

MY Homework

Lesson 1

Hands On: Model Multiplication

Homework Helper

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Gina put 3 scoops of frozen yogurt in each bowl. There are 6 bowls. How many scoops of frozen yogurt are there?

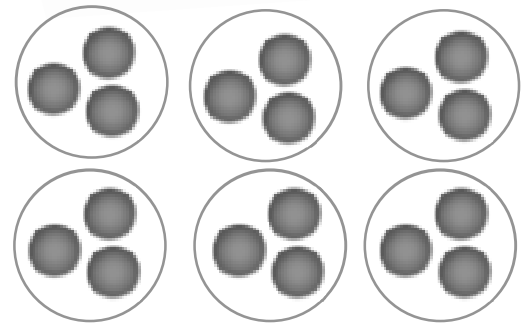
1 The model shows the total number of scoops.

There are 6 bowls, and each has 3 scoops. There are 6 groups of 3.

2 Use repeated addition to find the total.

$$3 + 3 + 3 + 3 + 3 + 3 = 18$$

There are 18 scoops of frozen yogurt.



Practice

Draw a model to find the total number. 1–4. See students' drawings.

1. 2 groups of 8 equals 16

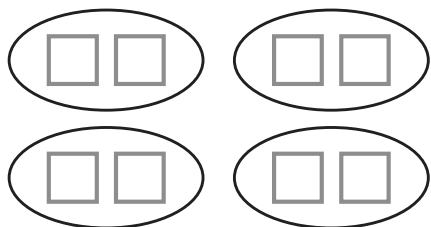
2. 5 groups of 7 equals 35

3. $6 \times 4 =$ 24

4. $4 \times 8 =$ 32

Describe each set of equal groups.

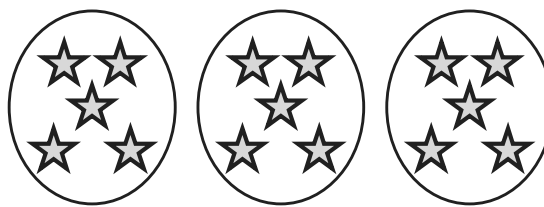
5.



$$\underline{2} + \underline{2} + \underline{2} + \underline{2} = \underline{8}$$

$$\underline{4} \text{ groups of } \underline{2} = \underline{8}$$

6.



$$\underline{5} + \underline{5} + \underline{5} = \underline{15}$$

$$\underline{3} \text{ groups of } \underline{5} = \underline{15}$$

7. $6 \times 5 = \underline{30}$

$$\underline{6} \text{ groups of } \underline{5} = \underline{30}$$

8. $3 \times 4 = \underline{12}$

$$\underline{3} \text{ groups of } \underline{4} = \underline{12}$$



Problem Solving

Mathematical
PRACTICE



Model Math Complete each number sentence.

9. Paulina played 3 soccer games on Saturday. She drank 1 juice box during each soccer game. How many juice boxes did she drink?

$$\underline{1} + \underline{1} + \underline{1} = \underline{3} \text{ juice boxes}$$

10. Daniel, Jamie, Molly, and Corey each have 4 books from the library. How many books do they have in all?

$$\underline{4} + \underline{4} + \underline{4} + \underline{4} = \underline{16} \text{ library books}$$

Vocabulary Check



11. Choose the correct word(s) to complete the sentence below.

equal groups

multiplication

You can use multiplication to find the total number of objects in equal groups.

Name _____

Operations and Algebraic Thinking
3.OA.1, 3.OA.3, 3.OA.8

CCSS

MY Homework

Lesson 2

Multiplication as Repeated Addition

Homework Helper



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Dani will put 2 forks at each of the 8 table settings. How many forks does she need in all?

Find 8 groups of 2.

Write an addition sentence to show the equal groups.

