CHAPTER RESOURCES • Chapter 1
Place Value, Multiplication, & Expressions

INCLUDES
• Prerequisite Skills Inventory
• Beginning-of-Year Test
• School-Home Letter
• Vocabulary Game Directions
• Daily Enrichment Activities
• Reteach Intervention for every lesson
• Chapter 1 Test
• Chapter 1 Performance Task
• Answer Keys and
  Individual Record Forms
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Overview of Go Math! Assessment

How Assessment Can Help Individualize Instruction
The Chapter Resources contains several types of assessment for use throughout the school year. Assessment pacing can also be found in the Go Math! Teacher Edition. The following pages will explain how these assessments help teachers evaluate students’ understanding of the Common Core standards. These Chapter Resources also contain Individual Record Forms to help guide teachers’ instructional choices and to improve students’ performance.

Diagnostic Assessment
Prerequisite Skills Inventory in the Chapter Resources should be given at the beginning of the school year or when a new student arrives. This short-answer test assesses students’ understanding of prerequisite skills. Test results provide information about the review or intervention that students may need in order to be successful in learning the mathematics related to the standards for this grade level. Suggestions for intervention are provided for this inventory.

Beginning-of-Year Test in the Chapter Resources contains items that are presented in Common Core assessment format. This test should be given early in the year to determine which on-grade level skills that students may already understand. This benchmark test will facilitate customization of instructional content to optimize the time spent teaching specific objectives. Suggestions for intervention are provided for this test.

Show What You Know in the Student Edition is provided for each chapter. It assesses prior knowledge from previous grades as well as content taught earlier in the current grade. Teachers can customize instructional content using the intervention options suggested. The assessment should be scheduled at the beginning of each chapter to determine if students have the prerequisite skills for the chapter.
Formative Assessment

Lesson Quick Check in every lesson of the Teacher Edition monitors students’ understanding of the skills and concepts being presented.

Lesson Practice for every lesson in the Student Edition helps students achieve fluency, speed, and confidence with grade level skills and concepts.

Mid-Chapter Checkpoint in the Student Edition provides monitoring of students’ progress to permit instructional adjustments, and when required, to facilitate students’ mastery of the objectives.

Middle-of-Year Test in the Chapter Resources assesses the same standards as the Beginning-of-Year Test, allowing students’ progress to be tracked and providing opportunity for instructional adjustments, when required.

Portfolios encourage students to collect work samples throughout the chapter as a reinforcement of their progress and achievements.

Summative Assessment

Chapter Review/Tests in the Student Edition indicate whether additional instruction or practice is necessary for students to master the concepts and skills taught in the chapter. These tests include items presented in a variety of Common Core assessment formats.

Chapter Tests in the Chapter Resources evaluate students’ mastery of concepts and skills taught in the chapter. These tests assess the mastery of the Common Core standards taught in a chapter. Item types on these tests are similar to ones a student would encounter on a test to assess Common Core standards.

Performance Assessment Tasks in the Chapter Resources are provided for each Chapter and Critical Area. Each assessment contains several tasks to assess students’ ability to use what they have learned and provides an opportunity for students to display their thinking strategies. Each set of tasks is accompanied by teacher support pages, a rubric for scoring, and examples of student work for the task.

End-of-Year Tests in the Chapter Resources assess the same standards as the Beginning- and Middle-of-Year Tests. It is the final benchmark test for the grade level. When students’ performance on the End-of-Year Test is compared to performance on the Beginning- and Middle-of-Year Tests, teachers are able to document students’ growth.
Getting Ready Tests in the *Getting Ready Lessons and Resources* evaluate the students’ understanding of concepts and skills taught as readiness for the next grade level. These tests are available in a mixed-response format comprised of multiple choice and short answer.

**Assessment Technology**

The **Personal Math Trainer** offers online homework, assessment, and intervention. There are pre-built tests that lead to intervention and a personal study plan. Algorithmically generated technology-enhanced items have wrong answer feedback and learning aids.
Data-Driven Decision Making

Go Math! allows for quick and accurate data-driven decision making so you can spend more instructional time tailoring to students’ needs. The Data-Driven Decision Making chart with Diagnostic, Formative, and Summative Assessments provides prescribed interventions so students have a greater opportunity for success with the Common Core standards.

Intervention and Review Resources

For skills that students have not yet mastered, the Reteach in Chapter Resources, Tier 1 and Tier 2 Rti Activities online, or The Personal Math Trainer provide additional instruction and practice on concepts and skills in the chapter.

Using Individual Record Forms

The Chapter Resources includes Individual Record Forms (IRF) for all tests. On these forms, each test item is correlated to the standard it assesses. There are intervention resources correlated to each item as well. A common error explains why a student may have missed the item. These forms can be used to:

• Follow progress throughout the year.
• Identify strengths, weaknesses, and provide follow-up instruction.
• Make assignments based on the intervention options provided.
Performance Assessment

Performance Assessment, together with other types of assessment, can supply the missing information not provided by other testing formats. Performance Assessments, in particular, help reveal the thinking strategies students use to work through a problem. Performance Assessments with multiple tasks for each chapter and Critical Area are provided in the Chapter Resources.

Performance Assessment is provided in many places in Go Math!

Each of these assessments has several tasks that target specific math concepts, skills, and strategies. These tasks can help assess students' ability to use what they have learned to solve everyday problems. Each assessment focuses on a theme. Teachers can plan for students to complete one task at a time or use an extended amount of time to complete the entire assessment.

Teacher support pages introduce each Performance Assessment. A task-specific rubric helps teachers evaluate students' work. Papers to illustrate actual students' work are also provided to aid in scoring.
Portfolio Assessment

A portfolio is a collection of each student’s work gathered over an extended period of time.

A portfolio illustrates the growth, talents, achievements, and reflections of the learner and provides a means for you and the student to assess performance and progress.

Building a Portfolio

There are many opportunities to collect student’s work throughout the year as you use Go Math! Give students the opportunity to select some work samples to be included in the portfolio.

- Provide a folder for each student with the student’s name clearly marked.
- Explain to students that throughout the year they will save some of their work in the folder. Sometimes it will be their individual work; sometimes it will be group reports and projects or completed checklists.

Evaluating a Portfolio

The following points made with regular portfolio evaluation will encourage growth in self-evaluation:

- Discuss the contents of the portfolio as you examine it with each student.
- Encourage and reward each student by emphasizing growth, original thinking, and completion of tasks.
- Reinforce and adjust instruction of the broad goals you want to accomplish as you evaluate the portfolios.
- Examine each portfolio on the basis of individual growth rather than in comparison with other portfolios.
- Share the portfolio with family during conferences or send the portfolio, home with the student.
Common Core Assessment Formats

Common Core Assessment consortia have developed assessments that contain item types beyond the traditional multiple-choice format. This allows for a more robust assessment of students' understanding of concepts. Common Core assessments will be administered via computers; and *Go Math!* presents items in formats similar to what students will see on the tests. The following information is provided to help teachers familiarize students with these different types of items. An example of each item type appears on the following pages. You may want to use the examples to introduce the item types to students. The following explanations are provided to guide students in answering the questions. These pages describe the most common item types. You may find other types on some tests.

**Example 1** Tell if a number rounds to a given number.

**Yes or No**

For this type of item, students respond to a single question with several examples. There are directions similar to, “For numbers 1a–1d, choose Yes or No to tell whether …” Tell students to be sure to answer the question for each part given below the directions. They will fill in the bubble next to “Yes” or “No” to tell whether the example fits the description in the question. They must fill in a bubble for each part.

**Example 2** Answer questions about a scenario.

**True or False**

This type of item is similar to the Yes or No type. For the True or False items, students will see directions similar to, “For numbers 2a–2c, select True or False for each statement.” Each part below the directions must be read as a stand-alone sentence. After reading the sentence, students mark True or False to indicate the answer. They need to fill in a bubble for each sentence.

**Example 3** Identify examples of a property.

**More Than One Correct Choice**

This type of item may confuse students because it looks like a traditional multiple-choice item. Tell students this type of item will ask them to mark all that apply. Younger students may not understand what “mark all that apply” means. Tell them to carefully look at each choice and mark it if it is a correct answer.
Example 4  Circle the word that completes the sentence.

Choose From a List

Sometimes when students take a test on a computer, they will have to select a word, number, or symbol from a drop-down list. The Go Math! tests show a list and ask students to choose the correct answer. Tell students to make their choice by circling the correct answer. There will only be one choice that is correct.

Example 5  Sort numbers by categories for multiples.

Sorting

Students may be asked to sort something into categories. These items will present numbers, words, or equations on rectangular “tiles.” The directions will ask students to write each of the items in the box that describes it. When the sorting involves more complex equations or drawings, each tile will have a letter next to it. Students will be asked to write the letter for the tile in the box. Tell students that sometimes they may write the same number or word in more than one box. For example, if they need to sort quadrilaterals by category, a square could be in a box labeled rectangle and another box labeled rhombus.

Example 6  Order numbers from least to greatest.

Use Given Numbers in the Answer

Students may also see numbers and symbols on tiles when they are asked to write an equation or answer a question using only numbers. They should use the given numbers to write the answer to the problem. Sometimes there will be extra numbers. They may also need to use each number more than once.

Example 7  Match related facts.

Matching

Some items will ask students to match equivalent values or other related items. The directions will specify what they should match. There will be dots to guide them in drawing lines. The matching may be between columns or rows.
Example 1
Yes or No
For numbers 1a–1d, choose Yes or No to tell whether the number is 300,000 when it is rounded to the nearest hundred thousand.

1a. 345,235  ○ Yes  ○ No
1b. 372,514  ○ Yes  ○ No
1c. 350,921  ○ Yes  ○ No
1d. 267,847  ○ Yes  ○ No

Example 2
True or False
Max earned 238,450 points in a computer game. Tristen earned 216,983 points in the same game.

For numbers 2a–2c, select True or False for each statement.

2a. Max earned more points than than Tristen.  ○ True  ○ False
2b. The total number of points Max and Tristen have is an odd number.  ○ True  ○ False
2c. Tristen needs 500 more points to have as many as Max.  ○ True  ○ False

Example 3
More Than One Correct Choice
Select the equations that show the Commutative Property of Multiplication. Mark all that apply.

A 35 × 56 = (30 + 5) × (50 + 6)
B 47 × 68 = 68 × 47
C 32 × 54 = 54 × 32
D 12 × 90 = 90 × 12
E 34 × 932 = 34 × (900 + 30 + 2)
F 45 × 167 = (40 + 5) × 167
Example 4

Choose From a List

Circle the word that completes the sentence.

$(25 \times 17) \times 20 = 25 \times (17 \times 20)$

The equation shows the factors in a different

order.

grouping.

operation.

Example 5

Write each number in the box below the word that describes it.

Sorting

$30 \quad 42 \quad 72 \quad 85$

Copy the numbers in the correct box.

<table>
<thead>
<tr>
<th>Multiple of 5</th>
<th>Multiple of 6</th>
</tr>
</thead>
</table>

Example 6

Write the numbers in order from least to greatest.

Use Given Numbers in the Answer

$18,345 \quad 17,467 \quad 18,714 \quad 16,235$

Write the given numbers to answer the question.

Example 7

Match the pairs of related facts.

Matching

Draw lines to match an item in one column to the related item in the other column.

$8 \times 7 = 56 \quad \bullet \quad 8 \times 9 = 72$

$8 \times 6 = 48 \quad \bullet \quad 7 \times 8 = 56$

$72 \div 9 = 8 \quad \bullet \quad 9 \times 7 = 63$

$63 \div 7 = 9 \quad \bullet \quad 48 \div 6 = 8$
Write the correct answer.

1. An office supply store sold 310,409 pencils last year. What is the expanded form of 310,409?

2. The population of Yuba City, California is 60,360 people. What is 60,360 rounded to the nearest thousand?

3. Last year, the local animal shelter found homes for 12,308 dogs and 7,953 cats. What is the total number of dogs and cats the animal shelter found homes for last year?

4. The area of South Dakota is 77,353 square miles. The area of North Dakota is 70,700 square miles. How many square miles greater is the area of South Dakota than the area of North Dakota?

5. Juan wrote this pattern on his paper.
   \[ 3 \times 6 = 18 \]
   \[ 3 \times 60 = 180 \]
   \[ 3 \times 600 = 1,800 \]
   \[ 3 \times 6,000 = \_ \_ \_ \]
   What is the unknown number in Juan’s pattern?

6. James uses the Distributive Property to find how many cans of paint are in the art supply closet. There are 5 boxes in the closet. Each box holds 14 cans.

How many cans of paint are in the closet?
7. Ling’s parents buy 4 tickets for the nature museum. Each ticket costs $13. What is the total cost of the 4 tickets?

10. Risley’s Restaurant charges $12 for a spaghetti dinner special. During one hour 16 people ordered the spaghetti dinner special.

What is the total amount Risley’s Restaurant charged during that hour for the spaghetti dinner specials?

8. The theater has 1,678 seats. A magician performed 3 sold out shows at the theater. How many people were able to see the magician’s show?

11. Anya used buttons to model a division problem.

The division problem this model represents is __________.
The quotient is __________ and the remainder is __________.

9. Erin has 4 bags with 19 marbles in each bag. She also has 7 bags with 14 marbles in each bag. She gives 23 marbles to her brother. She wrote this expression to find how many marbles she has left. How many marbles does Erin have left?

$$4 \times 19 + 7 \times 14 - 23$$

12. The Distributive Property can help you divide. Show how you can break apart the dividend to find the quotient for $224 \div 7$. 
13. On Saturday, a total of 1,292 people went to see a new movie. There were 4 different showings for the new movie and the same number of people attended each showing. How many people attended each showing?

