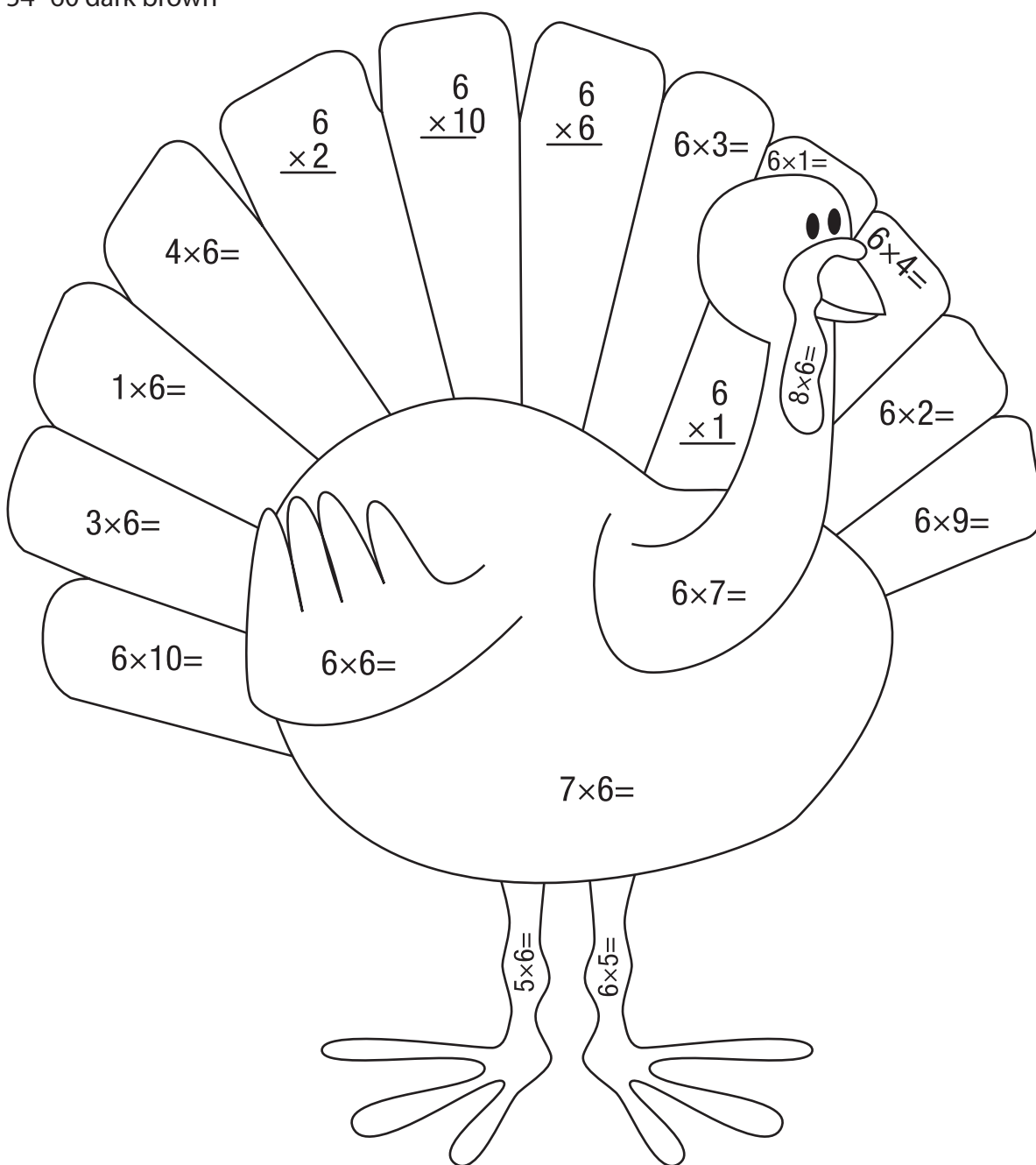\end{array}
$$

Activity 2 Directions: Multiply the middle number by each number around the circle. Then write each answer in the outside ring.

WORKSHEET: MULTIPLICATION FACTS OF 8s—2

Activity 3 Directions:

Color as follows:

- 8–16 yellow
- 24–32 purple
- 40–48 green
- 56 blue
- 64 black
- 72–80 red

$$8 \times 3$$

$$8 \times 9$$

$$8 \times 5$$

$$8 \times 2$$

$$1 \times 8$$

$$8 \times 4$$

$$6 \times 8$$

$$10 \times 8$$

$$8 \times 5$$

$$3 \times 8$$

$$8 \times 6$$

$$9 \times 8$$

$$2 \times 8$$

$$4 \times 8$$

$$8 \times 1$$

$$8 \times 8 =$$

$$7 \times 8 =$$

$$8 \times 7$$

$$8 \times 7 =$$

$$8 \times 10$$

WORKSHEET: MULTIPLICATION FACTS OF 6s—1

Activity 1 Directions: Solve all of these problems.

