Equations (Algebra) & Word Problems

Unit 4

Name_____

Unit 4 Notes

Expression- one or more variables or numbers with one or more operation. One side of equation without an equal sign.

3 + 6

4 + 7 X 2

Y -6

Equation- A statement that 2 expressions are equal. It has an equal sign and an expression to the right and left.

Simplify- Performing an operation to solve an expression or equation. 4n + 2n = ____ 4n + 2n

4n + 2n = 6n 6n

Evaluate an expression- Replace a letter with its value, then simplify by preforming the operation.

Y=3 y + 7 =

3 + 7 = 10

Combine like terms

Situation Equation- An equation set up in the same way the information is presented in the problem.

Solution equation- an equation set up showing the operation that can be used to solve the problem.

Pictograph- A graph that uses pictures to represent data. **Be sure to check for a key!**

Order of Operations

1. Inside parentheses (4+5)
2. Multiplication and division from left to right
3. Addition and subtraction from left to right

Pattern- a sequence that can be described by a rule.

Factor pairs- A factor pair for a number is two whole numbers whose product is that number. A factor pair for 12 is 2 and 6.

Prime number- A number greater than one that has itself times 1 as its only factor pair. N x 1

The first eight prime numbers are 2, 3, 5, 7, 11, 13, 17, and 19.

Composite number- A number greater than 1 that has more than one factor pair.

Example: 12 1 X 12 2 X 6 3 X 4

Sum- answer to an addition problem.

Difference- Answer to a subtraction problem.

Inverse Operations- Opposite operations that will undo each other. For example, addition and subtraction or multiplication and division.

Factor pairs- A factor pair for a number is two whole numbers whose product is that number. A factor pair for 12 is 2 and 6.

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The first eight prime numbers are 2,3,5,7,11,13, 17, and 19.

Composite number- A number greater than 1 that has more than one factor pair.

Example: 12 1 X 12 2 X 6 3 X 4

Name _____

LESSON 4

Algebra • Solve Multistep Problems Using Equations

CC.4.OA.3

OBJECTIVE Represent and solve multistep problems using equations.

The **Order of Operations** is a special set of rules which gives the order in which calculations are done in an expression. First, multiply and divide from left to right. Then, add and subtract from left to right.

Use the order of operations to find the value of *n*.

$6 \times 26 + 3 \times 45 - 11 = n$

Step 1 Circle the first multiplication or division expression in the equation.

$(6 \times 26) + 3 \times 45 - 11 = n$

Step 2 Multiply 6×26.

$\underline{156} + 3 \times 45 - 11 = n$

Step 3 Circle the next multiplication or division expression in the equation.

$156 + (3 \times 45) - 11 = n$

Step 4 Multiply 3×45.

$156 + \underline{135} - 11 = n$

Step 5 There are no more multiplication or division expressions. Circle the first addition or subtraction expression in the equation.

$(156 + 135) - 11 = n$

Step 6 Add $156 + 135$.

$\underline{291} - 11 = n$

Step 7 Subtract $291 - 11$.

$\underline{280} = n$

Find the value of *n*.

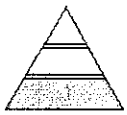
1. $5 \times 43 + 9 \times 24 + 25 = n$

_____ $= n$

2. $7 \times 29 + 4 \times 46 - 56 = n$

_____ $= n$

Name _____


CC.4.OA.3

Algebra • Solve Multistep Problems Using Equations

Find the value of *n*.

1. $4 \times 27 + 5 \times 34 - 94 = n$

$108 + 5 \times 34 - 94 = n$

$108 + 170 - 94 = n$

$278 - 94 = n$

$184 = n$

2. $7 \times 38 + 3 \times 45 - 56 = n$

_____ $= n$

3. $6 \times 21 + 7 \times 29 - 83 = n$

_____ $= n$

4. $9 \times 19 + 2 \times 57 - 75 = n$

_____ $= n$

5. $5 \times 62 + 6 \times 33 - 68 = n$

_____ $= n$

6. $8 \times 19 + 4 \times 49 - 39 = n$

_____ $= n$

Problem Solving

7. A bakery has 4 trays with 16 muffins on each tray. The bakery has 3 trays of cupcakes with 24 cupcakes on each tray. If 15 cupcakes are sold, how many muffins and cupcakes are left?

_____

8. Katy bought 5 packages of stickers with 25 stickers in each package. She also bought 3 boxes of markers with 12 markers in each box. If she receives 8 stickers from a friend, how many stickers and markers does Katy have now?

_____

Name _____

LESSON 1

Algebra • Multiplication Comparisons

OBJECTIVE Relate multiplication equations and comparison statements.

CC.4.OA.1

Tara has 3 times as many soccer medals as Greg. Greg has 4 soccer medals. How many soccer medals does Tara have?

Step 1 Draw a model.

Greg ◯◯◯◯

Tara ◯◯◯◯ ◯◯◯◯ ◯◯◯◯

Step 2 Use the model to write an equation.

$n =$ 3 $\times$ 4 **Think:** n is how many soccer medals Tara has.

Step 3 Solve the equation.

$n =$ 12

So, Tara has 12 soccer medals.

Draw a model and write an equation.

1. 4 times as many as 7 is 28.

2. 16 is 8 times as many as 2.

3. 3 times as many as 6 is 18.

4. 10 is 2 times as many as 5.

Name _____

CC.4.OA.1

Algebra • Multiplication Comparisons

Write a comparison sentence.

1. $6 \times 3 = 18$

6 times as many as 3 is 18.

2. $63 = 7 \times 9$

____ is ____ times as many as ____.

3. $5 \times 4 = 20$

____ times as many as ____ is ____.

4. $48 = 8 \times 6$

____ is ____ times as many as ____.

Write an equation.

5. 2 times as many as 8 is 16.

_____

6. 42 is 6 times as many as 7.

_____

7. 3 times as many as 5 is 15.

_____

8. 36 is 9 times as many as 4.

_____

9. 72 is 8 times as many as 9.

_____

10. 5 times as many as 6 is 30.