14. A dentist bought 9 bags of prizes for his patients. Each bag had 12 prizes. The prizes were divided equally among 3 boxes. How many prizes were in each box?

15. Rylee is learning about prime numbers in math class. Her friend asked her to name all the prime numbers between 10 and 20. What numbers should Rylee name?

16. Cassie wrote some numbers in a number pattern.

   14, 17, 12, 15, 10, 13, 8, 11

   What should be the next number in her pattern?

17. Mrs. Dalton needs \( \frac{1}{2} \) cup mixed nuts for her granola recipe. She only has a \( \frac{1}{4} \) cup measuring cup. Write the equivalent fraction that shows the amount of mixed nuts she will use for the recipe.

18. Michael is practicing the piano. He spends \( \frac{1}{2} \) hour practicing scales and \( \frac{1}{4} \) hour practicing the piece for his recital. What is a common denominator for \( \frac{1}{2} \) and \( \frac{1}{4} \)?

19. Julia and Sam rode their bikes on the bike path. Julia rode her bike \( \frac{3}{10} \) of the path’s distance. Sam rode his bike \( \frac{4}{8} \) of the path’s distance. Compare the distances using <, >, or =.
20. Ali needs \(\frac{4}{10}\) yard of red ribbon and \(\frac{5}{10}\) yard of blue ribbon to make a tail for her kite. How much ribbon does Ali need in all?

21. Bryan brought \(\frac{8}{10}\) gallon of water on a hiking trip. He drank \(\frac{4}{10}\) gallon of water. How much water is left?

22. Lily has two kittens. One kitten weighs \(\frac{15}{16}\) pound. The other kitten weighs \(\frac{12}{16}\) pound. What is the difference in the weights of the two kittens?

23. Jamie put \(2\frac{3}{12}\) pounds of green apples into a bag. He then added \(3\frac{5}{12}\) pounds of red apples into the same bag. What is the total weight of the apples in the bag?

24. Mrs. Laska buys \(4\frac{5}{8}\) yards of blue fabric and \(2\frac{1}{8}\) yards of green fabric. How many more yards of blue fabric than green fabric does Mrs. Laska buy?

25. In Crosby’s model collection, \(\frac{5}{16}\) of the models are trains and \(\frac{7}{16}\) of the models are cars. What part of Crosby’s model collection is trains and cars?

26. Leo walks his dog \(\frac{7}{8}\) mile. He walks his dog 3 times a day. How far does Leo walk his dog every day? Show how you can use repeated addition to solve.
27. On Tuesday, Lilly spent \( \frac{1}{4} \) hour working on her science fair project. Ben worked 3 times as long on his science fair project as Lilly did. How much time did Ben spend on his science fair project?

28. It takes Akio’s family \( 2\frac{1}{2} \) hours to drive from their home to the beach. It takes his family 3 times as long to drive to the mountains as it takes to drive to the beach. How long does it take Akio’s family to drive from their home to the mountains?

29. The stout infantfish is one of the world’s smallest fish. It is only about \( 8\frac{4}{10} \) millimeters long. What is this length written as a decimal?

30. The distance from Davina’s house to her school is \( 2\frac{75}{100} \) miles. What is this distance written as a decimal?

31. Jill buys a tomato that weighs 0.9 pound. Write the weight of the tomato as a fraction with a denominator of 100.

32. Use <, >, or = to compare 0.36 and 0.4.

33. Henry draws an obtuse triangle. How many obtuse angles does Henry’s triangle have?

34. What term best describes the lines shown?

Write perpendicular, parallel, or intersecting.
35. Tyler uses craft sticks to make a quadrilateral like the one shown. 

Tell whether she made a trapezoid, parallelogram, rhombus, rectangle, or square.

36. A puppy weighs 3 pounds.

What is the puppy’s weight in ounces?

37. The line plot shows the lengths of some leaves Madison collected on a hike.

How many leaves were longer than \( \frac{5}{8} \) inch?

38. A piece of ribbon is 86 centimeters long.

Using the information in the chart, find the length of the ribbon in meters.

39. Mr. Rourke is 5 feet 8 inches tall. How tall is Mr. Rourke in inches?

40. Greta wants to put ribbon around the perimeter of her art project. How many centimeters of ribbon will she need?
Choose the correct answer.

1. Judith has a necklace with a mass of 65.736 grams. What is the mass of her necklace rounded to the nearest tenth?
   - A 65.7 grams
   - B 65.74 grams
   - C 65.8 grams
   - D 66.0 grams

2. The post office is 3.56 kilometers from Maria’s house and 1.38 kilometers from Simon’s house. How much farther does Maria live from the library than Simon?
   - A 4.94 kilometers
   - B 2.28 kilometers
   - C 2.18 kilometers
   - D 1.18 kilometers

3. Crystal’s tomato plant was 32.65 centimeters tall in June. During July, the plant grew 82.6 centimeters. How tall was Crystal’s tomato plant at the end of July?
   - A 409.1 centimeters
   - B 115.25 centimeters
   - C 49.95 centimeters
   - D 40.91 centimeters

4. Rick and Chad are playing a number pattern game. Rick wrote the following pattern.
   \[32.3, 34.5, 36.7, \_\_\_, 41.1\]
   What is the unknown number in the pattern Rick wrote?
   - A 37.9
   - B 38.8
   - C 38.9
   - D 39.9

5. Yolanda read her book for \(1\frac{1}{5}\) hours Monday evening and for \(2\frac{3}{5}\) hours on Tuesday evening. Which is the best estimate of the time Yolanda read on Monday and Tuesday?
   - A about \(\frac{4}{5}\) hour
   - B about 3 hours
   - C about \(3\frac{1}{2}\) hours
   - D about 4 hours
6. Francine has a piece of wood that is \( \frac{5}{12} \) feet long. She uses \( 3\frac{1}{4} \) feet of the wood for a science project. How much wood does Francine have left?
   A 8\( \frac{2}{3} \) feet
   B 3\( \frac{2}{12} \) feet
   C 2\( \frac{4}{12} \) feet
   D 2\( \frac{2}{12} \) feet

7. Kevin has 3 bags of apples weighing a total of 22\( \frac{1}{2} \) pounds. Two of the bags weigh 6\( \frac{3}{8} \) pounds and 3\( \frac{1}{4} \) pounds. How much does the third bag weigh?
   A 11\( \frac{7}{8} \) pounds
   B 12\( \frac{4}{8} \) pounds
   C 12\( \frac{7}{8} \) pounds
   D 13\( \frac{5}{8} \) pounds

8. Aisha hiked each day for a week. The first day she hiked \( \frac{1}{6} \) mile, the second day she hiked \( \frac{1}{2} \) mile, and the third day she hiked \( \frac{5}{6} \) mile. By how much did she increase the distance she hiked each day?
   A \( \frac{9}{6} \) miles
   B \( \frac{5}{6} \) mile
   C \( \frac{1}{2} \) mile
   D \( \frac{1}{3} \) mile

9. A corn muffin recipe calls for \( \frac{1}{4} \) cup of cornmeal and \( \frac{5}{6} \) cup of flour. What is the least common denominator of the fractions?
   A 6
   B 12
   C 18
   D 24

10. On a coordinate grid, Carrie’s house is located 3 blocks to the right and 4 blocks up from (0, 0). Mike’s house is located 2 blocks to the left and 2 blocks down from Carrie’s house. What ordered pair describes the location of Mike’s house?
   A (1, 5)
   B (2, 1)
   C (1, 2)
   D (5, 2)
11. What is the unknown number in Sequence 2 in the chart?

<table>
<thead>
<tr>
<th>Sequence Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>6</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence 1</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>Sequence 2</td>
<td>12</td>
<td>24</td>
<td>36</td>
<td>72</td>
<td>?</td>
</tr>
</tbody>
</table>

A 64  
B 80  
C 96  
D 106

12. The graph shows the relationship between the number of weeks and plant growth in inches.

What rule relates the number of weeks and plant growth in inches?

A Multiply the number of weeks by $\frac{1}{2}$.
B Multiply the number of weeks by $\frac{1}{3}$.
C Multiply the number of weeks by $\frac{1}{4}$.
D Multiply the number of weeks by $\frac{1}{2}$.

13. A baker is weighing the dough that will be used to make pastries. The line plot shows the weight of the dough for each pastry.

How many pastries will be made from at least $\frac{3}{8}$ pound of dough?

A 4  
B 7  
C 8  
D 9

14. Marvin is buying a new computer on layaway for $302. If he makes a down payment of $50 and pays $28 each week, how many weeks will it take Marvin to pay for the computer?

A 8  
B 9  
C 10  
D 12
15. Mary drew a picture of her flower garden.

What type of quadrilateral is Mary’s garden?
A rectangle
B rhombus
C square
D trapezoid

16. Dmitri made a box with the dimensions shown to hold his modeling supplies.

What is the volume of the box?
A 8 cubic feet
B 14 cubic feet
C 16 cubic feet
D 18 cubic feet

17. The sidewalk tiles leading to the town library are shaped like regular hexagons. Which of the following describes a regular hexagon?
A a figure with 6 congruent sides and 6 congruent angles
B a figure with 6 sides and angles that are not congruent
C a figure with 5 sides and 5 angles that are not congruent
D a figure with 5 congruent sides and 5 congruent angles

18. A toy box in the shape of a rectangular prism has a volume of 672 cubic inches. The base area of the toy box is 28 square inches. What is the height of the toy box?
A 10 inches
B 12 inches
C 22 inches
D 24 inches

19. A pizza parlor uses 42 tomatoes for each batch of tomato sauce. About how many batches of sauce can the pizza parlor make from its last shipment of 1,236 tomatoes?
A 20
B 30
C 35
D 48
20. The art teacher has a list of 134 students who have signed up for art classes. The art teacher can register 8 students in each class. What is the least number of classes needed for all the students to be registered in a class?

A 16  
B 17  
C 18  
D 19

21. The number of roses Mr. Adams ordered for his store was three times as many as the number of carnations ordered. He ordered a total of 56 flowers. How many roses did Mr. Adams order?

A 14  
B 28  
C 34  
D 42

22. The owner of a clothing store received a shipment of 1,230 pairs of socks. The socks came in 36 boxes. The same number of pairs of socks were in 35 of the boxes. How many pairs of socks were in the last box?

A 2  
B 5  
C 15  
D 35

23. Jared uses 24 tiles to cover the top of his desk. Of the 24 tiles, \( \frac{3}{8} \) are blue. How many of the tiles are blue?

A 3  
B 8  
C 9  
D 12

24. Tony worked \( 4 \frac{2}{3} \) hours on his science project. Sonia worked \( 1 \frac{1}{4} \) times as long on her science project as Tony did. For how many hours did Sonia work on her science project?

A \( 4 \frac{5}{6} \) hours  
B 5 hours  
C \( 5 \frac{1}{3} \) hours  
D \( 5 \frac{5}{6} \) hours

25. Julia had \( \frac{2}{3} \) quart of cleaning liquid. She used \( \frac{1}{4} \) of it to clean the sink counter. How much cleaning liquid did Julia use?

A \( \frac{1}{8} \) quart  
B \( \frac{1}{6} \) quart  
C \( \frac{1}{2} \) quart  
D \( \frac{5}{12} \) quart
26. Carlos had 24 class play tickets to sell. He sold \( \frac{3}{4} \) of the tickets. How many tickets did Carlos sell?
   A 16
   B 18
   C 24
   D 26

27. Noreen made \( 8 \frac{2}{3} \) cups of snack mix for a party. Her guests ate \( \frac{3}{4} \) of the mix. How much snack mix did her guests eat?
   A \( 5 \frac{1}{4} \) cups
   B \( 5 \frac{3}{4} \) cups
   C \( 6 \frac{5}{12} \) cups
   D \( 6 \frac{1}{2} \) cups

28. Ganesh is stacking boxes in a storage room. There are 12 boxes in all. If each box weighs 9.6 pounds, how much do the boxes weigh altogether?
   A 11.25 pounds
   B 21.6 pounds
   C 115.2 pounds
   D 1,152 pounds

29. The instruction booklet for a DVD player says that the player uses about 0.4 kilowatt of electricity per hour. If electricity costs $0.20 per kilowatt hour, how much does it cost to run the player for an hour?
   A $0.08
   B $0.80
   C $8.00
   D $80.00

30. Rhianna was doing research for a report about the highest mountains in the United States. She read that the Grand Teton in Wyoming is about \( 1.37 \times 10^4 \) feet high. How should Rhianna write the height of the Grand Teton in standard form on her report?
   A 137 feet
   B 1,370 feet
   C 13,700 feet
   D 137,000 feet
31. Jeremy is training for a race. When he trains, he runs on a path that is 1.25 miles long. Last week, Jeremy ran on the path 7 times. How many miles did Jeremy run on the path last week?
   A 0.875 mile
   B 8.75 miles
   C 87.5 miles
   D 875 miles

32. There is \( \frac{1}{3} \) pound of cake that will be shared equally among 4 friends. What fraction of a pound of cake will each friend get?
   A \( \frac{1}{12} \) pound
   B \( \frac{1}{6} \) pound
   C \( \frac{1}{2} \) pound
   D \( \frac{3}{4} \) pound

33. At lunch, 5 friends share 3 pizzas equally. What fraction of a pizza does each friend get?
   A \( \frac{3}{5} \)
   B \( \frac{2}{3} \)
   C \( \frac{3}{4} \)
   D \( \frac{11}{5} \)

34. Julie has \( \frac{3}{4} \) quart of fruit juice. She pours the same amount into each of 4 glasses. Which equation represents the fraction of a quart of fruit juice \( n \) that is in each glass?
   A \( \frac{3}{4} ÷ \frac{1}{4} = n \)
   B \( 4 ÷ \frac{3}{4} = n \)
   C \( \frac{3}{4} ÷ 4 = n \)
   D \( 3 ÷ 4 = n \)

35. Terry evaluates \( 6 ÷ \frac{1}{8} \) by using a related multiplication expression. Which multiplication expression should he use?
   A \( 6 × \frac{1}{8} \)
   B \( \frac{1}{6} × \frac{1}{8} \)
   C \( \frac{1}{6} × 8 \)
   D \( 6 × 8 \)
36. Eli made a loaf of bread. He gave equal portions of $\frac{1}{2}$ of the loaf to 3 friends. What diagram could Eli use to find the fraction of the whole loaf of bread that each friend got?

