

MY Homework

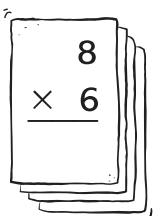
Lesson 1

Multiply by 6

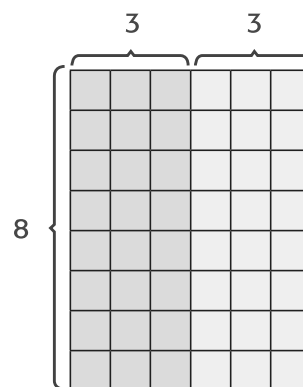
Homework Helper

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Tyrone spent 8 minutes playing each level of a video game. The video game had 6 levels. How many minutes did he spend altogether playing the video game?

Find 8×6 .Decompose 6 into two equal addends of $3 + 3$.6 is the double of 3. So, 8×6 is the double of 8×3 .

$$\begin{array}{rcl}
 8 \times 6 & = & 8 \times 3 + 8 \times 3 \\
 & = & 24 + 24 \\
 & = & 48
 \end{array}$$

So, $8 \times 6 = 48$.

Tyrone spent 48 minutes playing the video game.

Practice Sample arrays: 1, 2

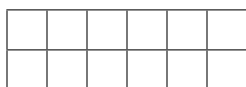
Double a known fact to find each product. Draw an array.

1. $2 \times 6 = \underline{12}$

$2 \times 3 = 6$

$2 \times 3 = 6$

$6 + 6 = 12$

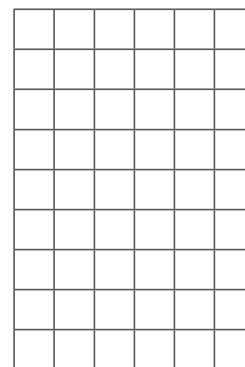


$$\begin{array}{r}
 9 \\
 \times 6 \\
 \hline
 54
 \end{array}$$

$9 \times 3 = 27$

$9 \times 3 = 27$

$27 + 27 = 54$



Algebra Find each unknown. Double a known fact.

3. $5 \times \blacksquare = 30$

The unknown is 6.

4. $\blacksquare \times 6 = 60$

The unknown is 10.

5. $6 \times \blacksquare = 36$

The unknown is 6.

6. $\blacksquare \times 6 = 42$

The unknown is 7.



Problem Solving

Mathematical
PRACTICE



Use Algebra For Exercises 7–8, write a multiplication sentence with a symbol for the unknown. Then solve.

7. A flea has 6 legs. How many legs are there altogether on 8 fleas?

$8 \times 6 = \blacksquare$; 48 legs

8. Admission to a science museum is \$9. How much altogether will it cost for 6 people?

$\$9 \times 6 = \blacksquare$; \$54

Mathematical



9. **PRACTICE** **Make Sense of Problems** Gina's kitten weighs 5 ounces. If the kitten gains 3 ounces every week, how many ounces will the kitten weigh in 6 weeks?

23 ounces

My Work!

Test Practice

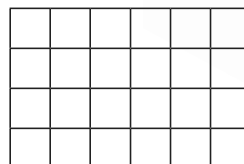
10. Which number sentence represents the array shown at the right?

Ⓐ $4 \times 6 = 24$

Ⓒ $4 + 6 = 10$

Ⓑ $3 \times 6 = 18$

Ⓓ $8 \times 3 = 24$



Name _____

MY Homework

Lesson 2

Multiply by 7

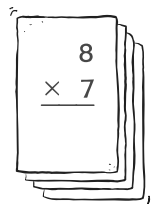
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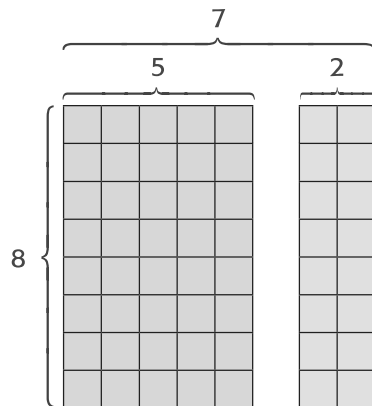
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**Jared will go on vacation for 8 weeks this summer.
For how many days will he be on vacation?**

Find 8×7 .