_____

Problem Solving

11. Alan is 14 years old. This is twice as old as his brother James is. How old is James?

_____

12. There are 27 campers. This is nine times as many as the number of counselors. How many counselors are there?

_____

Name _____

LESSON 2

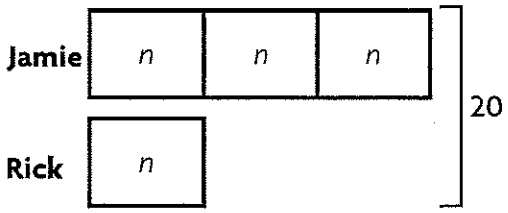
Algebra • Comparison Problems

OBJECTIVE Solve problems involving multiplicative comparison and additive comparison.

CC.4.OA.2

Jamie has 3 times as many baseball cards as Rick. Together, they have 20 baseball cards. How many cards does Jamie have?

Step 1 Draw a box with the letter *n* in it to show that Rick has an unknown number of cards. Jamie has 3 times as many cards as Rick, so draw three identical boxes to represent Jamie's cards.



Step 2 Use the model to write an equation.

Think: There are 4 equal bars. The number in each bar is represented by *n*.

There are a total of 20 cards. So, 4 × *n* = 20.

Step 3 Solve the equation to find the value of *n*.

Think: 4 times what number is 20?

Since 4 × 5 = 20, the value of *n* is 5. Rick has 5 cards.

Step 4 Find how many cards Jamie has.

Think: Jamie has 3 times as many cards as Rick.

So, Jamie has 3 × 5 = 15 baseball cards.

Draw a model. Write an equation and solve.

1. Maddie has 2 times as many stickers on her notebook as Meg. Together, they have 15 stickers. How many stickers are on Maddie's notebook?

2. How many more stickers are on Maddie's notebook than on Meg's notebook?

Name _____

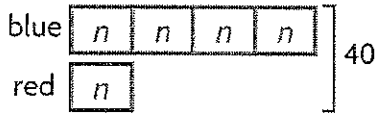
CC.4.OA.2

Algebra • Comparison Problems

Draw a model. Write an equation and solve.

1. Stacey made a necklace using 4 times as many blue beads as red beads. She used a total of 40 beads. How many blue beads did Stacey use?

Think: Stacey used a total of 40 beads. Let n represent the number of red beads.



$5 \times n = 40$; $5 \times 8 = 40$;

$4 \times 8 = 32$ blue beads

2. At the zoo, there were 3 times as many monkeys as lions. Tom counted a total of 24 monkeys and lions. How many monkeys were there?

3. Fred's frog jumped 7 times as far as Al's frog. The two frogs jumped a total of 56 inches. How far did Fred's frog jump?

4. Sheila has 5 times as many markers as Dave. Together, they have 18 markers. How many markers does Sheila have?

Problem Solving

5. Rafael counted a total of 40 white cars and yellow cars. There were 9 times as many white cars as yellow cars. How many white cars did Rafael count?

6. Sue scored a total of 35 points in two games. She scored 6 times as many points in the second game as in the first. How many more points did she score in the second game?

Name _____

LESSON 3

Problem Solving • Multistep Multiplication Problems

CC.4.OA.3

OBJECTIVE Use the *draw a diagram* strategy to solve multistep problems.

Use the strategy *draw a diagram* to solve a multistep multiplication problem.

Amy planted 8 rows with 18 tulips in each row. In each of the 4 middle rows, there are 4 red tulips. All of the other tulips are yellow. How many of the tulips are yellow tulips?

Read the Problem

What do I need to find?

I need to find the total number of yellow tulips.

What information do I need to use?

There are 8 rows of tulips with 18 tulips in each row.

There are 4 rows of tulips with 4 red tulips in each row.

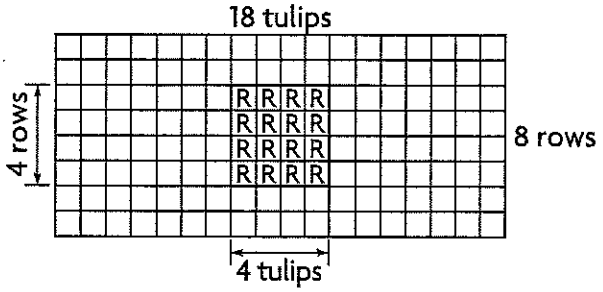
How will I use the information?

I can multiply to find the total number of tulips and the number of red tulips.

Then I can subtract to find the number of yellow tulips.

Solve the Problem

I drew a diagram for each color of tulip.



Next, I found the number in each section.

All Tulips	Red Tulips
$8 \times 18 = 144$	$4 \times 4 = 16$

Last, I subtracted the number of red tulips from the total number of tulips.

144 − 16 = 128

So, there are 128 yellow tulips.

1. A car dealer has 8 rows of cars with 16 cars in each row. In each of the first 3 rows, 6 are used cars. The rest of the cars are new cars. How many new cars does the dealer have?

_____

2. An orchard has 4 rows of apple trees with 12 trees in each row. There are also 6 rows of pear trees with 15 trees in each row. How many apple and pear trees are in the orchard?

_____

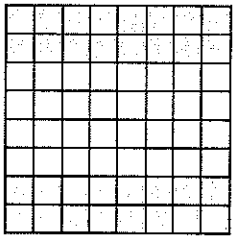
Name _____

Problem Solving • Multistep Multiplication Problems

CC.4.OA.3

Solve each problem.

1. A community park has 6 tables with a chessboard painted on top. Each board has 8 rows of 8 squares. When a game is set up, 4 rows of 8 squares on each board are covered with chess pieces. If a game is set up on each table, how many total squares are NOT covered by chess pieces?



$4 \times 8 = 32$

$32 \times 6 =$ ____

192 squares

2. Jonah and his friends go apple picking. Jonah fills 5 baskets. Each basket holds 15 apples. If 4 of Jonah's friends pick the same amount as Jonah, how many apples do Jonah and his friends pick in all? Draw a diagram to solve the problem.

_____

3. There are 6 rows of 16 chairs set up for the third-grade play. In the first 4 rows, 2 chairs on each end are reserved for teachers. The rest of the chairs are for students. How many chairs are there for students?