A

B

C

D

37. Lori rode her bicycle 19.5 miles in 3 hours. Which gives the best estimate of how far Lori rode in 1 hour?

A between 4 and 5 miles

B between 5 and 6 miles

C between 6 and 7 miles

D between 7 and 8 miles

38. Roger is riding in a bike-a-thon to raise money for his favorite charity. The total distance of the bike-a-thon is 38.7 miles. So far he has completed $\frac{1}{10}$ of the bike-a-thon. How many miles has Roger biked?

A 387 miles

B 38.7 miles

C 3.87 miles

D 0.387 mile

39. Ellen is making small bags of confetti from a large bag of confetti that weighs 4.75 pounds. If she puts the same amount of confetti in each of 5 bags, how much should each bag weigh?

A 0.09 pound

B 0.9 pound

C 0.95 pound

D 9.1 pounds

40. Trevor bought apples that cost $0.92 per pound. He paid $5.52 for the apples. How many pounds of apples did he buy?

A 60 pounds

B 6 pounds

C 0.6 pound

D 0.06 pound
41. Carly spent a total of $18.20 on Saturday afternoon. She bought a movie ticket for $8.25 and snacks for $3.85. She spent the rest of the money on bus fare to get to the movie and back home. How much was the bus fare each way if each trip cost the same amount?

A $2.20  
B $3.05  
C $6.10  
D $6.20

42. A publisher reports that it sold 1,516,792 travel magazines. What is the value of the digit 5 in 1,516,792?

A 5,000  
B 50,000  
C 500,000  
D 5,000,000

43. Martin is buying 400 video games for his entertainment store. Each video game costs $20. Which of the following could he use to find the total amount he will pay for the video games?

A \((4 \times 2) \times 10^2 = 800\)  
B \((4 \times 2) \times 10^3 = 8,000\)  
C \((4 \times 2) \times 10^4 = 80,000\)  
D \((4 \times 2) \times 10^5 = 800,000\)

44. Jamie’s dad travels 365 miles every week for business. How many miles does he travel in 4 weeks?

A 1,260 miles  
B 1,360 miles  
C 1,450 miles  
D 1,460 miles

45. Amber and her friend Nathan are saving to buy a video game that costs $65. Amber earns $12 per week for babysitting and spends $4 of it. Nathan earns $15 per week for walking dogs and spends $8 of it. Which expression can be used to find how many weeks it will take to save for the video game?

A \(65 \div [(12 - 4) + (15 - 8)]\)  
B \(65 \div [(12 + 4) - (15 + 8)]\)  
C \(65 \div [(12 - 4) + (15 + 8)]\)  
D \(65 \div [(12 + 4) - (15 - 8)]\)
46. Chen took 54 photos with his digital camera. He stored an equal number of photos in each of 6 folders on his computer. Which multiplication sentence could Chen use to find the number of photos in each folder?

   A  $54 \div 6 = 9$
   B  $5 \times 9 = 45$
   C  $6 \times 9 = 54$
   D  $6 \times 54 = 324$

47. Rachel’s home is 5 miles from her school. How many yards are in 5 miles?

   A  1,760 yards
   B  7,800 yards
   C  8,800 yards
   D  26,400 yards

48. Sarah bought 6 pounds of clay for pottery class. How many ounces of clay did Sarah buy?

   A  48 ounces
   B  64 ounces
   C  80 ounces
   D  96 ounces

49. The basketball game at the high school started at 7:30 P.M. and ended at 10:38 P.M. How long did the game last?

   A  2 hours 8 minutes
   B  2 hours 18 minutes
   C  3 hours 8 minutes
   D  3 hours 18 minutes

50. Kate used 6.15 meters of ribbon to make bows. How many centimeters of ribbon did she use?

   A  615 centimeters
   B  61.5 centimeters
   C  6.15 centimeters
   D  0.615 centimeter
Dear Family,
Throughout the next few weeks, our math class will be learning about place value, number properties, and numerical expressions. We will also learn to multiply by 1- and 2-digit whole numbers.

You can expect to see homework that requires students to write and evaluate numerical expressions.

Here is a sample of how your child will be taught to evaluate an expression.

**MODEL Evaluate Expressions**

This is how we will be evaluating $36 - (2 + 3) \times 4$.

**STEP 1**
Perform the operations in parentheses.

- $36 - (2 + 3) \times 4$
- $36 - 5 \times 4$

**STEP 2**
Multiply.

- $36 - 20$

**STEP 3**
Subtract.

- $16$

$36 - (2 + 3) \times 4 = 16$

**Activity**

You can write numerical expressions to describe situations around the house. For example, “We bought a case of 24 water bottles and have used 13 bottles. What expression shows how many are left?” can be represented by the expression $24 - 13$.

**Vocabulary**
- **evaluate** To find the value of a numerical or algebraic expression
- **numerical expression** A mathematical phrase that has numbers and operation signs but does not have an equal sign
- **order of operations** The process for evaluating expressions
Querida familia,

Durante las próximas semanas, en la clase de matemáticas aprenderemos sobre el valor de posición, las propiedades de los números y las expresiones numéricas.

Llevaré a casa tareas con actividades para practicar la escritura y evaluación de expresiones numéricas.

Este es un ejemplo de la manera en que evaluaremos expresiones numéricas.

**MODELO Evaluar expresiones**

Así es como evaluaremos $36 - (2 + 3) \times 4$.

Sandra tiene 8 manzanas. Le da algunas manzanas a Josh.

<table>
<thead>
<tr>
<th>PASO 1</th>
<th>Resuelve las operaciones en paréntesis.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$36 - (2 + 3) \times 4$</td>
</tr>
<tr>
<td></td>
<td>$36 - 5 \times 4$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PASO 2</th>
<th>Multiplica.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$36 - 20$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PASO 3</th>
<th>Resta.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$36 - (2 + 3) \times 4 = 16$</td>
</tr>
</tbody>
</table>

**Actividad**

Pueden escribir expresiones numéricas para representar cosas que suceden en la casa. Por ejemplo, “Compramos una caja de 24 botellas de agua y usamos 13 botellas. ¿Qué expresión muestra cuántas botellas quedan?” se puede representar con $24 - 13$. 

**Vocabulario**

**evaluar** Hallar el valor de una expresión numérica o algebraica

**expresión numérica** Una frase matemática que tiene solo números y signos de operaciones.

**orden de las operaciones** El proceso que se usa para evaluar expresiones
For 2 to 4 players

Materials
- 3 of 1 color per player: red, blue, green, and yellow
- 1 number cube

How to Play
1. Put your 3 connecting cubes in the START circle of the same color.
2. To get a cube out of START, you must roll a 6.
   - If you roll a 6, move 1 of your cubes to the same-colored circle on the path.
   - If you do not roll a 6, wait until your next turn.
3. Once you have a cube on the path, toss the number cube to take a turn.
   Move the cube that many tan spaces. You must get all three of your cubes on the path.
4. If you land on a space with a question, answer it. If you are correct, move ahead 1 space.
5. To reach FINISH move your connecting cubes up the path that is the same color as your cubes. The first player to get all three cubes on FINISH wins.
You can use a place-value chart and patterns to write numbers that are 10 times as much as or \( \frac{1}{10} \) of any given number.

Each place to the right is \( \frac{1}{10} \) of the value of the place to its left.

<table>
<thead>
<tr>
<th>Place Value</th>
<th>Hundred Thousands</th>
<th>Ten Thousands</th>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/10 of the hundred thousands place</td>
<td>10 times the ten thousands place</td>
<td>10 times the thousands place</td>
<td>10 times the hundreds place</td>
<td>10 times the tens place</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Each place to the left is 10 times the value of the place to its right.

Find \( \frac{1}{10} \) of 600.

\( \frac{1}{10} \) of 6 hundreds is 6 tens.
So, \( \frac{1}{10} \) of 600 is 60.

Find 10 times as much as 600.

10 times as much as 6 hundreds is 6 thousands.
So, 10 times as much as 600 is 6,000.

Use place-value patterns to complete the table.

<table>
<thead>
<tr>
<th>Number</th>
<th>10 times as much as</th>
<th>( \frac{1}{10} ) of</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. 700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. 5,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>10 times as much as</th>
<th>( \frac{1}{10} ) of</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. 900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. 80,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. 3,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. 40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Place-Value Mystery

Find the number that makes each statement true.

1. \(\frac{1}{10}\) of 3,000 is 10 times as much as _________.

2. \(\frac{1}{10}\) of _________ is 10 times as much as 8.

3. \(\frac{1}{10}\) of 50,000 is 10 times as much as _________.

4. \(\frac{1}{10}\) of 400,000 is 10 times as much as _________.

5. 10 times as much as _________ is \(\frac{1}{10}\) of 900.

6. 10 times as much as _________ is \(\frac{1}{10}\) of 60,000.

7. 10 times as much as 70 is \(\frac{1}{10}\) of _________.

8. 10 times as much as 2,000 is \(\frac{1}{10}\) of _________.

Place Value of Whole Numbers

You can use a place-value chart to help you understand whole numbers and the value of each digit. A **period** is a group of three digits within a number separated by a comma.

<table>
<thead>
<tr>
<th>Millions Period</th>
<th>Thousands Period</th>
<th>Ones Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hundreds</td>
<td>Tens</td>
<td>Ones</td>
</tr>
<tr>
<td>2,</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

**Standard form:** 2,367,089

**Expanded Form:** Multiply each digit by its place value, and then write an addition expression.

\[(2 \times 1,000,000) + (3 \times 100,000) + (6 \times 10,000) + (7 \times 1,000) + (8 \times 10) + (9 \times 1)\]

**Word Form:** Write the number in words. Notice that the millions and the thousands periods are followed by the period name and a comma.

two million, three hundred sixty-seven thousand, eighty-nine

To find the value of an underlined digit, multiply the digit by its place value. In 2,367,089, the value of 2 is \(2 \times 1,000,000\), or 2,000,000.

**Write the value of the underlined digit.**

1. 153,732,991
2. 236,143,802
3. 264,807
4. 78,209,146

**Write the number in two other forms.**

5. 701,245
6. 40,023,032
Place-Value Match

Match the standard form of the number given in Column A with either the word form or the expanded form of the number in Column B.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 900,000</td>
<td>thirty million</td>
</tr>
<tr>
<td>2. 8,000,000</td>
<td>5 × 1,000,000</td>
</tr>
<tr>
<td>3. 30,000,000</td>
<td>six hundred million</td>
</tr>
<tr>
<td>4. 2,000,000</td>
<td>eight hundred thousand</td>
</tr>
<tr>
<td>5. 100,000</td>
<td>9 × 100,000</td>
</tr>
<tr>
<td>6. 5,000,000</td>
<td>three million</td>
</tr>
<tr>
<td>7. 60,000,000</td>
<td>sixty million</td>
</tr>
<tr>
<td>8. 7,000,000</td>
<td>2 × 1,000,000</td>
</tr>
<tr>
<td>9. 800,000</td>
<td>5 × 10,000,000</td>
</tr>
<tr>
<td>10. 300,000</td>
<td>3 × 100,000</td>
</tr>
<tr>
<td>11. 1,000,000</td>
<td>seven million</td>
</tr>
<tr>
<td>12. 50,000,000</td>
<td>one hundred thousand</td>
</tr>
<tr>
<td>13. 600,000,000</td>
<td>one million</td>
</tr>
<tr>
<td>14. 3,000,000</td>
<td>eight million</td>
</tr>
</tbody>
</table>

15. **Write Math** Explain the method you used to match the standard form of a number to either its word form or its expanded form.
# Algebra • Properties

Properties of operations are characteristics of the operations that are always true.

<table>
<thead>
<tr>
<th>Property</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Commutative Property of Addition or Multiplication | Addition: $3 + 4 = 4 + 3$  
Multiplication: $8 \times 2 = 2 \times 8$ |
| Associative Property of Addition or Multiplication | Addition: $(1 + 2) + 3 = 1 + (2 + 3)$  
Multiplication: $6 \times (7 \times 2) = (6 \times 7) \times 2$ |
| Distributive Property                   | $8 \times (2 + 3) = (8 \times 2) + (8 \times 3)$                         |
| Identity Property of Addition           | $9 + 0 = 9$  
$0 + 3 = 3$                                  |
| Identity Property of Multiplication     | $54 \times 1 = 54$  
$1 \times 16 = 16$                             |

Use properties to find $37 + 24 + 43$.

$$37 + 24 + 43 = 24 + 37 + 43$$  
Use the **Commutative** Property of Addition to reorder the addends.  
$$= 24 + (37 + 43)$$  
Use the **Associative** Property of Addition to group the addends.  
$$= 24 + 80$$  
Use mental math to add.  
$$= 104$$

Grouping 37 and 43 makes the problem easier to solve because their sum, 80, is a multiple of 10.

Use properties to find the sum or product.

1. $31 + 27 + 29$  
2. $41 \times 0 \times 3$  
3. $4 + (6 + 21)$

Complete the equation, and tell which property you used.