6	6	10	9	6	7
× 4	× 9	× 6	× 6	× 5	× 6

6	5	2	8	3	6
× 7	× 6	× 6	× 6	× 6	× 6

6	6	6	4	6
× 10	× 8	× 3	× 6	× 2

Activity 2 Directions: Multiply the middle number by each number around the circle. Then write each answer in the outside ring.

WORKSHEET: MULTIPLICATION FACTS OF 6s—2

Activity 3 Directions:

Color as follows:
- 6–12 yellow
- 18–24 orange
- 30–gray
- 36–42 light brown
- 48 red
- 54–60 dark brown

6×2

6×10

6×6

6×3=

6×1=

6×4=

4×6=

1×6=

8×6=

6×1

6×2=

3×6=

6×9=

6×7=

6×10=

6×6=

5×6=

6×5=

7×6=

WORKSHEET: MULTIPLICATION FACTS OF 7s—1

Activity 1 Directions: Solve all of these problems.

7	5	2	8	3	7
× 7	× 7	× 7	× 7	× 7	× 6

7	7	10	9	7	7
× 4	× 9	× 7	× 7	× 5	× 8

7	6	7	4	7
× 10	× 7	× 3	× 7	× 2

Activity 2 Directions: Multiply the middle number by each number around the circle. Then write each answer in the outside ring.
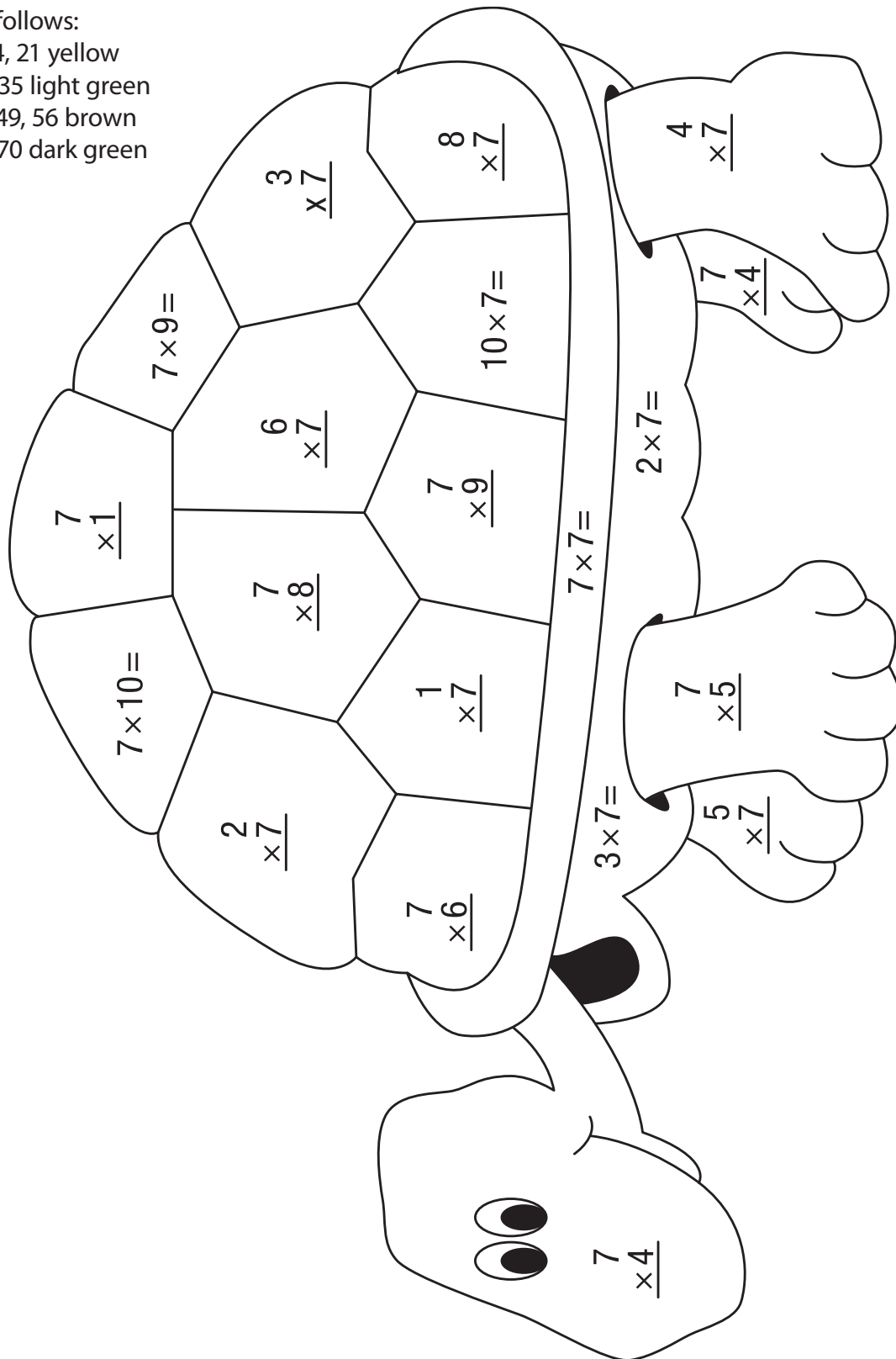
WORSHEET: MULTIPLICATION FACTS OF 7s—2