_____

Name _____

LESSON 5

Problem Solving • Multiply 2-Digit Numbers

CC.4.OA.3

OBJECTIVE Use the strategy *draw a diagram* to solve multistep multiplication problems.

A library ordered 17 cases with 24 books in each case. In 12 of the cases, 18 books were fiction books. The rest of the books were nonfiction. How many nonfiction books did the library order?

Read the Problem	Solve the Problem
What do I need to find? I need to find how many nonfiction books were ordered.	• First, find the total number of books ordered. 17 × 24 = 408 books ordered
What information do I need to use? 17 cases of 24 books each were ordered. In 12 cases, 18 books were fiction books.	• Next, find the number of fiction books. 12 × 18 = 216 fiction books
How will I use the information? I can find the total number of books ordered and the number of fiction books ordered. Then I can draw a bar model to compare the total number of books to the number of fiction books.	• Last, draw a bar model. I need to subtract. 408 books ordered 216 fiction books 408 − 216 = 192 So, the library ordered 192 nonfiction books.

1. A grocer ordered 32 cases with 28 small cans of fruit in each case. The grocer also ordered 24 cases with 18 large cans of fruit in each case. How many more small cans of fruit did the grocer order?

_____

2. Rebecca rode her bike 16 miles each day for 30 days. Michael rode his bike 25 miles for 28 days. Who rode farther? How much farther?

_____

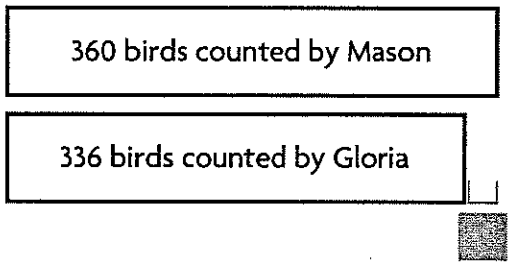
Name _____

CC.4.OA.3

Problem Solving • Multiply 2-Digit Numbers

Solve each problem. Use a bar model to help.

1. Mason counted an average of 18 birds at his bird feeder each day for 20 days. Gloria counted an average of 21 birds at her bird feeder each day for 16 days. How many more birds did Mason count at his feeder than Gloria counted at hers?



Birds counted by Mason: $18 \times 20 = 360$

Birds counted by Gloria: $21 \times 16 = 336$

Draw a bar model to compare.

Subtract. $360 - 336 = 24$

So, Mason counted 24 more birds.

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2. The 24 students in Ms. Lee's class each collected an average of 18 cans for recycling. The 21 students in Mr. Galvez's class each collected an average of 25 cans for recycling. How many more cans were collected by Mr. Galvez's class than Ms. Lee's class?

_____

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3. At East School, each of the 45 classrooms has an average of 22 students. At West School, each of the 42 classrooms has an average of 23 students. How many more students are at East School than at West School?

_____

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4. A zoo gift shop orders 18 boxes of 75 key rings each and 15 boxes of 80 refrigerator magnets each. How many more key rings than refrigerator magnets does the gift shop order?

_____

4-1 Name _____ Date _____

Homework

Simplify each expression.

1. $11m - 9m =$ ____
2. $y + 8y =$ ____
3. $13s - s =$ ____
4. $d + 2d + d =$ ____
5. $(9b - b) - 2b =$ ____
6. $104z + z =$ ____
7. $21 - (10 - 5) =$ ____
8. $(900 - 100) - 100 =$ ____
9. $90 - (50 - 1) =$ ____
10. $18 \div (27 \div 9) =$ ____
11. $(63 \div 7) \div 9 =$ ____
12. $40 \div (36 \div 9) =$ ____
13. $(48 \div 6) \cdot (11 - 9) =$ _____
14. $(3 + 17) \div (16 - 12) =$ _____
15. $(15 + 10) - (50 \div 10) =$ _____
16. $(19 + 11) \div (9 - 6) =$ _____

Evaluate.

17. $c = 3$

    $4 \cdot (7 - c)$

    _____

18. $r = 2$

    $(42 \div 7) \cdot (r + 1)$

    _____

19. $w = 7$

    $(72 \div 9) \cdot w$

    _____

20. $m = 0$

    $(12 \div 3) \cdot (5 - m)$

    _____

21. $h = 14$

    $45 \div (h - 5)$

    _____

22. $p = 19$

    $(p + 1) \div (9 - 4)$

    _____

23. $v = 6$

    $(18 - 9) + (2 + v)$

    _____

24. $t = 1$

    $(7 \cdot 2) \div t$

    _____

25. $g = 10$

    $(g + 90) \div (17 - 13)$

    _____

Solve for $\square$ or n.

26. $7 \cdot (3 + 2) = 7 \cdot \square$

    $\square =$ ____

27. $(9 - 1) \cdot 4 = \square \cdot 4$

    $\square =$ ____

28. $8 \cdot (4 + 5) = \square \cdot 9$

    $\square =$ ____

29. $6 \cdot (8 - 8) = n$

    $n =$ ____

30. $(12 - 6) \div 3 = n$

    $n =$ ____

31. $(21 \div 7) \cdot (5 + 5) = n$

    $n =$ ____

Practice Page # 1

4-1 Name _____ Date _____

Remembering

Read and write each number in expanded form.

1. ninety-six thousand, one hundred thirty-seven

_____

2. four hundred thirteen thousand, five hundred twenty-one

_____

3. seven hundred eight thousand, fifty-three

_____

4. six hundred thirty thousand, four hundred seventeen

_____

Find the area (in square units) of a rectangle with the given dimensions.

5. 4×6 _____

6. 4×60 _____

7. 5×9 _____

8. 50×9 _____

Divide with remainders.

9. $9\overline{)28}$

10. $3\overline{)17}$

11. $6\overline{)46}$

12. $7\overline{)54}$

13. **Stretch Your Thinking** Evaluate the expression $(d - 10) + (d \div 3)$ for $d = 21$. Explain each step.

_____

_____

_____

_____

_____

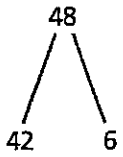
4-2 Homework

Name _____ Date _____

Write = or ≠ to make each statement true.