4. $(2 \times \_\_\_) + (2 \times 2) = 2 \times (5 + 2)$  
5. $\_\_\_ \times 1 = 15$
Using Properties of Operations

First, use one of the properties shown below to complete each equation. Then, match each equation to its property by writing the equation on the line below the property.

\[
\begin{align*}
1 \times 17 &= \underline{\hspace{1cm}} & \underline{\hspace{1cm}} \times 11 &= 13 \times (8 \times 11) \\
9 \times (5 + 3) &= \underline{\hspace{1cm}} + (9 \times 3) & \underline{\hspace{1cm}} + 0 &= 49 \\
\underline{\hspace{1cm}} \times 29 &= 29 \times 3 & (7 + 6) + \underline{\hspace{1cm}} &= 7 + (6 + 25) \\
51 + \underline{\hspace{1cm}} &= 39 + 51 & \\
\end{align*}
\]

**Using Properties of Operations**

<table>
<thead>
<tr>
<th>Associative Property of Addition</th>
<th>Identity Property of Multiplication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Associative Property of Multiplication</td>
<td>Commutative Property of Addition</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Commutative Property of Multiplication</td>
<td>Distributive Property</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Identity Property of Addition</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**1. Stretch Your Thinking** Use the Distributive Property to rewrite and find \(4 \times (25 + 4)\).

**2. Write Math** Explain how the Associative Property of Addition is similar to the Associative Property of Multiplication.
Algebra • Powers of 10 and Exponents

You can represent repeated factors with a base and an exponent.

Write $10 \times 10 \times 10 \times 10 \times 10 \times 10$ in exponent form.

10 is the repeated factor, so 10 is the **base**.
The base is repeated 6 times, so 6 is the **exponent**.

$10 \times 10 \times 10 \times 10 \times 10 \times 10 = 10^6$

A base with an exponent can be written in words.

Write $10^6$ in words.
The exponent 6 means “the sixth power.”

$10^6$ in words is “the sixth power of ten.”

You can read $10^2$ in two ways: “ten squared” or “the second power of ten.”
You can also read $10^3$ in two ways: “ten cubed” or “the third power of ten.”

Write in exponent form and in word form.

1. $10 \times 10 \times 10 \times 10 \times 10 \times 10$
   - exponent form: ________  word form: __________________________

2. $10 \times 10 \times 10$
   - exponent form: ________  word form: __________________________

3. $10 \times 10 \times 10 \times 10 \times 10$
   - exponent form: ________  word form: __________________________

Find the value.

4. $10^4$
5. $2 \times 10^3$
6. $6 \times 10^2$

________________________  __________________________  __________________________
Powers and Words

Find the value. Then write the value in word form.

1. \(70 \times 10^3 = \) ______________
   Word form: ______________________________________

2. \(35 \times 10^2 = \) ______________
   Word form: ______________________________________

3. \(14 \times 10^3 = \) ______________
   Word form: ______________________________________

4. \(60 \times 10^7 = \) ______________
   Word form: ______________________________________

5. \(51 \times 10^4 = \) ______________
   Word form: ______________________________________

6. \(24 \times 10^5 = \) ______________
   Word form: ______________________________________

7. \(86 \times 10^6 = \) ______________
   Word form: ______________________________________

8. \(19 \times 10^7 = \) ______________
   Word form: ______________________________________

9. **Stretch Your Thinking** What is another way to write the number in Exercise 1 using a whole number and a power of 10?
You can use basic facts, patterns, and powers of 10 to help you multiply whole numbers by multiples of 10, 100, and 1,000.

Use mental math and a pattern to find $90 \times 6,000$.

- $9 \times 6$ is a basic fact. $9 \times 6 = 54$
- Use basic facts, patterns, and powers of 10 to find $90 \times 6,000$.

$9 \times 60 = (9 \times 6) \times 10^1$
   $= 54 \times 10^1$
   $= 54 \times 10$
   $= 540$

$9 \times 600 = (9 \times 6) \times 10^2$
   $= 54 \times 10^2$
   $= 54 \times 100$
   $= 5,400$

$9 \times 6,000 = (9 \times 6) \times 10^3$
   $= 54 \times 10^3$
   $= 54 \times 1,000$
   $= 54,000$

$90 \times 6,000 = (9 \times 6) \times (10 \times 1,000)$
   $= 54 \times 10^4$
   $= 54 \times 10,000$
   $= 540,000$

So, $90 \times 6,000 = 540,000$.

Use mental math to complete the pattern.

1. $3 \times 1 = 3$
   $3 \times 10^1 = \underline{\hspace{1cm}}$

2. $8 \times 2 = 16$
   $(8 \times 2) \times 10^1 = \underline{\hspace{1cm}}$

3. $4 \times 5 = 20$
   $(4 \times 5) \times \underline{\hspace{1cm}} = 200$

4. $7 \times 6 = \underline{\hspace{1cm}}$
   $(7 \times 6) \times \underline{\hspace{1cm}} = 420$

   $(4 \times 5) \times \underline{\hspace{1cm}} = 2,000$
   $(7 \times 6) \times \underline{\hspace{1cm}} = 4,200$

   $(4 \times 5) \times \underline{\hspace{1cm}} = 20,000$
   $(7 \times 6) \times \underline{\hspace{1cm}} = 42,000$
Product Pattern

Look at the pattern of the products below.

\[11 \times 11 = 121\]
\[12 \times 11 = 132\]
\[13 \times 11 = 143\]
\[14 \times 11 = 154\]

Use the pattern above to find the product.

1. \(15 \times 11 = \underline{\hspace{2cm}}\)
2. \(16 \times 11 = \underline{\hspace{2cm}}\)

3. \(17 \times 11 = \underline{\hspace{2cm}}\)
4. \(18 \times 11 = \underline{\hspace{2cm}}\)

5. \(150 \times 11 = \underline{\hspace{2cm}}\)
6. \(120 \times 11 = \underline{\hspace{2cm}}\)

7. \(170 \times 11 = \underline{\hspace{2cm}}\)
8. \(140 \times 11 = \underline{\hspace{2cm}}\)

9. **Stretch Your Thinking** How does the product \(110 \times n\) compare to the product \(11 \times n\)? (Hint: \(n\) represents any number.)
Multiply by 1-Digit Numbers

You can use place value to help you multiply by 1-digit numbers.

Estimate. Then find the product. $378 \times 6$

Estimate: $400 \times 6 = 2,400$

Step 1 Multiply the ones.

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>

$\times$ 6

$\_\_\_\_\_\_\_$

Step 2 Multiply the tens.

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

$\times$ 6

$\_\_\_\_\_\_\_$

Step 3 Multiply the hundreds.

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

$\times$ 6

$\_\_\_\_\_\_\_$

So, $378 \times 6 = 2,268$.

Complete to find the product.

1. $7 \times 472$

   Estimate: $7 \times \_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_$

   Multiply the ones.

   \[
   \begin{array}{c}
   472 \\
   \times 7 \\
   \hline
   \end{array}
   \]

   Multiply the tens.

   \[
   \begin{array}{c}
   1 \\
   \times 7 \\
   \hline
   \end{array}
   \]

   Multiply the hundreds.

   \[
   \begin{array}{c}
   51 \\
   \times 7 \\
   \hline
   \end{array}
   \]

Estimate. Then find the product.

2. Estimate:

   \[
   \begin{array}{c}
   863 \\
   \times 8 \\
   \hline
   \end{array}
   \]

3. Estimate:

   \[
   \begin{array}{c}
   809 \\
   \times 8 \\
   \hline
   \end{array}
   \]

4. Estimate:

   \[
   \begin{array}{c}
   932 \\
   \times 7 \\
   \hline
   \end{array}
   \]

5. Estimate:

   \[
   \begin{array}{c}
   2,767 \\
   \times 7 \\
   \hline
   \end{array}
   \]
Multiplication Number Puzzle

Use the clues to complete the puzzle.

**Down**
1. \(856 \times 9 \) _______
2. \(847 \times 6 \) _______
3. \(5,082 \times 3 \) _______
4. \(7,028 \times 6 \) _______
5. \(24,162 \times 8 \) _______
6. \(2,127 \times 6 \) _______
7. \(3,289 \times 5 \) _______
8. \(601 \times 6 \) _______

**Across**
5. \(12,762 \times 9 \) _______
6. \(287 \times 6 \) _______
7. \(1,326 \times 9 \) _______
9. \(4,027 \times 4 \) _______
10. \(4,027 \times 6 \) _______
11. \(7,028 \times 9 \) _______
13. \(1,722 \times 4 \) _______

14. **Stretch Your Thinking** Write a different clue that has the same product as \(1,326 \times 9\).
Multiply by Multi-Digit Numbers

You can use place value and regrouping to multiply.

Find $29 \times 63$.

Step 1 Write the problem vertically.
Multiply by the ones.

\[
\begin{array}{c}
2 \\
63 \\
\times 29 \\
\hline
567 \\
63 \times 9 = (60 \times 9) + (3 \times 9) \\
= 540 + 27, \text{ or } 567
\end{array}
\]

Step 2 Multiply by the tens.

\[
\begin{array}{c}
2 \\
63 \\
\times 29 \\
\hline
567 \\
63 \times 20 = (60 \times 20) + (3 \times 20) \\
= 1,200 + 60, \text{ or } 1,260
\end{array}
\]

Step 3 Add the partial products.

\[
\begin{array}{c}
63 \\
\times 29 \\
\hline
567 \\
1,260 \\
\hline
1,827
\end{array}
\]

So, $63 \times 29 = 1,827$.

Complete to find the product.

1. \[
\begin{array}{c}
57 \\
\times 14 \\
\hline
\quad 57 \times \underline{\quad} \\
+ \quad 57 \times \underline{\quad} \\
\hline
\end{array}
\]

2. \[
\begin{array}{c}
76 \\
\times 45 \\
\hline
\quad 76 \times \underline{\quad} \\
+ \quad 76 \times \underline{\quad} \\
\hline
\end{array}
\]

3. \[
\begin{array}{c}
139 \\
\times 12 \\
\hline
\quad 139 \times \underline{\quad} \\
+ \quad 139 \times \underline{\quad} \\
\hline
\end{array}
\]

4. Find $26 \times 122$. Estimate first.

\[
\begin{array}{c}
122 \\
\times 26 \\
\hline
\quad \underline{\quad} \\
\end{array}
\]

Estimate: \underline{\quad}
Unknown Digits Multiplication

Find the unknown digits.

1. \[
\begin{array}{c}
\phantom{6}4 \\
\times \phantom{6}8 \\
\hline
\phantom{6}4 \\
\phantom{6}8 \\
\hline
\end{array}
\]
\[
\begin{array}{c}
\phantom{6}2 \\
\phantom{6}7 \\
\phantom{6}2 \\
\hline
\phantom{6}2, \phantom{6}9 \\
\phantom{6}5 \\
\phantom{6}8 \\
\hline
\end{array}
\]

2. \[
\begin{array}{c}
6 \phantom{5}5 \\
\times \phantom{6}7 \\
\hline
5 \phantom{5}5 \\
\phantom{6}5 \\
\hline
5, \phantom{6}3 \\
\phantom{6}5 \\
\hline
\end{array}
\]

3. \[
\begin{array}{c}
9 \phantom{0}0 \\
\times \phantom{6}2 \phantom{4}4 \\
\hline
3 \phantom{8}4 \\
\phantom{1}2 \\
\hline
2, \phantom{0}0 \\
\phantom{6}4 \\
\hline
\end{array}
\]

4. \[
\begin{array}{c}
8 \phantom{0}0 \\
\times \phantom{6}6 \phantom{8}8 \\
\hline
6 \phantom{0}6 \\
\phantom{1}2 \\
\hline
5, \phantom{5}7 \\
\phantom{6}6 \\
\hline
\end{array}
\]

5. \[
\begin{array}{c}
5 \phantom{0}3 \\
\times \phantom{6}7 \\
\hline
3 \phantom{0}7 \\
\phantom{1}0 \\
\hline
\begin{array}{c}
\phantom{4}4, \phantom{9}9 \\
\hline
\end{array}
\]

6. \[
\begin{array}{c}
2 \phantom{4}6 \\
\times \phantom{6}3 \\
\hline
7 \phantom{0}0 \\
\phantom{1}9 \\
\hline
\phantom{19}6 \\
\phantom{0}0 \\
\hline
\begin{array}{c}
\phantom{4}9, \phantom{9}0 \\
\hline
\end{array}
\]

7. **Stretch Your Thinking** What two-digit number multiplied by itself has the product 2,025? **Explain** how you found your answer.

- 
- 
-
Relate Multiplication to Division

Use the Distributive Property to find the quotient of $56 \div 4$.

**Step 1**
Write a related multiplication sentence for the division problem.

$$56 \div 4 = \square$$

$$4 \times \square = 56$$

**Step 2**
Use the Distributive Property to break apart the product into lesser numbers that are multiples of the divisor in the division problem.
Use a multiple of 10 for one of the multiples.

$$(40 + 16) = 56$$

$$(4 \times 10) + (4 \times 4) = 56$$

$$(4 \times (10 + 4)) = 56$$

**Step 3**
To find the unknown factor, find the sum of the numbers inside the parentheses.

$$10 + 4 = 14$$

**Step 4**
Write the multiplication sentence with the unknown factor you found. Then, use the multiplication sentence to complete the division sentence.

$$4 \times 14 = 56$$

$$56 \div 4 = 14$$

Use multiplication and the Distributive Property to find the quotient.

1. $68 \div 4 = \square$
2. $75 \div 3 = \square$
3. $96 \div 6 = \square$

4. $80 \div 5 = \square$
5. $54 \div 3 = \square$
6. $105 \div 7 = \square$
Number Relationships

Find the unknown number in the group to make related multiplication and division sentences. Write the multiplication and division sentences.

1. **4, ?, 68**

2. **5, ?, 65**

3. **4, ?, 52**

4. **6, ?, 78**

5. **Write Math** Describe how the number sentences in each exercise are related.