Activity 3 Directions:
Color as follows:
- 7, 14, 21 yellow
- 28–35 light green
- 42, 49, 56 brown
- 63–70 dark green

$$\begin{array}{r} 3 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$$

$7 \times 9 =$

$10 \times 7 =$

$$\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 9 \\ \hline \end{array}$$

$2 \times 7 =$

$7 \times 7 =$

$$\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$$

$7 \times 10 =$

$$\begin{array}{r} 1 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 6 \\ \hline \end{array}$$

$3 \times 7 =$

$$\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$$

PROGRESS CHART

Directions: Keep track of your progress by coloring each row up to your knowledge of that multiple.

	Not yet	A little	Getting there	Almost perfect	I really know it!
Multiplication facts that contain a **2**					
Multiplication facts that contain a **3**					
Multiplication facts that contain a **4**					
Multiplication facts that contain a **5**					
Multiplication facts that contain a **6**					
Multiplication facts that contain a **7**					
Multiplication facts that contain an **8**					
Multiplication facts that contain a **9**					

RULES FOR PLAYING THE GAME HOPSCOTCH MATH

Playing the game Hopscotch Math makes for hours of enjoyment whether you play it during the school year or at home over summer vacation.

1. Players should decide which pattern they want to play—the 3s or the 4s. For an example of how to play Hopscotch Math, we will be using the multiples of 4s pattern.

2. Put the pattern on the floor, sidewalk, gravel road, or wherever.

3. Players take turns. The first player stands behind the first box and tries to toss his/her bean bag into the first box. This action is easy to do because the student is standing right next to the first box.

4. If successful, the player bends over and picks up his/her bean bag and jumps all the way through the pattern saying the multiples of 4s while hopping.

5. If the bean bag is not thrown inside the box—or if the player says a wrong multiple while hopping through the pattern or perhaps loses his/her balance and is unable to finish the pattern—that player has completed his/her turn.

6. If the player is successful, that player returns behind the first box again to continue his/her turn.

7. This time the player tries to throw his/her bean bag inside the second box.

8. If the player is unsuccessful, it is the next player's turn.

9. If successful, the player hops into the first box on one foot while saying "four" for the first box's multiple, bends down, picks up the bean bag, and continues on through the pattern while saying multiples.

10. If the player makes it, he/she goes again— this time aiming for the third box.

11. Play continues for this player until he/she is unsuccessful at throwing his/her bean bag into the multiple box that he/she is on, says a wrong multiple while hopping through the pattern, or perhaps loses his/her balance and is unable to finish the pattern. In any of these cases it is always the next player's turn.

12. The player always gets to return to tossing at the multiple that he/she was on during the previous turn. The player does not have to start all over.

13. **Here is the object of the game:** The first player to make it all the way through the pattern wins.

Note: When you toss the bean bag into a multiple that contains two boxes (for example, 12 on the 4s pattern), your bean bag toss landing inside either of the two boxes is a successful toss.

WORKSHEET: DIVISION FACTS

1. 14 ÷ 2

2. 6 ÷ 2

3. 20 ÷ 2

4. 6 ÷ 3

5. 27 ÷ 3

6. 15 ÷ 3

7. 12 ÷ 4

8. 24 ÷ 4

9. 36 ÷ 4

10. 45 ÷ 5

11. 5 ÷ 5

12. 25 ÷ 5

13. 36 ÷ 6

14. 12 ÷ 6

15. 54 ÷ 6

16. 21 ÷ 7

17. 49 ÷ 7

18. 70 ÷ 7

19. 64 ÷ 8

20. 48 ÷ 8

21. 16 ÷ 8

22. 27 ÷ 9

23. 54 ÷ 9

24. 81 ÷ 9

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