1. $5 + 2 + 6 \bigcirc 6 + 7$
2. $90 \bigcirc 110 - 9$
3. $70 \bigcirc 30 + 30$
4. $70 \bigcirc 95 - 25$
5. $2 + 8 + 10 \bigcirc 30$
6. $27 - 10 \bigcirc 14 + 3$
7. $51 + 99 \bigcirc 150$
8. $35 \bigcirc 100 - 55$
9. $50 \bigcirc 20 + 5 + 20$

10. Write the eight related addition and subtraction equations for the break-apart drawing.



_____ _____

_____ _____

_____ _____

_____ _____

Write an equation to solve the problem. Draw a model if you need to. *Show your work.*

11. There were some people at the arts and crafts fair. Then 347 people went home. Now 498 people are left at the fair. How many people were at the fair to start?

_____

_____

12. A group of scientists spends 3,980 hours observing the behavior of monarch butterflies. They spend some more hours recording their observations. Altogether, the scientists spend 5,726 hours observing the butterflies and recording their observations. How many hours do the scientists spend recording their observations?

_____

_____ _____

Practice Page # 2

4-2 Name _____ Date _____

Remembering

Solve.

1. What is 538,152 rounded to the nearest:

   a. hundred? _____ b. thousand? _____

   c. ten thousand? _____ d. hundred thousand? _____

Draw a rectangle model. Find the tens product, the ones product, and the total product.

2. 3×65

3. 8×29

Evaluate each expression.

4. $(12 - 4) \cdot (6 + 3) =$ _____

5. $(8 \div 2) + (12 - 2) =$ _____

6. **Stretch Your Thinking** There were 381 books sold at a children's used book fair. At the end of the day, there were still 493 books remaining. Samantha says there were 112 books at the start of the book fair. Explain her error. How many books were there at the start of the book fair?

_____

_____

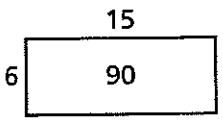
_____

_____

4-3 Name _____ Date _____

Homework

1. Write the eight related multiplication and division equations for the rectangle model below.



_____ _____

_____ _____

_____ _____

_____ _____

Solve each equation.

2. $r = 200 \div 5$

   $r =$ _____

3. $12 \times d = 84$

   $d =$ _____

4. $80 \div 10 = n$

   $n =$ _____

5. $120 = 10 \times m$

   $m =$ _____

6. $88 = 8 \times c$

   $c =$ _____

7. $100 \div q = 20$

   $q =$ _____

Write an equation to solve the problem. Draw a model if you need to.

Show your work.

8. Lucy bought some shrubs to plant in her garden. Each shrub cost $9. If Lucy spent $216 in all, how many shrubs did she buy?

   _____

   _____

9. Jeremiah has 592 flyers in stacks of 8 flyers each. How many stacks of flyers did Jeremiah make?

   _____

   _____

10. The apples from an average-sized tree will fill 20 baskets. If an orchard has 17 average-sized trees, how many baskets of apples can it produce?

    _____

    _____

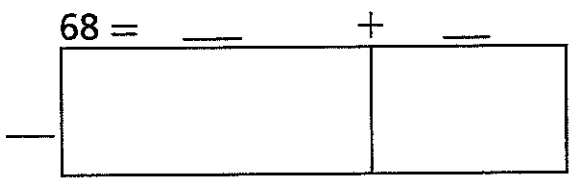
Practice Page # 3

4-3 Name _____ Date _____

Remembering

Use the Algebraic Notation Method to solve the problem. Complete the steps.

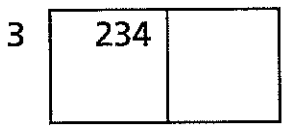
1. $5 \cdot 68$ _____



$5 \cdot 68 = \_\_ \cdot (\_\_ + \_\_)$
$= 300 + 40$
$= 340$

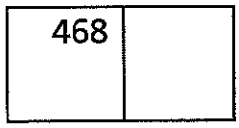
Solve. Use the Place Value Sections and the Expanded Notation Methods for division.

2. ___0 + ___ =



$3\overline{)234}$

3. ___0 + ___ =



$9\overline{)468}$

Write = or ≠ to make each statement true.

4. $40 + 40 \bigcirc 90$

5. $12 - 4 \bigcirc 12 + 4$

6. $4 + 7 \bigcirc 4 + 2 + 5$

7. $26 \bigcirc 30 - 4$

8. $8 + 10 + 2 \bigcirc 20$

9. $85 - 25 \bigcirc 65$

10. Stretch Your Thinking Write a word problem about puzzle pieces using the equation $9 \times p = 450$. Then solve the equation.

_____

_____

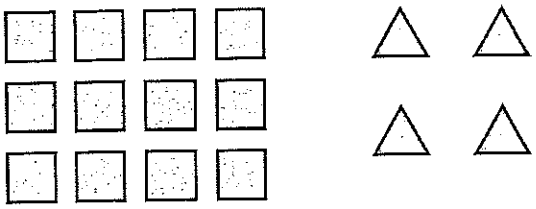
_____

_____

4-4 Homework

Name _____ Date _____

Use the shapes to answer Exercises 1–4.



1. How many squares? How many triangles? Use multiplication to find the answers.

_____

2. Because $4 \times$ _____ $= 12$, there are _____ times as many squares as triangles.

3. Write a multiplication equation that compares the number of squares s to the number of triangles t.

_____

4. Write a division equation that compares the number of triangles t to the number of squares s.

_____

Solve each comparison problem.

5. Stephen and Rocco were playing a video game. Stephen scored 2,500 points which is 5 times as many points as Rocco scored. How many points did Rocco score?

_____

6. Nick's dog weighs 72 pounds. Elizabeth's cat weighs 9 pounds. How many times as many pounds does Nick's dog weigh as Elizabeth's cat weighs?

_____

Practice Page # 4

4-4 Name _____ Date _____

Remembering

Solve using any numerical method. Use rounding and estimating to see if your answer makes sense.

