$\qquad$


## Using Bar Models: Multiplication and Division

## Worksheet 1 Real-World Problems: Multiplication

Study the bar models. Then complete the sentence.


B

$\qquad$ is twice as many as $\qquad$ Twice means 2 times.

B .

1. $\square$
Q $\square$
$\qquad$ is three times as many as $\qquad$
2. $\square$
B
$\qquad$ is four times as many as
3. 


$\qquad$ is five times as many as

## Draw bar models to show each statement.

Example
$A$ is three times as many as $B$.
$\square$
$\square$
4. $\quad C$ is four times as many as $D$.
5. $\quad$ is twice as many as $F$.
6. $\quad \mathrm{G}$ is five times as many as H .
$\qquad$
$\qquad$

## Express the bar model as a multiplication sentence.

- Example


7. 



Solve. Use the bar models to help you.

Example


1 unit $\rightarrow \xrightarrow{9}$
5 units $\rightarrow 5 \times 9=45$
8.

$\qquad$
6 units $\rightarrow$

## Solve. Draw bar models to help you.

Example
Jack is weighs twice as much as Chris.
Chris weighs 42 pounds.
How much does Jack weigh?
42 lb
Chris $\square$
$\square$
?
2 $\times \quad 42=$ 84

Jack weighs $\qquad$ pounds.
9. Terell packs some books into two boxes.

The first box has 16 books in it.
The second box has three times as many books as the first box has.
How many books does the second box have?
$\qquad$ $\times$ $\qquad$ $=$ $\qquad$
The second box has $\qquad$ books.
10. Lesley saves $\$ 24$.

Megan saves 5 times as much as Lesley. How much money does Megan save?

Megan saves \$ $\qquad$
$\qquad$

Write a word problem using the bar models given. Then solve the problem.
-Example


Mr. Tee buys 12 kilograms of wheat flour. He buys 3 times as much rice as wheat flour. How much rice does he buy?
$3 \times 12=36$
Mr. Tee buys 36 kilograms of rice.
11.


Name:
12.

$\qquad$

## Worksheet 2 Real-World Problems: Two-Step Problems with Multiplication

Complete.


Name:
Date:
2.

3.


## Solve. Use bar models to help you.


4. In February, 32 members join a new club.

During spring, 5 times as many members join the club. How many club members are there at the end of spring?
5. A store owner buys 24 boxes of apples. Each box contains 8 apples. During a sale, he sells 63 apples.
a. How many apples does he have at first?
b. How many apples does the store owner have left after the sale?
6. In the auditorium, Brad arranges 35 rows of chairs. Each row has 7 chairs. During the performance, 78 chairs are empty. a. How many chairs does Brad arrange?
b. How many people attend the performance?
7. A farmer keeps 27 chicks and 18 ducklings in each coop. She has 9 coops. How many chicks and ducklings does the farmer have altogether?
8. Sally has 56 stamps.

Sarah has three times as many stamps as Sally. Their brother, Peter, has 45 stamps less than Sarah. How many stamps does Peter have?

Write a two-step word problem using the bar models. Ask a friend to solve the problem.

Example


Alice has \$42.
Belinda has 4 times as much money as Alice.
a. How much money does Belinda have?
$4 \times \$ 42=\$ 168$
Belinda has $\$ 168$.
b. How much money do Alice and Belinda altogether?
$\$ 42+\$ 168=\$ 210$
Alice and Belinda have $\$ 210$ altogether.
9.

$\qquad$

Solve. Use a letter to represent the unknown number.

## Example

A glass has 450 milliliters of water.
There are 2 glasses.
Write a multiplication sentence using the letter $g$ to find the total volume of water in the 2 glasses.

$450 \times 2=2$
$g=\underline{900}$
The total volume of water is 900 milliliters.
10. Abe's plant is twice as tall as Bill's.

Bill's plant is 45 centimeters.
Write a sentence using the letter $h$ to find the height of Abe's plant.