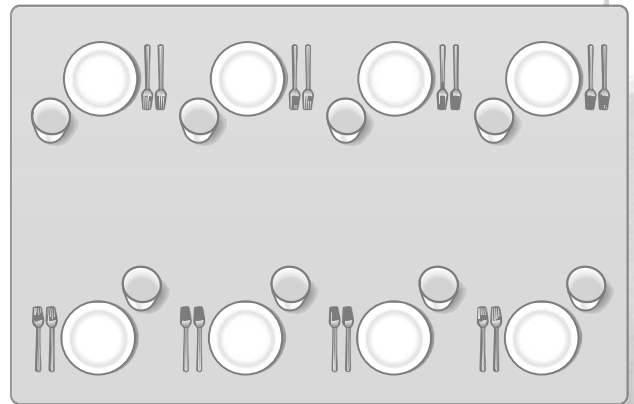
$$2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 16$$

Write a multiplication sentence to show 8 groups of 2.

$$8 \times 2 = \square \quad \leftarrow \text{Find the unknown.}$$

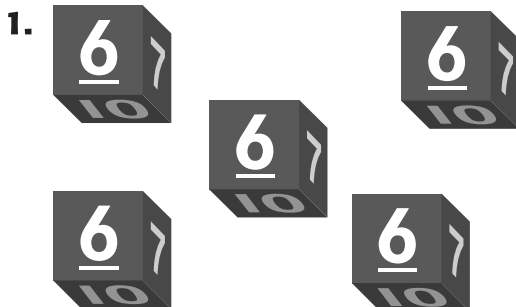
$$8 \times 2 = 16$$

So, 8 groups of 2 is 16. The unknown is 16 forks.



Practice

Write an addition sentence and a multiplication sentence for each.



$$6 + 6 + 6 + 6 + 6 = 30$$

$$5 \times 6 = 30$$



$$5 + 5 + 5 + 5 = 20$$

$$4 \times 5 = 20$$



Problem Solving 3-5. See students' drawings.


Draw a picture to find the total. Write a multiplication sentence.

3. 7 groups of 1 green grape

4. 9 groups of 2 square crackers

$$\underline{7} \times \underline{1} = \underline{7}$$

$$\underline{9} \times \underline{2} = \underline{18}$$

5. **PRACTICE**  **Model Math** How many buttons does Leonora have altogether if she has 4 bags of buttons and each bag has 10 buttons?

$$\underline{4} \times \underline{10} = \underline{40 \text{ buttons}}$$

Multiply to find the unknown product.

6. $8 \times 3 = \blacksquare$

The unknown is 24.

7. $4 \times 3 = \blacksquare$

The unknown is 12.

Vocabulary Check



Use the correct word(s) and the number sentence $6 \times 8 = 48$ to solve.

equal groups repeated addition multiply factors product

8. The number 48 is the product.
9. The symbol \times tells you to multiply.
10. The numbers 6 and 8 are the factors.
11. $8 + 8 + 8 + 8 + 8 + 8 = 48$ shows repeated addition.
12. 6×8 means 6 equal groups of 8.

Test Practice

13. Sam is washing windows. There are 5 windows in each of 7 rooms. How many windows does Sam have to wash?

- (A) 2 windows (C) 30 windows
(B) 12 windows (D) 35 windows

Name _____

MY Homework

Lesson 3

Hands On: Multiply with Arrays

Homework Helper



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James discovered that a sheet of stamps is in an array. The stamps are arranged in 6 equal rows of 3.

Write an addition sentence to show equal rows.

$$3 + 3 + 3 + 3 + 3 + 3 = 18$$

Write a multiplication sentence to represent the array.

$$\begin{array}{c} \text{rows} \\ 6 \end{array} \times \begin{array}{c} \text{number in} \\ \text{each row} \\ 3 \end{array} = \begin{array}{c} \text{total} \\ 18 \end{array}$$

James turns the sheet of stamps the other way. There still are 18 stamps. Only now, there are 3 equal rows of 6.

$$\begin{array}{c} \text{rows} \\ 3 \end{array} \times \begin{array}{c} \text{number in} \\ \text{each row} \\ 6 \end{array} = \begin{array}{c} \text{total} \\ 18 \end{array}$$



This is the Commutative Property of Multiplication.