1. $\begin{array}{r} 71 \\ \times\ 4 \\ \hline \end{array}$

2. $\begin{array}{r} 36 \\ \times\ 5 \\ \hline \end{array}$

3. $\begin{array}{r} 94 \\ \times\ 8 \\ \hline \end{array}$

4. $\begin{array}{r} 77 \\ \times\ 6 \\ \hline \end{array}$

Divide.

5. $6\overline{)89}$

6. $5\overline{)485}$

7. $4\overline{)743}$

Solve each equation.

8. $9 \times n = 108$

$n =$ _____

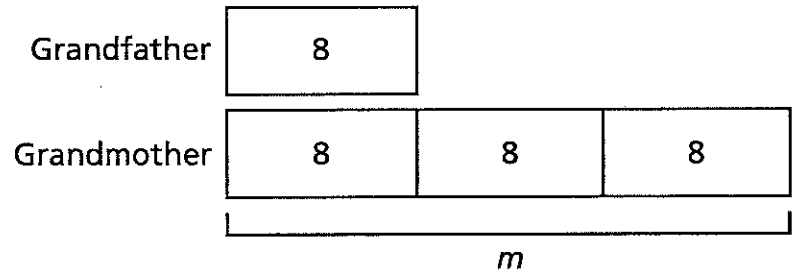
9. $40 \div t = 10$

$t =$ _____

10. $r = 56 \div 7$

$r =$ _____

11. Stretch Your Thinking Write and solve a word problem to match the comparison bars shown below.



_____

_____

_____

_____

_____

4-5 Homework

Name _____ Date _____

Write and solve an equation to solve each problem. Draw comparison bars when needed.

Show your work.

1. This year, a business had profits of $8,040. This is 4 times as great as the profits that the business had last year. What were last year's profits?

_____

2. In July, 74,371 people visited an art museum. In August 95,595 people visited the art museum. How many fewer people visited the art museum in July than in August?

_____

3. Drake has 36 animal stickers. Brenda has 9 animal stickers. How many times as many animal stickers does Drake have as Brenda has?

_____

4. A game is being watched by 60 adults and some children. If there are 20 more adults than children, how many children are watching the game?

_____

5. During the first lunch period, 54 students ate hot lunch. This is 9 fewer students than ate hot lunch during the second lunch period. How many students ate hot lunch during the second lunch period?

_____

6. The Jenkins Family traveled 750 miles by car during the summer. The Palmer Family traveled 3 times as many miles by car this summer. How many miles did the Palmer Family travel?

_____

Practice Page # 5

4-5 Name _____ Date _____

Remembering

Copy each exercise, aligning the places correctly. Then add.

1. 11,931 + 3,428

2. 25,422 + 89,360

Draw a rectangle model. Solve using any method that relates to the model.

3. 3 × 428 _____

4. 7 × 519 _____

Write and solve an equation to solve the problem. Draw comparison bars if you need to.

5. Virginia sold 84 rolls of wrapping paper this year. She sold 3 times as many rolls of wrapping paper this year as she sold last year. How many rolls of wrapping paper did Virginia sell last year?

_____

6. **Stretch Your Thinking** There are 1,438 boys and 1,196 girls at a school. How many fewer girls are there than boys?

   Write the comparison question for this problem in a different way. Then write and solve an equation to solve the problem. Draw comparison bars if you need to.

_____

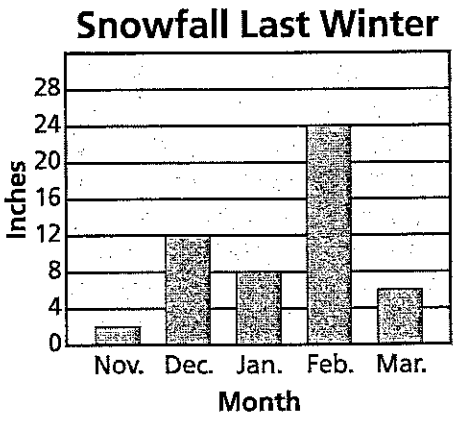
_____

_____

4-6 Homework

Name _____ Date _____

The graph below shows the amount of snow recorded each month last winter. Use the graph for Problems 1–6.



1. During which month was the amount of snow recorded 12 inches greater than the amount of snow recorded in December?

_____

2. How many fewer inches of snow were recorded in March than were recorded in February?

_____

3. The total amount of snow shown in the graph is 4 times as much snow as was recorded during the winter of 2004. How much snow was recorded during the winter of 2004?

_____

4. Write an addition equation and a subtraction equation that compare the number of inches of snow recorded during December *(d)* to the number of inches of snow recorded during March *(m)*.

_____

5. Write a multiplication equation and a division equation that compare the number of inches of snow recorded during November *(n)* to the number of inches of snow recorded during January *(j)*.

_____

6. On a separate sheet of paper, write a sentence about the graph that contains the words *times as much.*

Practice Page # 6

4-6 Name _____ Date _____

Remembering

Sketch an area model for each exercise. Then find the product.

1. 28×45 _____

2. 53×96 _____

Solve using any method.

3. $9\overline{)506}$

4. $2\overline{)538}$

5. $7\overline{)8{,}165}$

Write and solve an equation to solve each problem. Draw comparison bars when needed.

Show your work.

6. Benjamin received 52 emails at work today. This is 4 times as many emails as he received yesterday. How many emails did Benjamin receive yesterday?

_____

7. There are 327 third-grade students on a field trip at the history museum. There are 423 fourth-grade students on the same field trip. How many fewer third-grade students are there than fourth-grade students on the field trip?

_____

8. **Stretch Your Thinking** Look at the graph. Tatiana says there are 4 more dog owners than fish owners in the classroom. Explain Tatiana's error. Then write an equation that compares the numbers of dog owners and fish owners in the classroom.

Pet Owners in the Classroom

Pet	
Cat	☺ ☺ ☺
Bird	☺
Dog	☺ ☺ ☺ ☺ ☺ ☺
Fish	☺ ☺

☺ = 2 students

_____

_____

_____

4-7 Name _____ Date _____

Homework

Use an equation to solve. *Show your work.*

1. The soccer club has 127 members. The baseball club has 97 members. Both clubs will meet to discuss a fundraiser. The members will be seated at tables of 8 members each. How many tables will they use?