Decompose the factor 7 into the addends $5 + 2$.



$$\begin{aligned}
 8 \times 7 &= 8 \times 5 + 8 \times 2 && \text{Multiply.} \\
 &= 40 + 16 && \text{Add.} \\
 &= 56
 \end{aligned}$$

Practice

Algebra Find each unknown. Decompose the factor 7 into $5 + 2$.

1. $7 \times 10 = \blacksquare$

2. $5 \times 7 = \blacksquare$

Known facts: $5 \times 10 = \underline{50}$

Known facts: $5 \times 5 = \underline{25}$

$2 \times 10 = \underline{20}$

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

The unknown is 70.

The unknown is 35.

Algebra Find each unknown. Use the Commutative Property.

3. $7 \times 3 = \blacksquare$

$3 \times 7 = \blacksquare$

The unknown is 21.

4. $7 \times \blacksquare = 28$

$\blacksquare \times 7 = 28$

The unknown is 4.

5. $\blacksquare \times 7 = 49$

$7 \times \blacksquare = 49$

The unknown is 7.

6. $7 \times \blacksquare = 14$


$\blacksquare \times 7 = 14$

The unknown is 2.



Problem Solving

Algebra Write a multiplication sentence with a symbol for the unknown. Then solve.

7. **PRACTICE**  **Model Math** It takes Callie 9 minutes to paint each slat on a fence. There are 7 slats in each section of the fence. How long will it take Callie to paint each section of the fence?

$9 \times 7 = \blacksquare$; 63 minutes

8. Each house on Mulberry Street has 7 front windows. There are 3 houses on each side of the street. How many front windows are there in all?

$6 \times 7 = \blacksquare$; 42 front windows

Test Practice

9. A bicycle shop is replacing both tires on 7 bikes. How many tires will be replaced altogether?

(A) 2 tires

(C) 9 tires

(B) 7 tires

(D) 14 tires

Name _____

MY Homework

Lesson 3

Divide by 6 and 7

Homework Helper



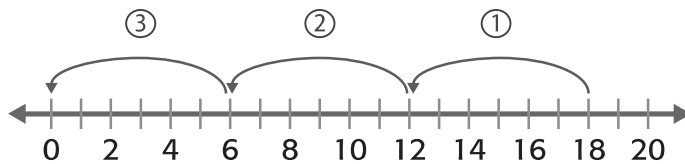
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Mariah sells jewelry. She has 18 pieces to deliver to 6 customers. Each customer bought the same number of pieces. How many pieces of jewelry did Mariah deliver to each customer?

You need to find the unknown in $18 \div 6 = \square$.

Use repeated subtraction.

Start at 18 on a number line and skip count backward by 6.



Helpful Hint

6 times what
number equals 18?

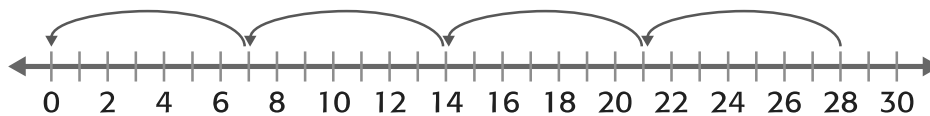
There are 3 groups of 6 in 18.

So, Mariah delivered 3 pieces of jewelry to each customer.

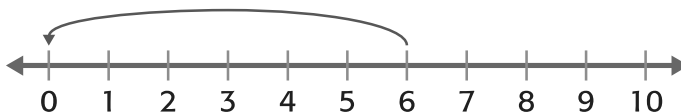
Practice

Use repeated subtraction to divide. Draw the arrows.

1. $28 \div 7 = \underline{\quad 4 \quad}$



2. $\boxed{1}$
 $6 \overline{) 6}$



Divide. Write a related multiplication fact.

$$\begin{array}{l} 3. \ 54 \div 6 = \underline{9} \\ \quad 9 \times 6 = 54 \end{array}$$

$$\begin{array}{l} 4. \ 21 \div 7 = \underline{3} \\ \quad 3 \times 7 = 21 \end{array}$$

$$\begin{array}{l} 5. \ 49 \div 7 = \underline{7} \\ \quad 7 \times 7 = 49 \end{array}$$

$$\begin{array}{l} \boxed{8} \\ 6. \ 6 \overline{)48} \\ \quad 8 \times 6 = 48 \end{array}$$

$$\begin{array}{l} \boxed{9} \\ 7. \ 7 \overline{)63} \\ \quad 9 \times 7 = 63 \end{array}$$

$$\begin{array}{l} \boxed{5} \\ 8. \ 6 \overline{)30} \\ \quad 5 \times 6 = 30 \end{array}$$



Problem Solving

Mathematical PRACTICE

Model Math Write a division sentence to solve.