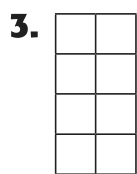
Practice

Draw an array to find the product.

1. $5 \times 7 = \underline{35}$

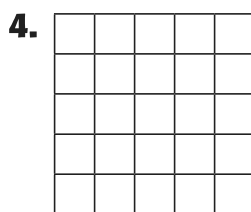
2. $6 \times 5 = \underline{30}$

Write an addition sentence and a multiplication sentence to show equal rows.



$$2 + 2 + 2 + 2 = 8$$

$$4 \times 2 = 8$$



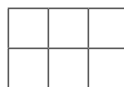
$$5 + 5 + 5 + 5 + 5 = 25$$

$$5 \times 5 = 25$$

Vocabulary Check



5. Draw two arrays to model $2 \times 3 = 6$.
Use the arrays to show the meaning of the Commutative Property of Multiplication.



Problem Solving

Mathematical



6. **PRACTICE** **Model Math** Suki's watercolor set has 3 rows of paint. There are 8 colors in each row. Write a multiplication sentence to find the total number of colors in the set.

$$3 \times 8 = 24 \text{ colors}$$

7. A checkerboard has 8 rows, with 8 squares in each row. Write a multiplication sentence to find the total number of squares.

$$8 \times 8 = 64 \text{ squares}$$

My Work!

Name _____

MY Homework

Lesson 4

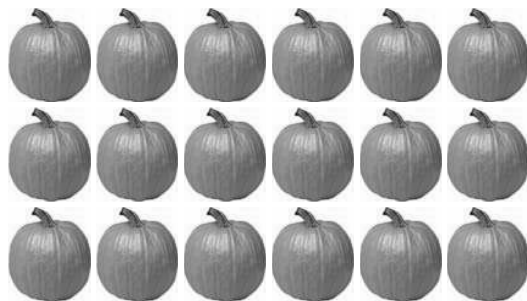
Arrays and Multiplication

Homework Helper



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The pumpkins in a patch are arranged in rows with an equal number in each row. How many pumpkins are in the patch?



Write an addition sentence and a multiplication sentence to show equal rows.

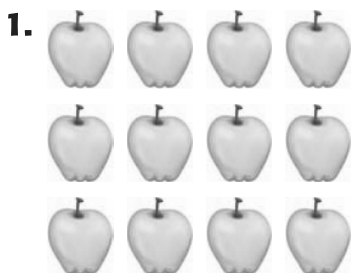
$$6 + 6 + 6 = 18 \quad 3 \times 6 = 18$$

The Commutative Property of Multiplication allows you to change the order of the factors to write another multiplication sentence, $6 \times 3 = 18$.

There are 18 pumpkins in the pumpkin patch.

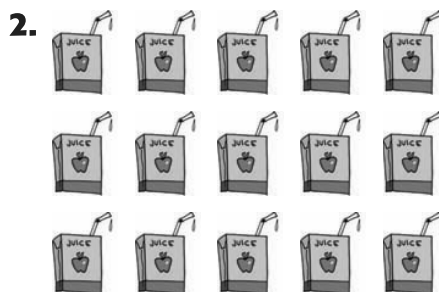
Practice

Write an addition sentence and a multiplication sentence to show equal rows.



$$\underline{4} + \underline{4} + \underline{4} = \underline{12}$$

$$\underline{3} \times \underline{4} = \underline{12}$$



$$\underline{5} + \underline{5} + \underline{5} = \underline{15}$$

$$\underline{3} \times \underline{5} = \underline{15}$$

Use the Commutative Property of Multiplication to find each missing number.