6. **Stretch Your Thinking** How can you use inverse operations to write the related multiplication and division sentences?
Problem Solving • Multiplication and Division

In Brett’s town, there are 128 baseball players on 8 different teams. Each team has an equal number of players. How many players are on each team?

<table>
<thead>
<tr>
<th>Read the Problem</th>
<th>Solve the Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What do I need to find?</strong></td>
<td></td>
</tr>
<tr>
<td>I need to find how many players are on each team in Brett’s town.</td>
<td></td>
</tr>
<tr>
<td><strong>What information do I need to use?</strong></td>
<td></td>
</tr>
<tr>
<td>There are 8 teams with a total of 128 players.</td>
<td></td>
</tr>
<tr>
<td><strong>How will I use the information?</strong></td>
<td></td>
</tr>
<tr>
<td>I can divide the total number of players by the number of teams. I can use a simpler problem to divide.</td>
<td></td>
</tr>
</tbody>
</table>

- First, I use the total number of players. 128 players
- To find the number of players on each team, I will need to solve this problem. 128 ÷ 8 = ___?
- To find the quotient, I break 128 into two simpler numbers that are easier to divide.

128 ÷ 8 = (80 + 48) ÷ 8
= (80 ÷ 8) + (48 ÷ 8)
= 10 + 6
= 16

So, there are 16 players on each team.

1. Susan makes clay pots. She sells 125 pots per month to 5 stores. Each store buys the same number of pots. How many pots does each store buy?

   125 ÷ 5 = (100 + ___) ÷ 5
   = (100 ÷ 5) + (___ ÷ 5)
   = ___ + 5
   = ___

2. Lou grows 112 rosemary plants. He ships an equal number of plants to customers in 8 states. How many rosemary plants does he ship to each customer?

   112 ÷ 8 = (80 + ___) ÷ 8
   = (___ ÷ 8) + (___ ÷ 8)
   = ___ + 4
   = ___
Simply Put

Solve. You may find it helpful to use the strategy solve a simpler problem.

1. Sal’s Pizza uses 720 pounds of flour in 4 weeks. Sal’s is open 6 days a week and uses the same amount of flour each day. How much flour does Sal’s Pizza use in 1 day?

2. In one 8-hour day, 5 barbers gave a total of 120 haircuts. The barbers gave the same number of haircuts per hour. How many haircuts did each barber give per hour?

3. Dan runs Freddy’s Deluxe Car Wash. Nine workers wash a total of 369 cars in one week. Suppose the workers all wash the same number of cars. How many cars does each worker wash that week?

4. Ali sells tomatoes to 9 restaurants. Each restaurant buys the same amount of tomatoes each day. Suppose Ali sells 162 pounds of tomatoes one day. How many pounds does she sell to each restaurant?

5. Dr. Barker and two other dentists work in the same office. In one day, the three dentists saw a total of 51 patients. Suppose each dentist saw the same number of patients. How many patients did each dentist see?

6. Micah uses 2 bags of birdseed to fill up 4 bird feeders. How many bags will he need to fill up 40 feeders?

7. Stretch Your Thinking When is it helpful to use simpler numbers to solve a problem?
Write words to match the expression.

\[ 6 \times (12 - 4) \]

Think: Many word problems involve finding the cost of a store purchase.

Step 1 Examine the expression.

• What operations are in the expression? **multiplication and subtraction**

Step 2 Describe what each part of the expression can represent when finding the cost of a store purchase.

• What can multiplying by 6 represent? **buying 6 of the same item**

Step 3 Write the words.

• Joe buys 6 DVDs. Each DVD costs $12. If Joe receives a $4 discount on each DVD, what is the total amount of money Joe spends?

1. What is multiplied and what is subtracted?

2. What part of the expression is the price of the item?

3. What can subtracting 4 from 12 represent?

Write words to match the expression.

4. \[ 4 \times (10 - 2) \]

5. \[ 3 \times (6 - 1) \]
Shopping Expressions

The table shows the prices for certain items at a supermarket. Use the information in the table to write problems that match the expressions below.

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loaf of bread</td>
<td>$3</td>
</tr>
<tr>
<td>Carton of eggs</td>
<td>$2</td>
</tr>
<tr>
<td>Box of cereal</td>
<td>$4</td>
</tr>
<tr>
<td>Pound of cheese</td>
<td>$5</td>
</tr>
<tr>
<td>Gallon of milk</td>
<td>$3</td>
</tr>
<tr>
<td>Can of tuna fish</td>
<td>$2</td>
</tr>
</tbody>
</table>

Write a word problem for each expression. The first word problem has been written for you.

1. $7 - 3$
   Jerry has $7 to spend at the supermarket. He buys a loaf of bread for $3. How much money does Jerry have now?

2. $(5 \times 2) + 4$

3. $5 + (4 - 1)$

4. $20 - (6 \times 2)$
Algebra • Evaluate Numerical Expressions

A numerical expression is a mathematical phrase that includes only numbers and operation symbols. You evaluate the expression when you perform all the computations to find its value.

To evaluate an expression, use the order of operations.

Evaluate the expression \((10 + 6 \times 6) - 4 \times 10\).

Step 1 Start with computations inside the parentheses.

Step 2 Perform the order of operations inside the parentheses. Multiply and divide from left to right.

Step 3 Rewrite the expression with the parentheses evaluated.

Step 4 Multiply and divide from left to right.

Step 5 Add and subtract from left to right.

So, \((10 + 6 \times 6) - 4 \times 10 = 6\).

Evaluate the numerical expression.

1. \(8 - (7 \times 1)\)
2. \(5 - 2 + 12 \div 4\)
3. \(8 \times (16 \div 2)\)

4. \(4 \times (28 - 20 \div 2)\)
5. \((30 - 9 \div 3) \div 9\)
6. \((6 \times 6 - 9) - 9 \div 3\)

7. \(11 \div (8 + 9 \div 3)\)
8. \(13 \times 4 - 65 \div 13\)
9. \(9 + 4 \times 6 - 65 \div 13\)
### Order of Operations Game

Three players are playing a board game. Complete the exercises below, and move each player’s piece the same number of spaces as the answer for the unknown value. Circle the player who wins the game. Each black space counts as one space.

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
<th>Player 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ((50 - 2) \div 4 = )</td>
<td>(5 + 10 \div 5 = )</td>
<td>(108 \div (27 - 9) = )</td>
</tr>
<tr>
<td>2. ((343 - 5) \div 26 - 11 = )</td>
<td>((7 \times 7) \div (3 + 4) = )</td>
<td>(6 + 3 - 7 = )</td>
</tr>
<tr>
<td>3. ((55 - 1) \div 9 = )</td>
<td>(16 \times 3 \div (4 \times 6) = )</td>
<td>((64 \div 16) \times (11 - 6) = )</td>
</tr>
<tr>
<td>4. ((15 - 36 \div 4) + (9 \times 2) = )</td>
<td>(2 \times (3 + 51 \div 17) = )</td>
<td>(144 - (10 + 4 \times 5 \times 5) = )</td>
</tr>
<tr>
<td>5. ((64 + 6) \div (\underline{} \times 5) = 2)</td>
<td>(81 \div (\underline{} \div 4) = 9)</td>
<td>((4 \times \underline{}) - (1 + 8 \times 2) = 3)</td>
</tr>
</tbody>
</table>

#### 6. Stretch Your Thinking

A fourth player joins the game and is given an expression that moves the game piece directly to the second black space on the board. The expression has a division, a multiplication, and a subtraction operation. Write a possible expression.
Algebra • Grouping Symbols

Parentheses ( ), brackets [ ], and braces { }, are different grouping symbols used in expressions. To evaluate an expression with different grouping symbols, perform the operation in the innermost set of grouping symbols first. Then evaluate the expression from the inside out.

Evaluate the expression \(2 \times [(9 \times 4) - (17 - 6)]\).

**Step 1** Perform the operations in the **parentheses** first.

\[
2 \times [(9 \times 4) - (17 - 6)]
\]

\[
2 \times [36 - 11]
\]

**Step 2** Next perform the operations in the **brackets**.

\[
2 \times [36 - 11]
\]

\[
2 \times 25
\]

**Step 3** Then multiply.

\[
2 \times 25 = 50
\]

So, \(2 \times [(9 \times 4) - (17 - 6)] = 50\)

Evaluate the numerical expression.

1. \(4 \times [(15 - 6) \times (7 - 3)]\)
2. \(40 - [(8 \times 7) - (5 \times 6)]\)
3. \(60 \div [(20 - 6) + (14 - 8)]\)

\(4 \times [9 \times \underline{\quad \quad \quad \quad \quad \quad \quad}]\)

\(4 \times [\underline{\quad \quad \quad \quad \quad \quad \quad}]\)

---

4. \(5 + [(10 - 2) + (4 - 1)]\)
5. \(3 \times [(9 + 4) - (2 \times 6)]\)
6. \(32 \div [(7 \times 2) - (2 \times 5)]\)

---

Chapter Resources
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9. **Stretch Your Thinking** Two numbers are unknown in the expression below. If the value of the expression is 98, what are the unknown numbers? (Both numbers are greater than 0.)

\[ \square \times \{[(12 - 3) \times 3] + (\square \times 6) - 8\} \]
1. Find the property that each equation shows.

Write the equation in the correct box.

\[ 11 \times (4 \times 6) = (11 \times 4) \times 6 \]
\[ 14 + 27 + 18 = 27 + 14 + 18 \]
\[ 15 + (12 + 11) = (15 + 12) + 11 \]
\[ 18 \times 2 = 2 \times 18 \]
\[ 5 \times 1 = 5 \]
\[ 72 + 0 = 72 \]

Commutative Property of Multiplication
Associative Property of Addition
Identity Property of Addition
Commutative Property of Addition
Associative Property of Multiplication
Identity Property of Multiplication

2. For numbers 2a–2d, select True or False for each statement.

2a. 50 is \( \frac{1}{10} \) of 500.  
   - True  
   - False

2b. 290 is 10 times as much as 2,900.  
   - True  
   - False

2c. 6,500 is 10 times as much as 65.  
   - True  
   - False

2d. 700 is 10 times as much as 70.  
   - True  
   - False
3. Select other ways to write 304,672. Mark all that apply.

   A  \((3 \times 100,000) + (4 \times 1,000) + (6 \times 100) + (7 \times 10) + (2 \times 1)\)
   B  three hundred forty thousands, six hundred seventy-two
   C  300,000 + 4,000 + 600 + 70 + 2
   D  30 hundred thousand + 4 thousands + 6 hundreds + 70 tens + 2 ones

4. Erica earned 30,000 bonus points on her computer assignment. This is 10 times as many bonus points as she earned last week. How many bonus points did Erica earn last week?

   _______ points

5. Rich earns $35 per week mowing lawns in his neighborhood. Which expression can be used to show how much money he earns in 8 weeks?

   A  \((8 + 30) + (8 + 5)\)
   B  \((8 \times 30) + (8 \times 5)\)
   C  \((8 + 30) \times (8 + 5)\)
   D  \((8 \times 30) \times (8 \times 5)\)

6. The table shows the equations Mr. Berger discussed in math class today.

<table>
<thead>
<tr>
<th>Equations</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4 \times 10^0 = 4)</td>
</tr>
<tr>
<td>(4 \times 10^1 = 40)</td>
</tr>
<tr>
<td>(4 \times 10^2 = 400)</td>
</tr>
<tr>
<td>(4 \times 10^3 = 4,000)</td>
</tr>
</tbody>
</table>

Explain the pattern of zeros in the product when multiplying by powers of 10.
7. It is 1,325 feet from Kinsey’s house to her school. Kinsey walks to school each morning and gets a ride home each afternoon. How many feet does Kinsey walk to school in 5 days?

_______ feet

8. Liam saves $12 of his allowance each week. Complete the table to show the total amount Liam saves.

<table>
<thead>
<tr>
<th>Liam’s Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Weeks</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>15</td>
</tr>
</tbody>
</table>

9. Kara followed these steps to evaluate the expression $22 + (30 - 4) ÷ 2$.

$30 - 4 = 26$

$26 + 22 = 48$

$48 ÷ 2 = 24$

George looks at Kara’s work and says she made a mistake. He says she should have divided by 2 before she added.

Part A

Which student is correct? Explain how you know.

Part B

Evaluate the expression.
10. Fahed buys 12 stickers for $2 each. He also buys 4 sticker albums. Each album costs twice as much as each sticker. Fahed has a coupon that gives him $2 off the sticker albums. Which numerical expression shows how much he spent?

A  $(12 \times 2) + [(4 \times 2) - 2]$
B  $(12 \times 2) + [(4 \times 4) - 2]$
C  $(12 \times 4) + [(4 \times 4) - 2]$
D  $(12 \times 4) + [(4 \times 2) + 2]$

11. Evaluate the numerical expression.

$$(57 + 4) \times 4 - 16 = \phantom{0}$$

12. Paul displays his sports trophies on shelves in his room. He has 5 trophies on each of 3 shelves and 2 trophies on another shelf. Write an expression to represent the number of trophies Paul displays.

13. Veronica is solving this problem in math class.


Veronica writes a numerical expression to represent the situation. Her expression, $(12 - 3) \times 4$, has a mistake.

Part A

Explain Veronica’s mistake.

Part B

Write an expression to find how many bottles of water are left, and then solve it.
14. Hector has 36 action figures. He separates his action figures into 4 equal groups to share with his friends. How many action figures does each friend get?

**Part A**

Use the array to show your answer.

```

```

**Part B**

Use the multiplication sentence to complete the division sentence.

\[ 4 \times \square = 36 \quad 36 \div 4 = \square \]

15. Marcus is making dinner for 7 people. Marcus opens 6 cans of soup. Each can is 14 ounces. If everyone gets the same amount of soup, how much soup will each person get? Use numbers and words to explain your answer.