Then write a related multiplication sentence.

9. There are 42 cards dealt to the players in a card game. Each player gets 7 cards. How many players are in the game?

$$\underline{42 \div 7 = 6; 6 \times 7 = 42; 6 \text{ players}}$$

10. Mr. Clancy bought 9 cans of paint. His total was \$54. Each can of paint was the same price. How much did each can of paint cost?

$$\underline{\$54 \div 9 = \$6; \$6 \times 9 = \$54; \$6}$$

11. Franklin's mother is making 6 snack bags for his campout. She will put 18 cherry fruit rolls and 18 grape fruit rolls into the bags. If she puts the same number in each bag, how many fruit rolls will be in each snack bag?

$$\underline{36 \div 6 = 6; 6 \times 6 = 36; 6 \text{ fruit rolls}}$$

Test Practice

12. Mrs. Tanner's class of 7 students decided to adopt an animal at a zoo. How much would each student need to pay in order to adopt an animal from the Zoo Friend Level?

- (A) \$35 (C) \$7
(B) \$8 (D) \$5

Central Florida Zoo Adopt An Animal

Adoption Level	Price
Zoo Friend	\$.35
Animal Lover	\$.56
Kingdom Keeper	\$.100

Name _____

Operations and Algebraic Thinking

3.OA.1, 3.OA.3, 3.OA.4, 3.OA.5,
3.OA.7, 3.OA.9

CCSS

MY Homework

Lesson 4

Multiply by 8

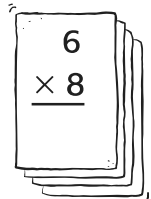
Homework Helper



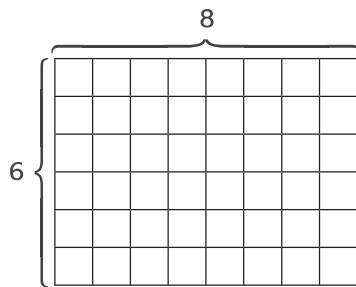
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Each ladybug has 6 legs. Elaine counted 8 ladybugs.
How many legs is that altogether?

Find 6×8 .



One Way Draw an array.



Another Way Double a known fact.

Decompose the number 8 into equal
addends of $4 + 4$.

$$\begin{array}{rcl} 6 \times 8 & = & 6 \times 4 + 6 \times 4 \\ & & \swarrow \quad \searrow \quad \swarrow \quad \searrow \\ & & 24 \quad + \quad 24 \quad = \quad 48 \end{array}$$

$6 \times 8 = 48$. So, 8 ladybugs have 48 legs altogether.

Practice

Double a known fact to find each product.

1. $5 \times 8 = \underline{40}$

2. $4 \times 8 = \underline{32}$

$5 \times \underline{4} = \underline{20}$

$4 \times \underline{4} = \underline{16}$

$5 \times \underline{4} = \underline{20}$

$4 \times \underline{4} = \underline{16}$

$\underline{20} + \underline{20} = \underline{40}$

$\underline{16} + \underline{16} = \underline{32}$

Algebra Find each unknown. Use the Commutative Property.

3. $8 \times \blacksquare = 40$

$\blacksquare \times 8 = 40$

The unknown is 5.

4. $\blacksquare \times 8 = 56$

$8 \times \blacksquare = 56$

The unknown is 7.

5. $2 \times 8 = \blacksquare$

$8 \times 2 = \blacksquare$

The unknown is 16.

6. $8 \times \blacksquare = 64$

$\blacksquare \times 8 = 64$

The unknown is 8.

Multiply.

7.
$$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$$

8.
$$\begin{array}{r} 8 \\ \times 9 \\ \hline 72 \end{array}$$

9.
$$\begin{array}{r} 8 \\ \times 0 \\ \hline 0 \end{array}$$

10.
$$\begin{array}{r} 3 \\ \times 8 \\ \hline 24 \end{array}$$



Problem Solving

Mathematical PRACTICE



Use Symbols Write a multiplication sentence with a symbol for the unknown. Then solve.

11. There were 5 dolphins swimming around a tour boat. Each dolphin circled the boat 8 times. What is the total number of times all of the dolphins circled the boat?