3. $3 \times 2 = 6$ $\underline{2} \times 3 = 6$

4. $6 \times 4 = 24$ $4 \times \underline{6} = 24$

5. $8 \times 6 = 48$ $6 \times 8 = \underline{48}$

6. $5 \times 2 = 10$ $\underline{2} \times 5 = 10$



Problem Solving

Draw an array to solve. Then write two multiplication sentences.

7. Bottles of syrup are arranged in 4 rows of 7 bottles each. How many bottles of syrup are there in all?

$4 \times 7 = 28$ bottles

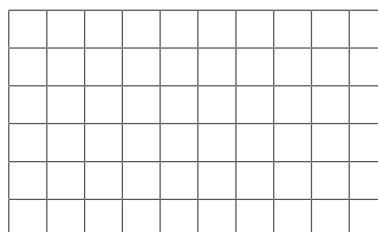
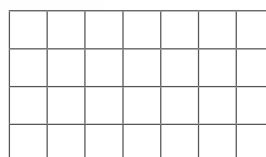
$7 \times 4 = 28$ bottles

8. A parking lot has 6 rows of 10 spaces. How many parking spaces are there altogether?

$6 \times 10 = 60$ parking spaces

$10 \times 6 = 60$ parking spaces

My Drawing!



Sample arrays shown.

Vocabulary Check



9. How can you use an array to show the Commutative Property?

Sample answer: Multiply the number of rows by the number of columns. Then turn the array. The product is the same.

Test Practice

10. Which pair of number sentences represents the Commutative Property of Multiplication?

(A) $3 \times 6 = 18$; $2 \times 9 = 18$

(C) $4 \times 5 = 20$; $8 \times 5 = 40$

(B) $6 \times 7 = 42$; $7 \times 6 = 42$

(D) $9 + 11 = 20$; $11 + 9 = 20$

Name _____

MY Homework

Lesson 5

Problem Solving: Make a Table

Homework Helper



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Jane's new bike can have hand brakes or foot brakes.
The bike can be silver, blue, black, or purple. How
many possible bikes are there?

1 Understand

There are 2 types of brakes: hand brakes or foot brakes.
There are 4 color choices: silver, blue, black, or purple.
I need to find the number of possible bikes.

2 Plan

Make a table.

	Silver	Blue	Black	Purple
Hand brakes	Hand/Silver	Hand/Blue	Hand/Black	Hand/Purple
Foot brakes	Foot/Silver	Foot/Blue	Foot/Black	Foot/Purple

3 Solve

There are 8 possible bikes.

4 Check

Multiply 2 types of brakes by 4 color choices. $4 \times 2 = 8$



Problem Solving

1. Solve the problem by making a table.

Claudio will decorate his bedroom. He can
choose tan, blue, or gray paint and striped or
plaid curtains. How many ways can he decorate
his room with different paint and curtains?

6 ways

	tan, (t)	blue, (b)	gray, (g)
striped, (s)	s,t	s,b	s,g
plaid, (p)	p,t	p,b	p,g

Solve each problem by making a table.

2. Jimmy has a number cube labeled 1 through 6, and a penny. How many different ways can the cube and penny land with one roll of the cube and one flip of the penny?

	1	2	3	4	5	6
heads, (h)	h1	h2	h3	h4	h5	h6
tails, (t)	t1	t2	t3	t4	t5	t6

12 ways

3. Archie earns \$4 each week for doing his chores. How much money will Archie earn in 2 months if there are 4 weeks in each month?

	Week 1	Week 2	Week 3	Week 4
Month 1	\$4	\$4	\$4	\$4
Month 2	\$4	\$4	\$4	\$4



\$32

4. **Mathematical PRACTICE 7 Identify Structure** Abigail has a green, yellow, and purple shirt to match with either a white, black, or red pair of pants. How many different shirt and pants outfits can she make?

	pants, (w)	pants, (b)	pants, (r)
shirt, (g)	g, w	g, b	g, r
shirt, (y)	y, w	y, b	y, r
shirt, (p)	p, w	p, b	p, r

9 outfits

How many outfits would be possible if Abigail had only 2 shirts and 2 pair of pants? Explain.