_____

2. A hardware store pays $3,500 for 42 lawnmowers. Then the store sells the lawnmowers for $99 each. How much profit does the store make from the lawnmower sales?

_____

3. George buys a set of 224 stamps. He gives 44 stamps to a friend. Then he places the remaining stamps into an album with 5 stamps on each page. How many pages does he fill in his album?

_____

4. Shane and his family go to the movie theater and buy 6 tickets for $12 each. Then they spend a total of $31 for popcorn and drinks. How much did Shane and his family spend for tickets, popcorn and drinks at the movie theater?

_____

5. Last year, 226 people attended the school graduation ceremony. This year, the school expects 125 more people than last year. The school has arranged for a van to transport people from the parking area to the ceremony. Each van holds 9 people. How many trips will the van make?

_____

Practice Page # 7

4-7 Name _____ Date _____

Remembering

Solve each multiplication problem, using any method. Use rounding and estimation to check your work.

1. 22×58 _____

2. 34×91 _____

3. 63×72 _____

4. 17×56 _____

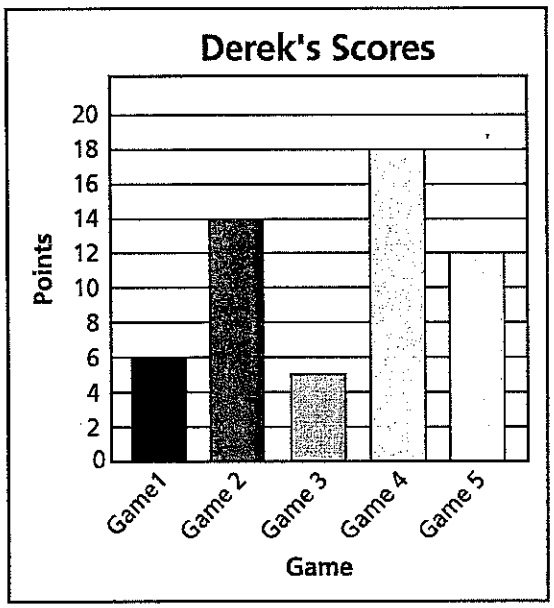
Solve by using any method. Then check your answer by rounding and estimating.

5. $9\overline{)39}$

6. $4\overline{)168}$

7. $5\overline{)4{,}204}$

The graph shows the number of points Derek scored during his first five basketball games.



8. Write a multiplication equation and a division equation that compare the number of points Derek scored during Game 1 (x) to the number of points Derek scored during Game 4 (y).

_____

9. Stretch Your Thinking There will be 138 people at a fundraising auction. Each table seats six. An additional 3 tables are needed to display the auction items. What is the minimum number of tables that are needed for the fundraiser? Which equation *cannot* be used to answer this question? Explain.

$138 \div (6 + 3) = t$ $(138 \div 6) + 3 = t$

_____

_____

_____

_____

4-8 Name _____ Date _____

Homework

Use an equation to solve. *Show your work.*

1. Rosa and Kate both went shopping. Kate bought a jacket for $45 and boots for $42. Rosa bought jeans for $27, a sweater for $22, and sneakers. They both spent the same exact amount of money. How much were Rosa's sneakers?

_____

2. Kyle works at a bakery on weekends. On Saturday, Kyle needs to make 120 muffins. Each recipe makes 8 muffins and uses 2 cups of flour. On Sunday, he needs to bake a large batch of cookies that uses 6 cups of flour. How many cups of flour will Kyle use to bake the muffins and the cookies?

_____

3. A toy factory made 715 small stuffed bears and packed them in boxes with 5 bears in each box. Then they made 693 large stuffed bears and packed them in boxes with 3 bears in each box. All the boxes of small and large stuffed bears are loaded into a truck for delivery. How many boxes are loaded into the truck?

_____

4. Last summer, Chris went to Europe and bought postcards from the cities he visited. In France, he visited 6 cities and bought 11 postcards in each city. In Italy, he visited 7 cities and bought 9 postcards in each city. In Spain, he visited 10 cities and bought 15 postcards in each city. How many postcards did Chris buy in Europe?

_____

5. Three fourth grade classes went on a field trip to see a play. Each class had 19 students and 2 adults attending. The rows in the playhouse each seat 9 people. How many rows did the fourth grade classes and adults take up at the playhouse?

_____

4-8 Name _____ Date _____

Remembering

Add or subtract.

1. 9,000 − 5,613

2. 317,492 + 36,057

3. 659,741 − 652,438

Solve. Then explain the meaning of the remainder.

4. Jessica needs to bake 50 muffins. Her baking pan holds 12 muffins. How many rounds of baking will she need to do?

_____

_____

_____

_____

_____

Use an equation to solve. *Show your work.*

5. At the fair, Hannah bought her family 5 hot dogs for $3 each and a pitcher of lemonade for $6. How much money did she spend in all?

_____

6. Reggie is keeping 7 of his 31 stuffed animals and splitting the remainder of his collection evenly among his 3 younger sisters. How many stuffed animals does each sister get?

_____

7. **Stretch Your Thinking** Write a word problem using the equation ($60 + $3 − $15) ÷ $4 = *w*. Then solve the equation to solve the problem.

_____

_____

_____

_____

_____

_____

4-9 Homework

Name _____ Date _____

Solve each problem.

1. $5 \times 7 + 9 = t$

_____

2. $9 \times (1 + 3) = m$

_____

3. $7 - 2 \times 2 = k$

_____

4. $(7 \times 2) + (4 \times 9) = w$

_____

5. $(7 - 2) \times (3 + 2) = r$

_____

6. $8 \times (12 - 7) = v$

_____

7. Whitney and Georgia are at the snack bar buying food for their family. Sandwiches cost $4 each. Salads cost $2 each. How much money will it cost them to buy 5 sandwiches and 7 salads?

_____

8. Lisa put tulips and roses into vases. Each vase has 12 flowers. The red vase has 7 tulips. The blue vase has twice as many roses as the red vase. How many roses are in the blue vase?