16. Megan wants to find the quotient. Use multiplication and the Distributive Property to help Megan find the quotient.

\[ 72 \div 4 = \square \]

**Multiplication**

**Distributive Property**
17. Marlene can type 157 words per minute. If she types at the same rate, how many words can she type in 25 minutes?

_____ words

18. There are 7 school buses taking students on a field trip. There are 37 students on each bus. How many students are going on the field trip?

_____ students

19. Select other ways to write 60,472. Mark all that apply.

A (6 × 10,000) + (4 × 100) + (7 × 10) + (2 × 1)
B 60,000 + 400 + 70 + 2
C sixty thousand, four hundred seventy-two
D six thousand, four hundred seventy-two

20. For numbers 20a–20b, select True or False.

20a. 42 − (9 + 6), value: 27  ○ True  ○ False
20b. 18 + (22 − 4) ÷ 6, value: 6  ○ True  ○ False

21. Peter ran 3 miles a day for 17 days. On the 18th day, Peter ran 5 miles. Write an expression that matches the words.

22. Select other ways to express $10^4$. Mark all that apply.

A $10 \times 4$  D $10,000$
B $10 + 4$  E $10 + 10 + 10 + 10$
C $1,000$  F $10 \times 10 \times 10 \times 10$
Talking About Phones

1. The Vega family has a cell phone plan that costs $75 per month including taxes and fees. The plan lets the 5 members of the Vega family share 1,000 minutes of talk time per month and 400 text messages per month. Any minutes over 1,000 cost $1 per minute, and any texts over 400 cost $2 per text.

Because of a family emergency, the family uses 1,050 minutes and 415 texts in March. Write an expression you could use to find the amount of the Vega’s cell phone bill for March. Evaluate the expression. Show your work.

The Vega’s bill for March is ________.

2. Tomás Vega offers to pay $59 of the March cell phone bill. Each of the other 4 members of the family agrees to split the rest of the bill equally among themselves. How much does each of the 4 family members owe? Show your work.

Each of the 4 family members owes ________.
3. The Vega family has a 3-year cell phone contract. Javier Vega says that the family gets a total of \(3 \times 10^4\) minutes of talk time to share during the 3 years.

Is Javier correct? If yes, write an expression to show how Javier could have found his answer. If no, explain why Javier is incorrect. Write the correct number of minutes as the product of a whole number and a power of 10. Show your work.

4. In April, the Vega family gets 400 text messages included in their plan. Together, Tomás and Marisol use half of the messages. Javier and Sergio use 120 messages. Carmen uses the rest of the messages. Write and evaluate an expression to find the number of messages Carmen uses. Show your work.

Carmen uses ___________ messages.
Place Value, Multiplication, and Expressions

Talking About Phones

COMMON CORE STANDARDS

5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

5.OA.A.2 Write simple expressions that record calculations with numbers, and interpret numerical expression without evaluating them.

MP1 Make sense of problems and persevere in solving them.

Also 5.NBT.A.1, 5.NBT.B.5, 5.NBT.B.6, 5.OA.A.1, MP3, MP6

PURPOSE

To assess the ability to use place value, multiplication, and expressions to represent and solve problems

TIME

25–30 minutes

GROUPING

Individuals

MATERIALS

• Performance Task, paper, pencil

PREPARATION HINTS

• Review multiplication with students before assigning the task.
• Review vocabulary, including evaluate, order of operation, and power.

IMPLEMENTATION NOTES

• Read the task aloud to students and make sure that all students have a clear understanding of the task.
• Students may use manipulatives to complete the task.
• Allow students as much paper as they need to complete the task.
• Allow as much time as students need to complete the task.
• Students must complete the task individually, without collaboration.
• Collect all student work when the task is complete.

TASK SUMMARY

Students write and evaluate expressions with grouping symbols to determine the cost of a family’s cell phone bill and the amounts owed by family members. They critique a mathematical statement and use a multiplication expression using powers of 10 to justify their critique.
REPRESENTATION
In this task, teachers can…
• Use both verbal and visual representations of the order of operations to introduce the task.

ACTION and EXPRESSION
In this task, teachers can…
• Provide access to online interactive tools to support multiplication skills before assigning
  the task.
• Support students in setting explicit goals for completion of the task.

ENGAGEMENT
In this task, teachers can…
• Vary the level of social interaction required to discuss the task before it is completed.
• Reduce stress by scheduling a regular time to work on the task.

EXPECTED STUDENT OUTCOMES
• Complete the task within the time allowed
• Reflect engagement in a productive struggle
• Write and evaluate expressions with grouping symbols
• Critique a mathematical statement using powers of 10

SCORING
Use the associated Rubric to evaluate each student’s work.
## Performance Task Rubric

<table>
<thead>
<tr>
<th>A level 3 response</th>
<th>A level 2 response</th>
<th>A level 1 response</th>
<th>A level 0 response</th>
</tr>
</thead>
</table>
| • Indicates that the student has made sense of the task and persevered  
  • Demonstrates the ability to write and evaluate expressions with grouping symbols to solve word problems  
  • Demonstrates the ability to write multiples of 10 as products of a whole number and a power of 10 | • Indicates that the student has made sense of the task and persevered  
  • Demonstrates the ability to write and evaluate expressions with grouping symbols to solve word problems  
  • Demonstrates the ability to write a multiple of 10 as the product of a whole number and a power of 10  
  • Addresses most or all aspects of the task, using mathematically sound procedures  
  • May contain an incorrect answer derived from a correct procedure | • Shows that the student has made sense of at least some components of the task  
  • Shows evidence of uneven ability to write and evaluate expressions with grouping symbols to solve word problems  
  • May show difficulty with writing a multiple of 10 as the product of a whole number and a power of 10 | • Shows little evidence that the student has made sense of the task  
  • Shows little evidence of ability to write and evaluate expressions with grouping symbols to solve word problems  
  • Shows an inability to write a multiple of 10 as the product of a whole number and a power of 10  
  • Shows little evidence of adequately addressing the components of the task  
  • Shows little evidence of applying mathematics correctly or appropriately to the situation |
Write the correct answer.

1. An office supply store sold 310,409 pencils last year. What is the expanded form of 310,409?
   \[300,000 + 10,000 + 400 + 9\]

2. The population of Yuba City, California is 60,360 people. What is 60,360 rounded to the nearest thousand?
   \[60,000\]

3. Last year, the local animal shelter found homes for 12,308 dogs and 7,953 cats. What is the total number of dogs and cats the animal shelter found homes for last year?
   \[20,261\text{ dogs and cats}\]

4. The area of South Dakota is 77,353 square miles. The area of North Dakota is 70,700 square miles. How many square miles greater is the area of South Dakota than the area of North Dakota?
   \[6,653\text{ square miles}\]

5. Juan wrote this pattern on his paper.
   \[3 \times 6 = 18\]
   \[3 \times 60 = 180\]
   \[3 \times 600 = 1,800\]
   \[3 \times 6,000 = \square\]
   What is the unknown number in Juan’s pattern?
   \[18,000\]

6. James uses the Distributive Property to find how many cans of paint are in the art supply closet. There are 5 boxes in the closet. Each box holds 14 cans.
   \[10 \times 4 = \square\]
   How many cans of paint are in the closet?
   \[70\text{ paint cans}\]

7. Ling’s parents buy 4 tickets for the nature museum. Each ticket costs $13. What is the total cost of the 4 tickets?
   \[\$52\]

8. The theater has 1,678 seats. A magician performed 3 sold out shows at the theater. How many people were able to see the magician’s show?
   \[5,034\text{ people}\]

9. Erin has 4 bags with 19 marbles in each bag. She also has 7 bags with 14 marbles in each bag. She gives 23 marbles to her brother. She wrote this expression to find how many marbles she has left. How many marbles does Erin have left?
   \[4 \times 19 + 7 \times 14 - 23\]
   \[151\text{ marbles}\]

10. Risley’s Restaurant charges $12 for a spaghetti dinner special. During one hour 16 people ordered the spaghetti dinner special.
   \[\$192\]

11. Anya used buttons to model a division problem.
   \[15 \div 2 = \square\]
The division problem this model represents is \[15 \div 2\]
The quotient is \[7\] and the remainder is \[1\].

12. The Distributive Property can help you divide. Show how you can break apart the dividend to find the quotient for \[224 \div 7\].
   \[\text{Possible answer:}\]
   \[(210 \div 7) + (14 \div 7) = 30 + 2 = 32\]
13. On Saturday, a total of 1,292 people went to see a new movie. There were 4 different showings for the new movie and the same number of people attended each showing. How many people attended each showing?

323 people

14. A dentist bought 9 bags of prizes for his patients. Each bag had 12 prizes. The prizes were divided equally among 3 boxes. How many prizes were in each box?

36 prizes

15. Rylee is learning about prime numbers in math class. Her friend asked her to name all the prime numbers between 10 and 20. What numbers should Rylee name?

11, 13, 17, 19

16. Cassie wrote some numbers in a number pattern.

14, 17, 12, 15, 10, 13, 8, 11

What should be the next number in her pattern?

6

17. Mrs. Dalton needs \( \frac{1}{2} \) cup mixed nuts for her granola recipe. She only has a \( \frac{1}{4} \) cup measuring cup. Write the equivalent fraction that shows the amount of mixed nuts she will use for the recipe.

2 cups

18. Michael is practicing the piano. He spends \( \frac{1}{2} \) hour practicing scales and \( \frac{1}{4} \) hour practicing the piece for his recital. What is a common denominator for \( \frac{1}{2} \) and \( \frac{1}{4} \)?

Possible answer: 4

19. Julia and Sam rode their bikes on the bike path. Julia rode her bike \( \frac{3}{4} \) of the path’s distance. Sam rode his bike \( \frac{3}{8} \) of the path’s distance. Compare the distances using <, >, or =.

Possible answers: \( \frac{3}{10} < \frac{4}{8} \) or \( \frac{4}{8} > \frac{3}{10} \)

20. Ali needs \( \frac{9}{10} \) yard of red ribbon and \( \frac{5}{6} \) yard of blue ribbon to make a tail for her kite. How much ribbon does Ali need in all?

\( \frac{9}{10} \) yard

21. Bryan brought \( \frac{3}{8} \) gallon of water on a hiking trip. He drank \( \frac{2}{5} \) gallon of water. How much water is left?

\( \frac{4}{10} \) gallon or \( \frac{2}{5} \) gallon

22. Lily has two kittens. One kitten weighs \( \frac{3}{10} \) pound. The other kitten weighs \( \frac{5}{16} \) pound. What is the difference in the weights of the two kittens?

\( \frac{3}{16} \) pound

23. Jamie put \( 2 \frac{3}{8} \) pounds of green apples into a bag. He then added \( 3 \frac{1}{2} \) pounds of red apples into the same bag. What is the total weight of the apples in the bag?

Possible answer: \( 5 \frac{5}{8} \) pounds

24. Mrs. Laska buys \( 4 \frac{5}{8} \) yards of blue fabric and \( 2 \frac{1}{8} \) yards of green fabric. How many more yards of blue fabric than green fabric does Mrs. Laska buy?

Possible answer: \( 2 \frac{4}{8} \) yards

25. In Crosby’s model collection, \( \frac{5}{16} \) of the models are trains and \( \frac{7}{16} \) of the models are cars. What part of Crosby’s model collection is trains and cars?

Possible answer: \( \frac{12}{16} \) of the collection is trains and cars

26. Leo walks his dog \( \frac{7}{8} \) mile. He walks his dog 3 times a day. How far does Leo walk his dog every day? Show how you can use repeated addition to solve.

\( \frac{7}{8} + \frac{7}{8} + \frac{7}{8} = \frac{21}{8} \) miles, or \( 2 \frac{3}{8} \) miles
27. On Tuesday, Lilly spent $\frac{1}{2}$ hour working on her science fair project. Ben worked 3 times as long on his science fair project as Lilly did. How much time did Ben spend on his science fair project?

\[ \frac{3}{4} \text{ hour} \]

28. It takes Akio’s family 2 $\frac{1}{2}$ hours to drive from their home to the beach. It takes his family 3 times as long to drive to the mountains as it takes to drive to the beach. How long does it take Akio’s family to drive from their home to the mountains?

\[ 7\frac{1}{2} \text{ hours} \]

29. The stout infant fish is one of the world’s smallest fish. It is only about 8.4 millimeters long. What is this length written as a decimal?

\[ 8.4 \text{ millimeters} \]

30. The distance from Davina’s house to her school is 2 $\frac{7}{8}$ miles. What is this distance written as a decimal?

\[ 2.75 \text{ miles} \]

31. Jill buys a tomato that weighs 0.9 pound. Write the weight of the tomato as a fraction with a denominator of 100.

\[ \frac{90}{100} \text{ pound} \]

32. Use $<$, $>$, or $=$ to compare 0.36 and 0.4.

Possible answers: $0.36 < 0.4$ or $0.4 > 0.36$

33. Henry draws an obtuse triangle. How many obtuse angles does Henry’s triangle have?

\[ 1 \text{ obtuse angle} \]

34. What term best describes the lines shown?

Parallel

35. Tyler uses craft sticks to make a quadrilateral like the one shown. Tell whether she made a trapezoid, parallelogram, rhombus, rectangle, or square.

Trapezoid

36. A puppy weighs 3 pounds.

What is the puppy’s weight in ounces?

\[ 48 \text{ ounces} \]

37. The line plot shows the lengths of some leaves Madison collected on a hike.

How many leaves were longer than $\frac{3}{8}$ inch?

\[ 7 \text{ leaves} \]

38. A piece of ribbon is 86 cm long.

Using the information in the chart, find the length of the ribbon in meters.