4 outfits; $2 \times 2 = 4$

Name _____

MY Homework

Lesson 6

Use Multiplication to Find Combinations

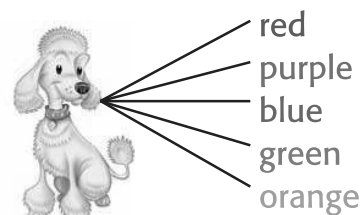
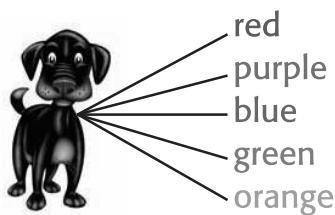
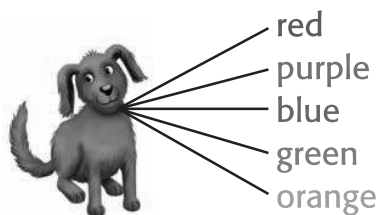
Homework Helper



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Lucia's three dogs have red, purple, blue, green, and orange collars that they take turns wearing. Find the number of possible dog and collar combinations.

Show all of the possible combinations.



There are 3 dogs and 5 collar colors.

$3 \times 5 = 15$ possible combinations

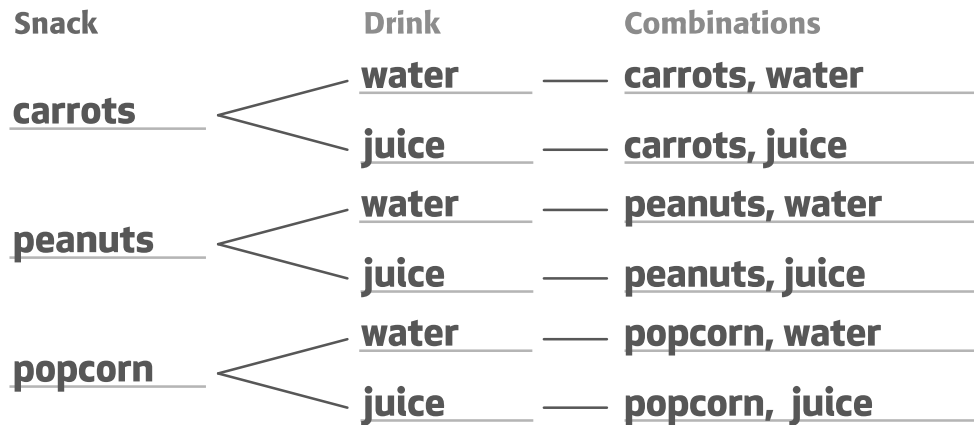
Practice

1. Diana can take 1 pencil and 1 eraser to school. Her choices are shown. How many different pencil and eraser combinations are there? Complete the tree diagram. Write a multiplication sentence.

Pencil Colors	Eraser Shapes	Combinations
yellow	heart	yellow, heart
	star	yellow, star
	square	yellow, square
blue	heart	blue, heart
	star	blue, star
	square	blue, square

2 \times 3 = 6 combinations

- Mathematical **2. PRACTICE 7 Identify Structure** For a snack, Randy can choose from peanuts, carrots, or popcorn. He can have water or juice to drink. How many snack and drink combinations are there? Complete the tree diagram. Write a multiplication sentence.



3 × 2 = 6 combinations

Vocabulary Check



3. Write the correct vocabulary word(s) in each space to complete the sentence.

combination

tree diagram

Each branch of a tree diagram shows a possible combination of items.

Test Practice

4. Amanda bought 4 pairs of shoes and 5 purses. Which number sentence shows the number of different shoes and purse combinations that Amanda can make?

(A) $4 + 5 = 9$

(C) $4 + 4 + 4 + 4 = 16$

(B) $5 \times 8 = 40$

(D) $4 \times 5 = 20$