$\qquad$ $\times$ $\qquad$
$\qquad$
$h=$ $\qquad$

Abe's plant is $\qquad$ centimeters tall.

Solve. Use letters to represent the unknown numbers.
11. Lily bought 3 boxes of apples.

Each box contained 32 apples.
She found that each box contained 5 rotten apples.
a. How many good apples are there in each box?

$j=$ $\qquad$
There are $\qquad$ good apples in each box.
b. How many good apples are there altogether?


There are $\qquad$ good apples altogether.
12. Raymond spends 4 times as much money as Sally. Sally spends $\$ 48$. Tina spends $\$ 75$ less than Raymond. How much does Tina spend?

$r=\$$
Raymond spends \$ $\qquad$

$\square-\quad=t$
$t=\$$ $\qquad$

Tina spends \$ $\qquad$
13. Brad collects spiders as a hobby.

He has 5 boxes of spiders and each box contains 36 spiders. He gives 15 spiders to his friends. How many spiders does Brad have left?
$\qquad$

## Worksheet 3 Real-World Problems: Division

## Complete the division sentence.

 Use the bar model to help you.- Example


1. 


2.

42

$\qquad$
$\qquad$

Solve. Use the bar model to help you.
Example

3.

84

$\qquad$ units $\rightarrow$
$\qquad$ unit $\rightarrow$

## Complete the division sentence. Use the bar model to help you.

Example

| 48 |  |  |
| :---: | :---: | :---: |
| 3 |  | 3 |
| ? |  |  |
| 48 | 3 | 16 |

4. 

45

$\qquad$ $\div$ $=$ $\qquad$

Name: $\qquad$

Solve. Use the bar models to help you.

Example
A shopkeeper puts 32 eggs equally into 4 egg trays. How many eggs does each tray have?

$32 \div 4=8$
Each tray has 8 eggs.
5. Lionel has $\$ 72$.

He divides the money equally among 6 children. How much money does each child get?

6. Shirley collects 72 pineapples. She puts them equally into 8 boxes. How many pineapples are in each box?


## Solve. Use the bar models to help you.

Example
Jerry puts 48 stamps equally into 6 envelopes.
How many stamps are in each envelope?

$\qquad$

## Solve. Use bar models to help you.

7. $A$ hotel chef fries 35 eggs for breakfast in a hotel. He divides them equally among 7 plates. How many eggs are on each plate?
8. A milkman delivers the same amount of milk to 8 households.

## He delivers a total of 48 cartons of milk.

How many cartons of milk does each household get?

## Solve. Use the bar models to help you.

## Example

Lisa has 76 beads. She puts all of the beads into bags.
She puts 4 beads into each bag.
How many bags does Lisa use?


```
76 \div4=19
```

Lisa uses 19 bags.
9. Janice sells 45 oranges to a buyer. She puts 5 oranges into each bag. How many bags does Janice use for all of the oranges?

$\qquad$

## Solve. Use the bar models to help you.

10. Robert collects 132 bunches of grapes.

He puts 6 bunches in each box. How many boxes does Robert use to pack all of the grapes?


## Solve. Use the bar models to help you.

## Example

Talia uses 40 toothpicks to make pentagons. Each pentagon is made with 5 toothpicks.
How many pentagons does Talia make in all?

40 toothpicks

? pentagons
$40 \div 5=8$
Talia makes 8 pentagons in all.
11. Margaret has 75 coins.

She arranges them in her coin book so that each page has 5 coins. How many pages are needed to hold all of Margaret's coins?
12. Mr. Nelson has 76 liters of paint. He pours all of the paint equally into 4 cans. How many liters of paint does each can have in it?
$\qquad$
$\qquad$

## Worksheet 4 Real-World Problems: Two-Step Problems with Division

Solve. Use the bar models to help you.

## Example

Billy has twice as many stamps as Natalia.
They have 96 stamps altogether.
How many stamps does Billy have?