Possible answers: $0.86$ meter or $\frac{86}{100}$ meter or $0.43$ meter

39. Mr. Rourke is 5 feet 8 inches tall. How tall is Mr. Rourke in inches?

\[ 68 \text{ inches} \]

40. Greta wants to put ribbon around the perimeter of her art project. How many centimeters of ribbon will she need?

\[ 50 \text{ centimeters} \]
1. Judith has a necklace with a mass of 65.736 grams. What is the mass of her necklace rounded to the nearest tenth?
   A. 65.7 grams
   B. 65.74 grams
   C. 65.8 grams
   D. 66.0 grams

2. The post office is 3.56 kilometers from Maria's house and 1.38 kilometers from Simon's house. How much farther does Maria live from the library than Simon?
   A. 4.94 kilometers
   B. 2.28 kilometers
   C. 2.18 kilometers
   D. 1.18 kilometers

3. Crystal's tomato plant was 32.65 centimeters tall in June. During July, the plant grew 82.6 centimeters. How tall was Crystal's tomato plant at the end of July?
   A. 409.1 centimeters
   B. 155.25 centimeters
   C. 49.95 centimeters
   D. 40.91 centimeters

4. Rick and Chad are playing a number pattern game. Rick wrote the following pattern.
   32.3, 34.5, 36.7, ____, 41.1
   What is the unknown number in the pattern Rick wrote?
   A. 37.9
   B. 38.8
   C. 39.9
   D. 39.9

5. Yolanda read her book for 1 1/5 hours Monday evening and for 2 3/5 hours on Tuesday evening. Which is the best estimate of the time Yolanda read on Monday and Tuesday?
   A. about 1 1/2 hours
   B. about 3 hours
   C. about 3 1/2 hours
   D. about 4 hours

6. Francine has a piece of wood that is 5 5/12 feet long. She uses 3 1/4 feet of the wood for a science project. How much wood does Francine have left?
   A. 8 5/12 feet
   B. 3 2/12 feet
   C. 2 4/12 feet
   D. 2 2/12 feet

7. Kevin has 3 bags of apples weighing a total of 22 1/2 pounds. Two of the bags weigh 6 3/8 pounds and 3 1/4 pounds. How much does the third bag weigh?
   A. 11 7/8 pounds
   B. 12 4/8 pounds
   C. 12 7/8 pounds
   D. 13 5/8 pounds

8. Aisha hiked each day for a week. The first day she hiked 1/6 mile, the second day she hiked 1/6 mile, and the third day she hiked 5/6 mile. By how much did she increase the distance she hiked each day?
   A. 9/6 miles
   B. 5/6 mile
   C. 1/3 mile
   D. 1/3 mile

9. A corn muffin recipe calls for 1/3 cup of cornmeal and 1/4 cup of flour. What is the least common denominator of the fractions?
   A. 6
   B. 12
   C. 18
   D. 24

10. On a coordinate grid, Carrie's house is located 3 blocks to the right and 4 blocks up from (0, 0). Mike's house is located 2 blocks to the left and 2 blocks down from Carrie's house. What ordered pair describes the location of Mike's house?
    A. (1, 5)
    B. (2, 1)
    C. (1, 2)
    D. (5, 2)
11. What is the unknown number in Sequence 2 in the chart?

<table>
<thead>
<tr>
<th>Sequence Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>6</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence 1</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>Sequence 2</td>
<td>12</td>
<td>24</td>
<td>36</td>
<td>72</td>
<td>?</td>
</tr>
</tbody>
</table>

A 64  
B 80  
C 96  
D 106

12. What is the unknown number in Sequence 2 in the chart?

A 64  
B 80  
C 96  
D 106

13. A baker is weighing the dough that will be used to make pastries. The line plot shows the weight of the dough for each pastry.

How many pastries will be made from at least \( \frac{3}{8} \) pound of dough?

A 4  
B 7  
C 8  
D 9

14. Marvin is buying a new computer on layaway for $302. If he makes a down payment of $50 and pays $28 each week, how many weeks will it take Marvin to pay for the computer?

A 8  
B 9  
C 10  
D 12

15. Mary drew a picture of her flower garden.

What type of quadrilateral is Mary’s garden?

A rectangle  
B rhombus  
C square  
D trapezoid

16. Dmitri made a box with the dimensions shown to hold his modeling supplies.

What is the volume of the box?

A 8 cubic feet  
B 14 cubic feet  
C 16 cubic feet  
D 18 cubic feet

17. The sidewalk tiles leading to the town library are shaped like regular hexagons. Which of the following describes a regular hexagon?

A a figure with 6 congruent sides and 6 congruent angles  
B a figure with 6 sides and angles that are not congruent  
C a figure with 5 sides and 5 angles that are not congruent  
D a figure with 5 congruent sides and 5 congruent angles

18. A toy box in the shape of a rectangular prism has a volume of 672 cubic inches. The base area of the toy box is 28 square inches. What is the height of the toy box?

A 10 inches  
B 12 inches  
C 22 inches  
D 24 inches

19. A pizza parlor uses 42 tomatoes for each batch of tomato sauce. About how many batches of sauce can the pizza parlor make from its last shipment of 1,236 tomatoes?

A 20  
B 30  
C 35  
D 48
20. The art teacher has a list of 134 students who have signed up for art classes. The art teacher can register 8 students in each class. What is the least number of classes needed for all the students to be registered in a class?
A 16  B 17  C 18  D 19

21. The number of roses Mr. Adams ordered for his store was three times as many as the number of carnations ordered. He ordered a total of 56 flowers. How many roses did Mr. Adams order?
A 14  B 28  C 34  D 42

22. The owner of a clothing store received a shipment of 1,230 pairs of socks. The socks came in 36 boxes. The same number of pairs of socks were in 35 of the boxes. How many pairs of socks were in the last box?
A 2  B 5  C 15  D 35

23. Jared uses 24 tiles to cover the top of his desk. Of the 24 tiles, \( \frac{3}{8} \) are blue. How many of the tiles are blue?
A 3  B 8  C 9  D 12

24. Tony worked \( 4 \frac{2}{3} \) hours on his science project. Sonia worked \( 1 \frac{1}{2} \) times as long on her science project as Tony did. For how many hours did Sonia work on her science project?
A \( 4 \frac{2}{3} \) hours  B \( 5 \) hours  C \( 5 \frac{1}{2} \) hours  D \( 5 \frac{5}{6} \) hours

25. Julia had \( \frac{2}{3} \) quart of cleaning liquid. She used \( \frac{1}{2} \) of it to clean the sink counter. How much cleaning liquid did Julia use?
A \( \frac{1}{8} \) quart  B \( \frac{1}{6} \) quart  C \( \frac{1}{4} \) quart  D \( \frac{5}{12} \) quart

26. Carlos had 24 class play tickets to sell. He sold \( \frac{3}{4} \) of the tickets. How many tickets did Carlos sell?
A 16  B 18  C 24  D 26

27. Noreen made \( 8 \frac{2}{3} \) cups of snack mix for a party. Her guests ate \( \frac{2}{3} \) of the mix. How much snack mix did her guests eat?
A \( 5 \frac{1}{3} \) cups  B \( 5 \frac{1}{2} \) cups  C \( 6 \frac{5}{12} \) cups  D \( 6 \frac{1}{2} \) cups

28. Ganesh is stacking boxes in a storage room. There are 12 boxes in all. If each box weighs 9.6 pounds, how much do the boxes weigh altogether?
A 11.25 pounds  B 21.6 pounds  C 115.2 pounds  D 1,152 pounds

29. The instruction booklet for a DVD player says that the player uses about 0.4 kilowatt of electricity per hour. If electricity costs $0.20 per kilowatt hour, how much does it cost to run the player for an hour?
A $0.08  B $0.80  C $8.00  D $80.00

30. Rhianna was doing research for a report about the highest mountains in the United States. She read that the Grand Teton in Wyoming is about \( 1.37 \times 10^4 \) feet high. How should Rhianna write the height of the Grand Teton in standard form on her report?
A 137 feet  B 1,370 feet  C 13,700 feet  D 137,000 feet
31. Jeremy is training for a race. When he trains, he runs on a path that is 1.25 miles long. Last week, Jeremy ran on the path 7 times. How many miles did Jeremy run on the path last week?
   A. 0.875 mile  
   B. 8.75 miles  
   C. 87.5 miles  
   D. 875 miles

32. There is 1/3 pound of cake that will be shared equally among 4 friends. What fraction of a pound of cake will each friend get?
   A. 1/12 pound  
   B. 1/6 pound  
   C. 1/2 pound  
   D. 3/4 pound

33. At lunch, 5 friends share 3 pizzas equally. What fraction of a pizza does each friend get?
   A. 3/5  
   B. 2/3  
   C. 3/4  
   D. 1 1/5

34. Julie has 3/4 quart of fruit juice. She pours the same amount into each of 4 glasses. Which equation represents the fraction of a quart of fruit juice that is in each glass?
   A. 3/4 ÷ 1/4 = n  
   B. 4 ÷ 3/4 = n  
   C. 3/4 ÷ 4 = n  
   D. 3 ÷ 4 = n

35. Terry evaluates $6 - \frac{1}{2}$ by using a related multiplication expression. Which multiplication expression should he use?
   A. $6 \times \frac{1}{3}$  
   B. $\frac{1}{6} \times \frac{1}{8}$  
   C. $\frac{1}{6} \times 8$  
   D. $6 \times 8$

36. Eli made a loaf of bread. He gave equal portions of 3/2 of the loaf to 3 friends. What diagram could Eli use to find the fraction of the whole loaf of bread that each friend got?
   A. 
   B. 
   C. 
   D. 

37. Lori rode her bicycle 19.5 miles in 3 hours. Which gives the best estimate of how far Lori rode in 1 hour?
   A. between 4 and 5 miles  
   B. between 5 and 6 miles  
   C. between 6 and 7 miles  
   D. between 7 and 8 miles

38. Roger is riding in a bike-a-thon to raise money for his favorite charity. The total distance of the bike-a-thon is 38.7 miles. So far, he has completed 1/10 of the bike-a-thon. How many miles has Roger biked?
   A. 38.7 miles  
   B. 3.87 miles  
   C. 0.387 mile  
   D. 0.387 mile

39. Ellen is making small bags of confetti from a large bag of confetti that weighs 4.75 pounds. If she puts the same amount of confetti in each of 5 bags, how much should each bag weigh?
   A. 0.09 pound  
   B. 0.9 pound  
   C. 0.95 pound  
   D. 9.1 pounds

40. Trevor bought apples that cost $0.92 per pound. He paid $5.52 for the apples. How many pounds of apples did he buy?
   A. 60 pounds  
   B. 6 pounds  
   C. 0.6 pound  
   D. 0.06 pound
41. Carly spent a total of $18.20 on Saturday afternoon. She bought a movie ticket for $8.25 and snacks for $3.85. How much was the bus fare each way if each trip cost the same amount?

A $2.20  
B $3.05  
C $6.10  
D $6.20

42. A publisher reports that it sold 1,516,792 travel magazines. What is the value of the digit 5 in 1,516,792?

A $2,000  
B $50,000  
C $500,000  
D $5,000,000

43. Martin is buying 400 video games for his entertainment store. Each video game costs $20. Which of the following could he use to find the total amount he will pay for the video games?

A \((4 \times 2) \times 10^2 = 800\)  
B \((4 \times 2) \times 10^3 = 8,000\)  
C \((4 \times 2) \times 10^4 = 80,000\)  
D \((4 \times 2) \times 10^5 = 800,000\)

44. Jamie’s dad travels 365 miles every week for business. How many miles does he travel in 4 weeks?

A 1,260 miles  
B 1,360 miles  
C 1,450 miles  
D 1,460 miles

45. Amber and her friend Nathan are saving to buy a video game that costs $65. Amber earns $12 per week for babysitting and spends $4 of it. Nathan earns $15 per week for walking dogs and spends $8 of it. Which expression can be used to find how many weeks it will take to save for the video game?

\[65 \div [(12 - 4) + (15 - 8)]\]  
\[65 \div [(12 + 4) + (15 - 8)]\]  
\[65 \div [(12 - 4) + (15 + 8)]\]  
\[65 \div [(12 + 4) - (15 - 8)]\]

46. Chen took 54 photos with his digital camera. He stored an equal number of photos in each of 6 folders on his computer. Which multiplication sentence could Chen use to find the number of photos in each folder?

A \(54 \div 6 = 9\)  
B \(5 \times 9 = 45\)  
C \(6 \times 9 = 54\)  
D \(6 \times 54 = 324\)

47. Rachel’s home is 5 miles from her school. How many yards are in 5 miles?

A 1,760 yards  
B 7,800 yards  
C 8,800 yards  
D 26,400 yards

48. Sarah bought 6 pounds of clay for pottery class. How many ounces of clay did Sarah buy?

A 48 ounces  
B 64 ounces  
C 80 ounces  
D 96 ounces

49. The basketball game at the high school started at 7:30 P.M. and ended at 10:38 P.M. How long did the game last?

A 2 hours 8 minutes  
B 2 hours 18 minutes  
C 3 hours 8 minutes  
D 3 hours 18 minutes

50. Kate used 6.15 meters of ribbon to make bows. How many centimeters of ribbon did she use?

A 615 centimeters  
B 61.5 centimeters  
C 6.15 centimeters  
D 0.615 centimeter
3. Select other ways to write 304,672. Mark all that apply.

- (3 × 100,000) + (4 × 1,000) + (6 × 100) + (7 × 10) + (2 × 1)
- three hundred forty thousands, six hundred seventy-two
- 300,000 + 4,000 + 600 + 70 + 2
- 30 hundred thousand + 4 thousands + 6 hundreds + 70 tens + 2 ones

4. Erica earned 30,000 bonus points on her computer assignment. This is 10 times as many bonus points as she earned last week. How many bonus points did Erica earn last week?