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

12. Cameron worked 8 hours at the coffee shop. He earned the same amount in tips each hour. At the end of his shift, Cameron had \$32 in tips. How much money did he earn in tips each hour?

$8 \times \blacksquare = \32 ; \$4

Test Practice

13. Stuart knows spiders have 8 legs. Which shows a known fact Stuart can double to find the number of legs on 7 spiders?

(A) $4 \times 3 = 12$

(C) $4 \times 8 = 32$

(B) $4 \times 7 = 28$

(D) $7 \times 8 = 56$

Name _____

MY Homework

Lesson 5

Multiply by 9

Homework Helper

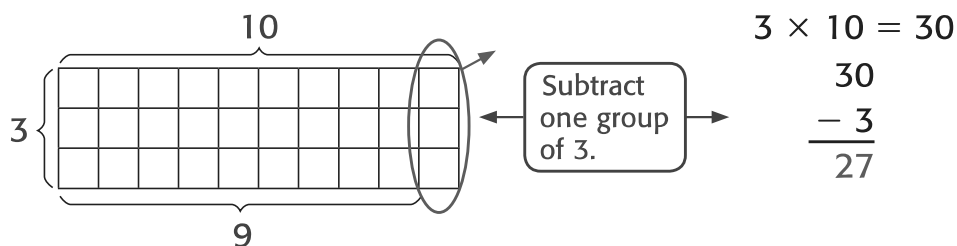


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Delia counted 9 petals on each flower she picked. If she picked 3 flowers, how many petals are there in all?

Find 3×9 .

One Way Subtract from a known 10s fact.



Another Way Use patterns.

Starting with the product 18, the multiples of 9 follow a pattern. The tens digit in each product is 1 less than the factor that is not 9. The sum of the digits in the product is 9.

$$3 - 1 = 2$$

$$\downarrow$$

$$3 \times 9 = 27$$

$$\uparrow \uparrow$$

$$2 + 7 = 9$$

So, there are 27 petals in all.

Practice

Use the Commutative Property to find each product or missing factor.

1. $\begin{array}{r} 9 \\ \times 7 \\ \hline 63 \end{array}$ $\begin{array}{r} \boxed{7} \\ \times 9 \\ \hline 63 \end{array}$

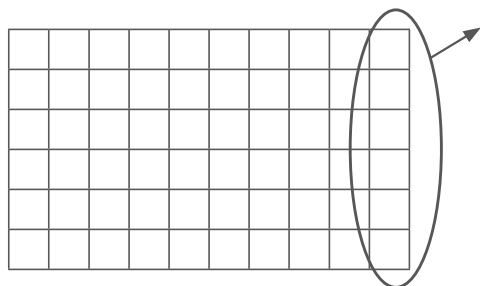
2. $\begin{array}{r} 2 \\ \times \boxed{9} \\ \hline 18 \end{array}$ $\begin{array}{r} 9 \\ \times 2 \\ \hline 18 \end{array}$

3. $\begin{array}{r} 9 \\ \times 5 \\ \hline 45 \end{array}$ $\begin{array}{r} \boxed{5} \\ \times 9 \\ \hline 45 \end{array}$

Draw an array for a known 10s fact. Then subtract 1 from each row to find the product.

4. $6 \times 9 = \underline{54}$

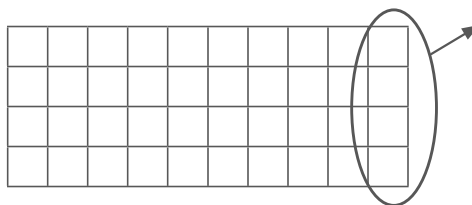
Known fact: $\underline{6} \times \underline{10} = \underline{60}$



$60 - \underline{6} = \underline{54}$

5. $4 \times 9 = \underline{36}$

Known fact: $\underline{4} \times \underline{10} = \underline{40}$



$\underline{40} - \underline{4} = \underline{36}$

Algebra Use the Commutative Property to find each unknown.

6. $9 \times \blacksquare = 36$

$\blacksquare \times 9 = 36$

The unknown is 4.


7. $\blacksquare \times 9 = 72$

$9 \times \blacksquare = 72$

The unknown is 8.



Problem Solving

- 8. PRACTICE**  **Justify Conclusions** Ty works 9 hours a day and earns \$6 an hour. Cal works 6 hours a day and earns \$9 an hour. If they both work 5 days, who earns more money? Who works longer? Explain.