_____

9. Pam has 9 bags of apples. Each bag contains 6 apples. There are 3 bags of red apples and 1 bag of green apples. The rest of the bags contain yellow apples. How many more yellow apples are there than red apples?

_____

10. Clay works on a farm. He packaged eggs into containers that hold 1 dozen eggs each. He filled 4 containers with white eggs and 5 containers with brown eggs. How many eggs did Clay collect? Hint: one dozen eggs = 12 eggs

_____

4-9 Name _____ Date _____

Remembering

Subtract. Show your new groups.

1. 3,146 − 1,960

2. 7,504 − 2,738

3. 6,000 − 5,241

Solve using any method and show your work.
Use estimation to check your work.

4. 23 × 88 _____

5. 71 × 49 _____

6. 62 × 67 _____

7. 15 × 38 _____

Use an equation to solve.

8. An audio book is made up of 8 CDs. Each of the first 7 CDs is 42 minutes long and the final CD is 26 minutes long. Mark plans to listen to the book the same number of minutes for 8 days. How many minutes each day will Mark listen to the audio book?

_____

9. **Stretch Your Thinking** A sign shows the price per pound for several bulk food items. Use the information to write a word problem that requires at least 3 steps to solve. Then solve your problem

Food Item	Cost per pound
mixed nuts	$5
dried fruit	$3
snack mix	$7
wild rice	$2
red lentils	$4

_____

_____

_____

_____

_____

_____

_____

4-11 Name _____ Date _____

Homework

Use the rule to find the next three terms in the pattern.

1. 2, 6, 18, 54, ...

Rule: multiply by 3

_____

2. 115, 145, 175, 205, 235, ...

Rule: add 30

_____

Use the rule to find the first ten terms in the pattern.

3. First term: 12 Rule: add 25

_____

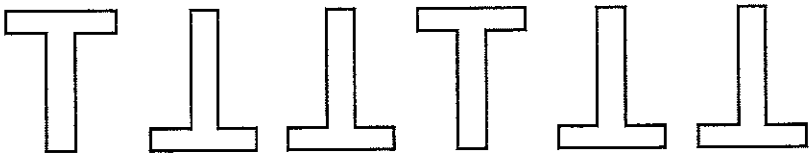
Make a table to solve.

4. Jay saves $2 in June, $4 in July, $6 in August, and $8 in September. If the pattern continues, how much money will Jay save in December?

_____

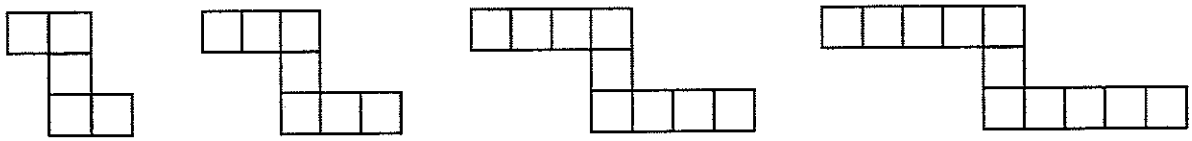
Describe the next term of each pattern.

5.



_____

6.



_____

_____

Practice Page # 10

4-11 Name _____ Date _____

Remembering

Subtract.

1. 491,562
   − 208,723

2. 392,119
   − 48,319

Solve. *Show your work.*

3. Sid unpacks 8 cartons of paper clips. Each carton contains 3,500 paper clips. How many paper clips is this altogether?

   _____

4. Camille unpacks 102 boxes of red pens and 155 boxes of blue pens. Each box contains 8 pens. How many pens does she unpack altogether?

   _____

List all of the factor pairs for each number.

5. 55 _____

6. 14 _____

7. **Stretch Your Thinking** During the first week of the year, Angelina's dad gives her $10 and says that he will give her $10 more each week for the rest of the year. At the end of the year, how much money will Angelina receive from her dad? (Hint: 1 year = 52 weeks) Make a table to show the pattern, and explain your answer.

_____

_____

_____

_____

_____

Unit 4 ~~Test~~
Form B

Name Study Guide Date

Fill in the circle for the correct answer. *Show your work.*

1. Dylan has 8 times as many football cards as baseball cards. Which equation compares Dylan's football and baseball cards?

Ⓐ $f \times b = 8$
Ⓑ $b = 8 + f$
Ⓒ $f = 8b$
Ⓓ $f = 8 + b$

2. A truck driver delivers 245 gallons of milk to one store. He delivers 185 gallons of milk to a second store. Which equation shows how many gallons of milk the truck driver delivers in all?

Ⓕ $245 + 185 = g$; $g = 430$ gallons
Ⓖ $245 + 185 = g$; $g = 420$ gallons
Ⓗ $245 - 185 = g$; $g = 60$ gallons
Ⓚ $245 - 185 = g$; $g = 50$ gallons

3. A box holds 112 cans of cat food. Which equation shows how many cans of cat food are in 8 full boxes?

Ⓐ $8 + 112 = c$; $c = 110$ cans
Ⓑ $8 + 112 = c$; $c = 120$ cans
Ⓒ $8 \times 112 = c$; $c = 886$ cans
Ⓓ $8 \times 112 = c$; $c = 896$ cans

4. There are 18 umbrellas at the beach shop. There are 3 times as many chairs as umbrellas. Which equation shows how many chairs are at the beach shop?

Ⓕ $c = 18 \div 3$; $c = 6$ chairs
Ⓖ $c = 18 - 3$; $c = 15$ chairs
Ⓗ $c = 3 + 18$; $c = 21$ chairs
Ⓚ $c = 3 \times 18$; $c = 54$ chairs

5. Gwen sold 2,412 movie tickets last weekend. That is 4 times the number of tickets sold on Wednesday. Which equation shows the number of tickets sold on Wednesday?

Ⓐ $4t = 2{,}412$; $t = 603$ tickets
Ⓑ $4t = 2{,}412$; $t = 630$ tickets
Ⓒ $4 + t = 2{,}412$; $t = 2{,}408$ tickets
Ⓓ $4 + t = 2{,}412$; $t = 2{,}308$ tickets

6. Mr. Brady has $987. He buys a DVD player for $171 and some movies for $112. Which equation shows how much money Mr. Brady has left?