1 unit $\quad \rightarrow \quad 96 \div 3=32$
2 units $\rightarrow 2 \times 32=64$

Billy has $\qquad$ stamps.

1. Jeron moves three times as many bricks as Matthew.

They move 96 bricks altogether.
How many bricks does Jeron move?

$\qquad$ units $\rightarrow$ $\qquad$
1 unit $\qquad$
$\qquad$ units
Jeron moves $\qquad$ bricks.

## Solve. Use bar models to help you.

Example
Jessica spends four times as much money as Kathy.
Both of them spend $\$ 65$ altogether.
How much money does Jessica spend?


5 units $\rightarrow \$ 65$
1 unit $\rightarrow \$ 65 \div 5=\$ 13$
4 units $\rightarrow 4 \times \$ 13=\$ 52$
Jessica spends $\$ 52$.
2. In a math competition, Gabriel completes 3 times as many problems as Harry.
Altogether, they complete 72 problems.
How many problems does Gabriel complete?
$\qquad$
Solve. Use bar models to help you.

## Example

Mrs. Lee buys 3 pairs of shorts and a T-shirt for \$77.
The T-shirt costs \$41.
a. How much do the 3 pairs of shorts cost?


$$
\begin{aligned}
& \$ 77-\$ 41=\$ 36 \\
& \text { The } 3 \text { pairs of shorts cost } \$ 36 \text {. }
\end{aligned}
$$

b. How much does each pair of shorts cost?

$$
\begin{aligned}
& \$ 36 \div 3=\$ 12 \\
& \text { Each pair of shorts costs } \$ 12 .
\end{aligned}
$$

3. Rosanna buys 8 packages of pencils.

Each package has 24 pencils.
She divides all the pencils equally into 6 boxes.
a. How many pencils does Rosanna buy in all?
b. How many pencils does each box contain?
4. Mr. Chan buys 100 apples and oranges. He keeps all of the 44 oranges in a box. He packs all of the apples equally into 4 crates.
a. How many apples does Mr. Chan buy?
b. How many apples are packed into each crate?
5. Jane has 24 stickers.

Adam has 56 stickers.
They put all of their stickers equally into 5 boxes. How many stickers does each box have?
6. Michael has 64 cartons of milk. He packs the cartons equally into 8 boxes. He sells each carton for \$3. How much money does Michael earn for each box of milk?

Write a word problem using the bar models. Then solve the problem.

- Example

6 blocks


84 blocks

84 blocks are arranged in groups of 6 blocks each. How many groups are there?
$84 \div 6=14$
There are 14 groups.
7.


$\qquad$

Solve. Use letters to represent the unknown numbers.
Example
A jug contains 125 milliliters of milk.
Jon fills up 5 cups equally with all the milk from the jug.
Use the letter $j$ to represent the amount of milk contained in each cup.

$\underline{125} \div \underline{5}=\underline{j}$
$j=$ $\qquad$
The volume of milk in each cup is $\qquad$ milliliters.
9. A box contains 56 marbles.

Felix divides them equally in groups so that each group has 4 marbles. How many groups are there in all?

$\qquad$
$k=$ $\qquad$

There are $\qquad$ groups in all.
10. Dom sold 4 times as many oranges as Eugene. Dom had 85 oranges at first. After selling some, he had 9 oranges left.
a. How many oranges did Dom sell?

$\qquad$
$p=$ $\qquad$

Dom sold $\qquad$ oranges.
b. How many oranges did Eugene sell?

$\qquad$ $\div$ $\qquad$ $=$ $\qquad$
$q=$ $\qquad$

Eugene sold $\qquad$ oranges.
11. Sue broke 6 flower pots and had 36 flower pots left. She could arrange her flower pots into 7 equal rows if she had not broken any.
a. How many flower pots did Sue have at first?
b. How many flower pots would there be in each row?
12. Lee has 224 baseball cards and Chad has 276 baseball cards. They put the baseball cards equally in 4 packets.
a. How many baseball cards do Lee and Chad have altogether?
b. How many are there in each packet?