$9 \times \$6 = \$54; 6 \times \$9 = \$54; \text{They earn the same amount.}$

$9 \times 5 = 45 \text{ hours; } 6 \times 5 = 30 \text{ hours; Ty works longer than Cal.}$

Test Practice

9. Anna lives 9 blocks from school. How many blocks does she walk to school in 3 days?
- (A) 6 blocks (C) 12 blocks
(B) 9 blocks (D) 27 blocks

Name _____

MY Homework

Lesson 6

Divide by 8 and 9

Homework Helper

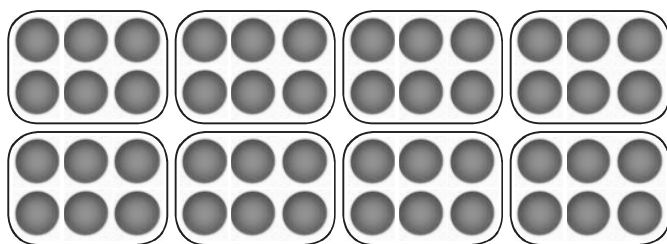


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Samantha bought a set of silverware with 48 pieces. She divides the pieces evenly among 8 sections of a tray. How many pieces of silverware are in each section of the tray?

One Way Use counters to partition.

Use 48 counters to model dividing evenly among 8 groups.



There are 6 counters in each group.

Another Way Use repeated subtraction.

①	②	③	④	⑤	⑥
48	40	32	24	16	8
$\begin{array}{r} 48 \\ - 8 \\ \hline 40 \end{array}$	$\begin{array}{r} 40 \\ - 8 \\ \hline 32 \end{array}$	$\begin{array}{r} 32 \\ - 8 \\ \hline 24 \end{array}$	$\begin{array}{r} 24 \\ - 8 \\ \hline 16 \end{array}$	$\begin{array}{r} 16 \\ - 8 \\ \hline 8 \end{array}$	$\begin{array}{r} 8 \\ - 8 \\ \hline 0 \end{array}$

8 is subtracted 6 times.

$48 \div 8 = 6$. So, there were 6 pieces of silverware in each section.

Practice

Use counters to find the number of equal groups or the number in each group.

1. 27 counters
9 equal groups
3 in each group
So, $27 \div 9 = \underline{3}$.

2. 54 counters
9 equal groups
6 in each group
So, $54 \div \underline{9} = 6$.

3. 32 counters
8 equal groups
4 in each group
So, $32 \div 8 = \underline{4}$.

4. Use repeated subtraction to divide.

$$63 \div 9 = \underline{7}$$

$$\begin{array}{r} 63 \\ -9 \\ \hline 54 \end{array} \nearrow \begin{array}{r} 54 \\ -9 \\ \hline 45 \end{array} \nearrow \begin{array}{r} 45 \\ -9 \\ \hline 36 \end{array} \nearrow \begin{array}{r} 36 \\ -9 \\ \hline 27 \end{array} \nearrow \begin{array}{r} 27 \\ -9 \\ \hline 18 \end{array} \nearrow \begin{array}{r} 18 \\ -9 \\ \hline 9 \end{array} \nearrow \begin{array}{r} 9 \\ -9 \\ \hline 0 \end{array}$$

Algebra Use the inverse operation to find each unknown.

5. $16 \div 8 = \blacksquare$

$$\blacksquare \times 8 = 16$$

$$\blacksquare = \underline{2}$$

6. $\blacksquare \div 9 = 4$

$$4 \times 9 = \blacksquare$$

$$\blacksquare = \underline{36}$$

7. $64 \div 8 = \blacksquare$

$$\blacksquare \times 8 = 64$$

$$\blacksquare = \underline{8}$$



Problem Solving

Mathematical
PRACTICE



Use Algebra For Exercises 8 and 9, write a division sentence with a symbol for the unknown. Then solve.

8. Michael, the chef, has 18 pineapple slices to divide evenly among 9 fruit cups. How many pineapple slices will he put in each cup?

$$\underline{18 \div 9 = \blacksquare; 2 \text{ pineapple slices}}$$

9. Kayla counted 40 chairs in the auditorium. There were 8 chairs in each row. How many rows of chairs were there?

$$\underline{40 \div 8 = \blacksquare; 5 \text{ rows}}$$

10. Simon sold 72 packages of popcorn for the fundraiser. There are 9 packages in each box. If he has delivered 27 packages, how many boxes does Simon have left to deliver?

$$\underline{5 \text{ boxes}}$$

Test Practice

11. Which number sentence uses the inverse operation to find the unknown in the division sentence $81 \div 9 = \blacksquare$?