5. Rich earns $35 per week mowing lawns in his neighborhood. Which expression can be used to show how much money he earns in 8 weeks?

- (8 × 30) + (8 × 5)
- (8 × 30) × (8 × 5)

6. The table shows the equations Mr. Berger discussed in math class today.

<table>
<thead>
<tr>
<th>Equations</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 × 10^3 = 4</td>
<td></td>
</tr>
<tr>
<td>4 × 10 = 40</td>
<td></td>
</tr>
<tr>
<td>4 × 10^3 = 400</td>
<td></td>
</tr>
<tr>
<td>4 × 10^3 = 4,000</td>
<td></td>
</tr>
</tbody>
</table>

Explain the pattern of zeros in the product when multiplying by powers of 10.

Possible explanation: For each power of ten, the number of zeros written after the base is the same as the number in the exponent.
7. It is 1,325 feet from Kinsey’s house to her school. Kinsey walks to school each morning and gets a ride home each afternoon. How many feet does Kinsey walk to school in 5 days?

6,625 feet

8. Liam saves $12 of his allowance each week. Complete the table to show the total amount Liam saves.

<table>
<thead>
<tr>
<th>Number of Weeks</th>
<th>Total Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>$48</td>
</tr>
<tr>
<td>9</td>
<td>$108</td>
</tr>
<tr>
<td>15</td>
<td>$180</td>
</tr>
</tbody>
</table>

9. Kara followed these steps to evaluate the expression $22 + (30 - 4) ÷ 2$

30 - 4 = 26
26 + 22 = 48
48 ÷ 2 = 24

George looks at Kara’s work and says she made a mistake. He says she should have divided by 2 before she added.

Part A
Which student is correct? Explain how you know.

George; Possible answer: According to the order of operations, you should perform division before addition.

Part B
Evaluate the expression.

$30 - 4 = 26$
$26 ÷ 2 = 13$
$22 + 13 = 35$

10. Fahed buys 12 stickers for $2 each. He also buys 4 sticker albums. Each album costs twice as much as each sticker. Fahed has a coupon that gives him $2 off the sticker albums. Which numerical expression shows how much he spent?

A. $(12 \times 2) + [(4 \times 2) - 2]
B. $(12 \times 2) + [(4 \times 4) - 2]
C. $(12 \times 4) + [(4 \times 4) - 2]
D. $(12 \times 2) + [(4 \times 2) + 2]

11. Evaluate the numerical expression.

$(57 + 4) \times 4 - 16 = 228$

12. Paul displays his sports trophies on shelves in his room. He has 5 trophies on each of 3 shelves and 2 trophies on another shelf. Write an expression to represent the number of trophies Paul displays.

$(5 \times 3) + 2$

13. Veronica is solving this problem in math class.

Janelle buys 4 cases of water. Each case of water contains 12 bottles. Janelle drinks 3 bottles of water. Veronica writes a numerical expression to represent the situation. Her expression, $(12 - 3) \times 4$, has a mistake.

Part A
Explain Veronica’s mistake.

Possible explanation: Veronica subtracted 3 from 12 when she should have multiplied $12 \times 4$ and then subtracted 3 from this amount.

Part B
Write an expression to find how many bottles of water are left, and then solve it.

$(12 \times 4) - 3 = 45$
14. Hector has 36 action figures. He separates his action figures into 4 equal groups to share with his friends. How many action figures does each friend get?

Part A
Use the array to show your answer.

Part B
Use the multiplication sentence to complete the division sentence.

15. Marcus is making dinner for 7 people. Marcus opens 6 cans of soup. Each can is 14 ounces. If everyone gets the same amount of soup, how much soup will each person get? Use numbers and words to explain your answer.

12 ounces; Possible explanation: First, I multiply $6 \times 14 = 84$ to find the total number of ounces of soup. Then, I divide $84 \div 7 = 12$. So, each person gets 12 ounces of soup.

16. Megan wants to find the quotient. Use multiplication and the Distributive Property to help Megan find the quotient.

$72 \div 4 = 18$

Multiplication

$4 \times 18 = 72$

Distributive Property

$(4 \times 10) + (4 \times 8)$

17. Marlene can type 157 words per minute. If she types at the same rate, how many words can she type in 25 minutes?

3,925 words

18. There are 7 school buses taking students on a field trip. There are 37 students on each bus. How many students are going on the field trip?

259 students

19. Select other ways to write 60,472. Mark all that apply.

A $(6 \times 10,000) + (4 \times 100) + (7 \times 10) + (2 \times 1)$

B $60,000 + 400 + 70 + 2$

C sixty thousand, four hundred seventy-two

D six thousand, four hundred seventy-two

20. For numbers 20a–20b, select True or False.

20a. $42 - (9 + 6)$, value: 27

True

20b. $18 + (22 - 4) + 6$, value: 6

False

21. Peter ran 3 miles a day for 17 days. On the 18th day, Peter ran 5 miles. Write an expression that matches the words.

$(3 \times 17) + 5$

22. Select other ways to express $10^4$. Mark all that apply.

A $10 \times 4$

$10,000$

B $10 + 4$

$10 + 10 + 10 + 10$

C $1,000$

$10 \times 10 \times 10 \times 10$
**Talking About Phones**

1. The Vega family has a cell phone plan that costs $75 per month including taxes and fees. The plan lets the 5 members of the Vega family share 1,000 minutes of talk time per month and 415 texts per month. Any minutes over 1,000 cost $1 per minute, and any texts over 400 cost $2 per text. Because of a family emergency, the family uses 1,050 minutes and 415 texts in March. Write an expression you could use to find the amount of the Vega’s cell phone bill for March. Evaluate the expression. Show your work.

$$150 + 75 \times 50 + 15 \times 200 = 150 + 75 \times 1000 + 415 \times 200$$

The Vega’s bill for March is $155.00.

2. Tomás Vega offers to pay $59 of the March cell phone bill. Each of the other 4 members of the family agrees to split the rest of the bill equally among themselves. How much does each of the 4 family members owe? Show your work.

$$155.00 - 59.00 = 96.00$$

Each of the 4 family members owes $24.00.

3. The Vega family has a 3-year cell phone contract. Javier Vega says that the family gets a total of $3 \times 10^4$ minutes of talk time to share during the 3 years.

Is Javier correct? If yes, write an expression to show how Javier could have found his answer. If no, explain why Javier is incorrect. Write the correct number of minutes as the product of a whole number and a power of 10. Show your work.

$$3 \times 12 \times 1000 = 36,000$$

This is how many minutes the family would have in 3 years.

So, $36,000 = 36 \times 10^3$.

Start here. No, $10^4 = 10,000$ which equals only 10 months, not 3 years.

4. In April, the Vega family gets 400 text messages included in their plan. Together, Tomás and Marisol use half of the messages. Javier and Sergio use 120 messages. Carmen uses the rest of the messages. Write and evaluate an expression to find the number of messages Carmen uses. Show your work.

$$400 - (400/2 - 120) = 400 - 200 - 120 = 80$$

Carmen uses 80 messages.
Talking About Phones

1. The Vega family has a cell phone plan that costs $75 per month including taxes and fees. The plan lets the 5 members of the Vega family share 1,000 minutes of talk time per month and 400 text messages per month. Any minutes over 1,000 cost $1 per minute, and any texts over 400 cost $2 per text. Because of a family emergency, the family uses 1,050 minutes and 415 texts in March. Write an expression you could use to find the amount of the Vega’s cell phone bill for March. Evaluate the expression. Show your work.

\[
\begin{align*}
& \text{75.00} + \text{75} \times (\text{1050} - \text{1000}) + 2(\text{415} - \text{400}) \\
& + \text{3200} \\
& = \text{155.00}
\end{align*}
\]

The Vega’s bill for March is $155.00.

2. Tomás Vega offers to pay $50 of the March cell phone bill. Each of the other 4 members of the family agrees to split the rest of the bill equally among themselves. How much does each of the 4 family members owe? Show your work.

\[
\begin{align*}
& \frac{\text{85.00} - \text{50.00}}{4} \\
& = \text{9.60}
\end{align*}
\]

Each of the 4 family members owes $24.10.

3. The Vega family has a 3-year cell phone contract. Javier Vega says that the family gets a total of $3 \times 10^3$ minutes of talk time to share during the 3 years.

Is Javier correct? If yes, write an expression to show how Javier could have found his answer. If no, explain why Javier is incorrect. Write the correct number of minutes as the product of a whole number and a power of 10. Show your work.

Javier is incorrect because he said that

\[
you \ do \ 10^3 \ but \ your \ supposed \ to \ do \ it \ 10^2, \ 10^4 \ equals \ 10,000 \ but \ 10^2 \ equals \ 1,000. \ So \ Javier \ is \ incorrect.
\]

4. In April, the Vega family gets 400 text messages included in their plan. Together, Tomás and Marisol use half of the messages. Javier and Sergio use 120 messages. Carmen uses the rest of the messages. Write and evaluate an expression to find the number of messages Carmen uses. Show your work.

\[
\begin{align*}
& 200 + 120(33.0) + 100 + 33.0 = 70 \\
& \frac{200}{330} \div 330 = 70
\end{align*}
\]

Carmen uses 70 messages.
**Talking About Phones**

1. The Vega family has a cell phone plan that costs $75 per month including taxes and fees. The plan lets the 5 members of the Vega family share 1,000 minutes of talk time per month and 400 text messages per month. Any minutes over 1,000 cost $1 per minute, and any texts over 400 cost $2 per text.

   Because of a family emergency, the family uses 1,050 minutes and 415 texts in March. Write an expression you could use to find the amount of the Vega’s cell phone bill for March. Evaluate the expression. Show your work.

   \[
   \begin{array}{c}
   59 \\
   \underline{+ \ 15} \\
   75 \\
   \underline{+ \ 30} \\
   135.00
   \end{array}
   \]

   The Vega’s bill for March is **$135.00**.

2. Tomás Vega offers to pay $59 of the March cell phone bill. Each of the other 4 members of the family agrees to split the rest of the bill equally among themselves. How much does each of the 4 family members owe? Show your work.

   \[
   \begin{array}{c}
   4 \div 20 \\
   - 30 \ \\
   80
   \end{array}
   \]

   Each of the 4 family members owes **$80**.

3. The Vega family has a 3-year cell phone contract. Javier Vega says that the family gets a total of \(3 \times 10^4\) minutes of talk time to share during the 3 years.

   Is Javier correct? If yes, write an expression to show how Javier could have found his answer. If no, explain why Javier is incorrect. Write the correct number of minutes as the product of a whole number and a power of 10. Show your work.

   \[
   \begin{array}{c}
   10 \times 10 \times 10 \times 1 \ \\
   1000 \ \\
   10000 \ \\
   100000
   \end{array}
   \]

4. In April, the Vega family gets 400 text messages included in their plan. Together, Tomás and Marisol use half of the messages. Javier and Sergio use 120 messages. Carmen uses the rest of the messages. Write and evaluate an expression to find the number of messages Carmen uses. Show your work.

   \[
   \begin{array}{c}
   400 \\
   - \ 200 \\
   \underline{+ \ 80}
   \end{array}
   \]

   Carmen uses **80** messages.
Talking About Phones

1. The Vega family has a cell phone plan that costs $75 per month including taxes and fees. The plan lets the 5 members of the Vega family share 1,000 minutes of talk time per month and 400 text messages per month. Any minutes over 1,000 cost $1 per minute, and any texts over 400 cost $2 per text.

Because of a family emergency, the family uses 1,050 minutes and 415 texts in March. Write an expression you could use to find the amount of the Vega’s cell phone bill for March. Evaluate the expression. Show your work.

\[
75.00 + (1050-1000) \times \frac{1}{15} + \left(\frac{400}{15} - 400\right) = 155.00
\]

The Vega’s bill for March is $155.00.

2. Tomás Vega offers to pay $50 of the March cell phone bill. Each of the other 4 members of the family agrees to split the rest of the bill equally among themselves. How much does each of the 4 family members owe? Show your work.

Each of the 4 family members owes $8.75.

3. The Vega family has a 3-year cell phone contract. Javier Vega says that the family gets a total of \(3 \times 10^6\) minutes of talk time to share during the 3 years.

Is Javier correct? If yes, write an expression to show how Javier could have found his answer. If no, explain why Javier is incorrect. Write the correct number of minutes as the product of a whole number and a power of 10. Show your work.

\[
10^6 \div 10 \quad \text{no it is not right because they only get 1000 minutes.}
\]

4. In April, the Vega family gets 400 text messages included in their plan. Together, Tomás and Marisol use half of the messages. Javier and Sergio use 120 messages. Carmen uses the rest of the messages. Write and evaluate an expression to find the number of messages Carmen uses. Show your work.

\[
155 - 400 \div 2 + 120 = 675
\]

Carmen uses 675 messages.
# Prerequisite Skills Inventory

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**Key:** R—Reteach
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<td>7.9</td>
<td>5.NF.B.6</td>
<td>Multiply a mixed number and a fraction.</td>
<td>R—7.9</td>
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<td>28</td>
<td>4.4</td>
<td>5.NBT.B.7</td>
<td>Multiply a whole number and a decimal.</td>
<td>R—4.4</td>
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<td>29</td>
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<td>Multiply decimals to hundredths.</td>
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<td>Write the standard form of a number written as a decimal multiplied by a power of 10.</td>
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<td>Multiply a whole number and a decimal.</td>
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<td>R—8.5</td>
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## Chapter 1 Test

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<td>1.9</td>
<td>5.NBT.B.6</td>
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<td>R—1.9</td>
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<td>22</td>
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<td>5.NBT.A.2</td>
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<td>R—1.4</td>
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