Ⓕ $987 + (171 + 112) = m$; $m = \$1{,}270$

Ⓖ $987 + (171 - 112) = m$; $m = \$1{,}046$

Ⓗ $987 - (171 - 112) = m$; $m = \$928$

Ⓚ $987 - (171 + 112) = m$; $m = \$704$

Solve for ☐ or *n*.

7. $(17 + 13) \div (15 - 9) = n$

Ⓐ $n = 4$ Ⓑ $n = 5$ Ⓒ $n = 6$ Ⓓ $n = 8$

8. $(16 - 7) \cdot 6 = \square \cdot 6$

Ⓕ $\square = 6$ Ⓖ $\square = 7$ Ⓗ $\square = 8$ Ⓚ $\square = 9$

List all factor pairs for the number.

9. 31

Ⓐ 0 and 30

Ⓑ 1 and 31

Ⓒ 0 and 31; 1 and 31

Ⓓ 1 and 30; 1 and 31

10. 42

Ⓕ 1 and 42; 6 and 7

Ⓖ 1 and 42; 3 and 14; 6 and 7

Ⓗ 1 and 42; 2 and 21; 3 and 14; 6 and 7

Ⓚ 1 and 42; 2 and 21; 3 and 14; 4 and 10; 6 and 7

11. Which number is composite?

Ⓐ 21 Ⓑ 37 Ⓒ 43 Ⓓ 59

12. Which number is prime?

Ⓕ 15 Ⓖ 29 Ⓗ 57 Ⓚ 63

13. Which number is a multiple of 9?

Ⓐ 32 Ⓑ 49 Ⓒ 56 Ⓓ 63

Name Study Guide Date

14. Which number is a multiple of 6?

Ⓕ 28 Ⓖ 32 Ⓗ 48 Ⓚ 56

Use the rule to find the next 3 terms in the pattern.

15. 7, 14, 28, 56, ...
Rule: multiply by 2

Ⓐ 102, 204, 408 Ⓒ 122, 244, 488
Ⓑ 112, 224, 448 Ⓓ 132, 264, 528

16. 50, 85, 120, 155, ...
Rule: add 35

Ⓕ 190, 225, 260 Ⓗ 180, 215, 250
Ⓖ 190, 225, 250 Ⓚ 180, 215, 245

17. 3, 9, 27, 81, ...
Rule: multiply by 3

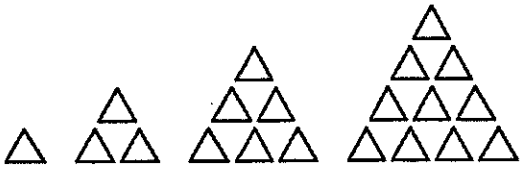
Ⓐ 162, 324, 648 Ⓑ 162; 486; 1,458 Ⓒ 243, 486, 972 Ⓓ 243; 729; 2,187

Describe the next term of the pattern.

18.

Ⓕ shaded triangle
Ⓖ shaded pentagon
Ⓗ unshaded triangle
Ⓚ unshaded pentagon

19.



Ⓐ 5 rows with 16 triangles
Ⓑ 5 rows with 15
Ⓒ 6 rows with 14 triangles
Ⓓ 6 rows with 12 triangles

20. Two friends are planning a 116-mile canoe trip that will last 4 days. They want to travel the same number of miles each day. Which equation shows how many miles they will travel each day?

Ⓕ $116 \div 4 = m$; $m = 27$ miles
Ⓖ $116 \div 4 = m$; $m = 29$ miles
Ⓗ $116 \times 4 = m$; $m = 464$ miles
Ⓚ $116 \times 4 = m$; $m = 444$ miles

21. A website gets a large number of hits. Then it gets 1,060 more hits. The website gets 12,565 hits in all. Which equation can be used to show the hits the website had first?

Ⓐ $h + 1{,}060 = 12{,}565$

Ⓑ $h = 1{,}060 + 12{,}565$

Ⓒ $h - 1{,}060 = 12{,}565$

Ⓓ $h = 1{,}060 - 12{,}565$

Use the picture graph for 22–23.

Brett's Basketball Scores

Game 1	◔◔◔◔
Game 2	◔◔◔◔◔◔◔◔
Game 3	◔◔◔◔◔◔
Game 4	◔◔

◔ = 4 points

22. How many fewer points did Brett score in Game 1 than in Game 3?

Ⓕ 36

Ⓖ 30

Ⓗ 16

Ⓚ 8

23. What multiplication equation compares the number of points Brett scored in Game 2 and Game 4?

Ⓐ $p \times 8 = 24;\ p = 3$

Ⓑ $p \times 8 = 32;\ p = 4$

Ⓒ $p \times 4 = 24;\ p = 6$

Ⓓ $p \times 4 = 32;\ p = 8$

24. Zack bought 3 pads of drawing paper, 4 charcoal pencils, and 5 color pencils. The pads of drawing paper cost $8 each. The charcoal pencils and color pencils cost $3 each. Which equation shows the total cost of the art supplies?

Ⓕ $3 \times 8 + 3 \times 4 + 5 = c;\ c = \$41$

Ⓖ $3 \times 8 + 3 \times (4 + 5) = c;\ c = \$51$

Ⓗ $3 \times 8 + 3 \times 4 + 5 = c;\ c = \$113$

Ⓚ $3 \times 8 + 3 \times (4 + 5) = c;\ c = \$297$

25. A store has DVDs on sale. The store has 5 racks of cartoons with 13 in each rack. It has 3 racks of movies with 12 in each rack. There were 25 cartoons sold in the first hour of the sale. Which shows how many cartoons and movies are left?

Ⓐ $(5 \times 13 + 3 \times 12) - 25 = 56$

Ⓑ $(5 \times 13 + 3 \times 12) - 25 = 66$

Ⓒ $(5 \times 13 + 3 \times 12) - 25 = 76$

Ⓓ $(5 \times 13 + 3 \times 12) - 25 = 86$