(A) $90 - 9 = 81$

(C) $8 \times 9 = 72$

(B) $72 + 9 = 81$

(D) $9 \times 9 = 81$

MY Homework

Lesson 7

Problem Solving: Make an Organized List

Homework Helper



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**Harold, Nina, Adam, and Rachel sit at the same table.
Students must go to the drinking fountain in groups of 3.
What possible combinations of these students can go to the
drinking fountain together?**

1 Understand

What facts do you know?

Harold, Nina, Adam, and Rachel sit together.

Students go to the drinking fountain in groups of 3.

What do you need to find?

the possible combinations of students that could go to
the drinking fountain together

2 Plan

I will make an organized list of the possible combinations.

3 Solve

I will list the students in different groups of 3.
So, there are four possible combinations of
students who can go to the drinking fountain
together.

Harold, Nina, Adam

Nina, Adam, Rachel

Harold, Adam, Rachel

Harold, Nina, Rachel

4 Check

Does the answer make sense?

Checking my list, I see that each student's name is listed the
same number of times, and one is left out each time.

So, the answer is reasonable.



Problem Solving

Solve each problem by making an organized list.

1. Paul needs 34 cents. He has only dimes and pennies. How many ways can he make 34 cents using both kinds of coin? Explain.

3 ways: 1 dime and 24 pennies; 2 dimes and 14 pennies; 3 dimes and 4 pennies

2. Camille rides a bus to work. To get downtown, she can ride any bus number between 11 and 34, that can be divided evenly by 3, and is an even number. Which numbers are the buses that Camille could ride to work?

12, 18, 24, and 30

3. Bruce is grocery shopping. He can go to the deli, the bakery, and the dairy section in any order. How many possibilities are there for the order in which Bruce can do his shopping?

6 possibilities

4. Flora has 5 boxes that increase in size. In the first box she packs 4 books. In each box after that, she pack 3 more books than the box before. How many books does Flora pack in the last box?

16 books



5. **PRACTICE 3 Justify Conclusions** A mouse makes itself a new nest every 2 weeks. It uses 8 large leaves to line each nest. How many leaves will the mouse have used after 6 weeks? Explain.

24 leaves; 2 weeks, 8 leaves; 4 weeks,

$8 + 8 = 16$ leaves; 6 weeks, $16 + 8 = 24$ leaves

My Work!

3. **deli, bakery, dairy;
deli, dairy, bakery;
bakery, dairy, deli;
bakery, deli, dairy;
dairy, bakery, deli;
dairy, deli, bakery**

4.

Box Number	Number of Books
1	4
2	7
3	10
4	13
5	16

Name _____

MY Homework

Lesson 8

Multiply by 11 and 12

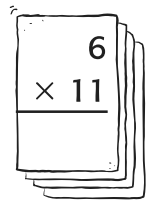
Homework Helper



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**Felisa can put 6 photos on each page of her scrapbook.
How many photos can she place altogether on 11 pages?**

Find 6×11 . Write multiplication vertically or horizontally.



One Way Use repeated addition.

$$6 \times 11 =$$

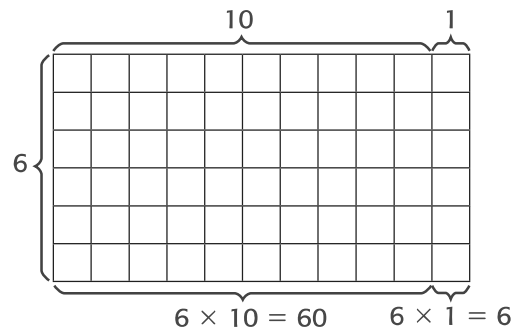
$$11 + 11 + 11 + 11 + 11 + 11 = 66$$

Another Way Decompose 11 into 10 + 1.

Decompose 11 into the addends 10 + 1.

1 Multiply each part.
 $6 \times 10 = 60$
 $6 \times 1 = 6$

2 Add.
 $60 + 6 = 66$



So, $6 \times 11 = 66$.

Felisa can place 66 photos on 11 pages in her scrapbook.

Practice

Write an addition sentence and a multiplication sentence for each.

1. 5 rows of 11 counters $\underline{11} + \underline{11} + \underline{11} + \underline{11} + \underline{11} = \underline{55}$

$$\underline{5} \times \underline{11} = \underline{55}$$

2. 3 rows of 12 counters $\underline{12} + \underline{12} + \underline{12} = \underline{36}$

$$\underline{3} \times \underline{12} = \underline{36}$$

Use repeated addition to find each product.

3. $3 \times 11 = \underline{33}$

4. $8 \times 12 = \underline{96}$

Decompose one factor to find each product.

5. $5 \times 12 = \underline{60}$

6. $7 \times 11 = \underline{77}$



Problem Solving

7. How many eggs are there altogether in 7 dozen eggs? (*Hint: 1 dozen = 12*)


84 eggs

8. How many months are in 6 years?

72 months

9. A certain butterfly has 9 spots. How many spots would 11 of these butterflies have?

99 spots

10. **PRACTICE**  **Keep Trying** Luke can run a mile in 7 minutes. Colleen can run a mile in 5 minutes. At this rate, how much longer would it take Luke to run 11 miles than it would take Colleen to run 11 miles?

22 minutes

My Work!

Test Practice

11. Which number sentence does *not* belong with the other three?

(A) $4 \times 12 = 48$

(C) $4 + 12 = 16$

(B) $12 \times 4 = 48$

(D) $12 + 12 + 12 + 12 = 48$

Name _____

Operations and Algebraic Thinking
3.OA.2, 3.OA.4, 3.OA.6

CCSS

MY Homework

Lesson 9

Divide by 11
and 12

Homework Helper



Need help? connectED.mcgraw-hill.com

Jolene's little sister, Camille, is 36 months old.
How old is Camille in years?

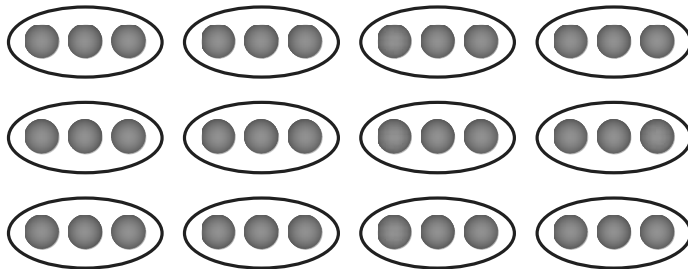
Find $36 \div 12$.

Think of division as a missing factor problem.

$$\begin{array}{c} 12 \times ? = 36 \\ \uparrow \\ \text{The missing factor is 3.} \\ \downarrow \\ 12 \times 3 = 36 \end{array}$$

So, $36 \div 12 = 3$. Camille is 3 years old.

Check using models. Partitioning 36 counters into 12 groups will result in 3 counters in each group.



Practice

Find the number of equal groups.

1. 77 counters

11 in each group

There will be 7 groups.

2. 60 counters

12 in each group

There will be 5 groups.

Use repeated subtraction to divide.

3. $48 \div 12 = \underline{4}$

48	36	24	12	
- 12	- 12	- 12	- 12	
36	24	12	0	

4. $33 \div 11 = \underline{3}$

33	22	11	
- 11	- 11	- 11	
22	11	0	

Algebra Use the inverse operation to find each unknown.

5. $88 \div 11 = \blacksquare$

$11 \times \underline{8} = 88$

The unknown is 8.

6. $12 \overline{)72}$

$12 \times \underline{6} = 72$

The unknown is 6.



Problem Solving

7. Tim is saving to buy a new cell phone that costs \$84. If he saves \$12 each month, in how many months will he have \$84?

7 months

8. A grocery store has 60 boxes of cereal. There are 12 different kinds of cereal. If there are an equal number of boxes of each kind, how many boxes of each kind are there?

5 boxes

9. **Mathematical PRACTICE 1** **Keep Trying** Malcolm's family has 3 cats, 2 dogs, 2 rabbits, and 4 hamsters. Malcolm spends an equal amount of time each day playing with each animal. If he spends 55 minutes altogether, how much time did he spend with each animal?

5 minutes

Test Practice

10. Which number sentence can you use to check your answer when finding $44 \div 11$?

(A) $4 + 11 = 15$

(C) $4 \times 11 = 44$

(B) $44 - 11 = 33$

(D) $44 + 11 = 55$