Multiplication and Division in Word Problems
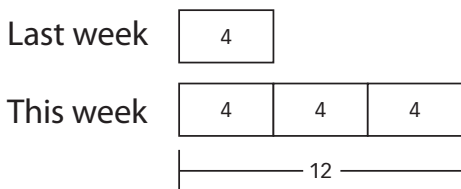
Name: _____

Prerequisite: Model Multiplication

Study the example showing how to use a model to solve a multiplication problem. Then solve problems 1–6.

Example

Lauren worked 4 hours last week. She worked 3 times as many hours this week as last week. How many hours did Lauren work this week?

Last week | 4 |

This week | 4 | 4 | 4 |
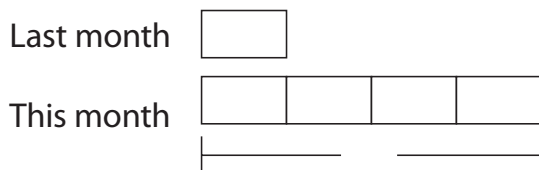   ├──── 12 ────┤

12 is 3 times as many as 4.
$12 = 3 \times 4$

Lauren worked 12 hours this week.

1 Nina picked 8 tomatoes last month. She picked 4 times as many tomatoes this month. How many tomatoes did Nina pick this month?
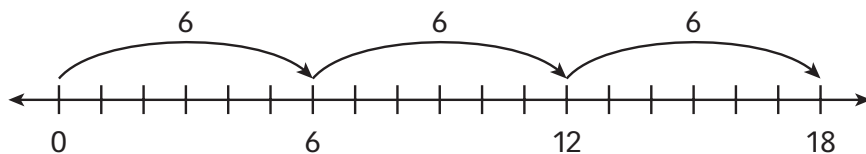
Label the bar model and complete the sentences.

Last month | |

This month | | | | |

_____ is _____ times as many as _____ .

_____ = _____ × _____

Nina picked _____ tomatoes this month.

2 Ben has 6 marbles. Tom has 3 times as many marbles as Ben. How many marbles does Tom have?

```
        6           6           6
   0         6          12         18
```

_____ × _____ = 18

Tom has _____ marbles.

Vocabulary

multiplication an operation used to find the total number of items in equal-sized groups.

Solve.

3 Yesterday Ruth scored 2 points at the game. Today she scored 8 times as many points as she did yesterday. How many points did Ruth score today?

Show your work.

Solution: _____

4 Matt planted 5 times as many flowers on Sunday as he planted on Saturday. Matt planted 7 flowers on Saturday. How many flowers did Matt plant on Sunday?

Show your work.

Solution: _____

5 Mr. Ash has 7 students in art class. Mr. Trent has double the number of students in his class as Mr. Ash. How many students does Mr. Trent have in his class?

Show your work.

Solution: _____

6 Which is more: 2 times as many as a number or 5 times as many as the same number? Explain. Choose any number to show how you know.

_____

_____

_____

_____

Name: _____

Use Multiplication in Word Problems

Study the example showing one way to use multiplication to solve a word problem. Then solve problems 1–5.

Example

Sue swam 4 laps in a pool. Andy swam 5 times as many laps as Sue. How many laps did Andy swim?

Number of laps Sue swam

4

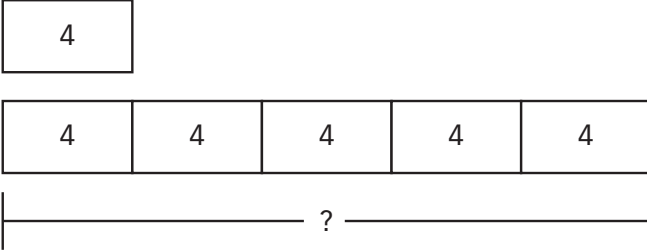Number of laps Andy swam

4	4	4	4	4

?

$5 \times 4 = \square$
$5 \times 4 = 20$
Andy swam 20 laps.
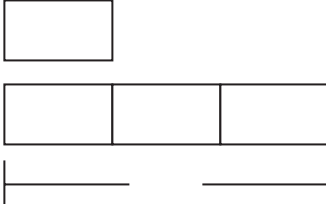
1 Adam has 9 pennies. Ryan has 3 times as many pennies as Adam. How many pennies does Ryan have?

Label the bar model.

Write an equation.
Use $\square$ for the unknown. _____ $\times$ _____ = _____
Solve the equation. _____
Write the answer. Ryan has _____ pennies.

2 Jade picked 5 pounds of berries. She needs 3 times that amount to make jam. How many pounds of berries does Jade need to make jam?

Skip count to find the amount Jade needs:

5, _____, _____.

Jade needs _____.

Vocabulary

unknown a missing number in an equation.

$\square = 5 \times 4$
$\square$ is the unknown.

$6 \times 7 = P$
P is the unknown.

equation a mathematical sentence that uses an equal sign (=) to show that two expressions have the same value.

$5 \times 4 = 20$

Solve.

3 Look at how a student solved the problem below.

> A cook used 12 eggs at lunch. He used 3 times as many eggs at breakfast. How many eggs did the cook use at breakfast?
>
> Skip count: 12, 24, 36, 48
> The cook used 48 eggs at breakfast.

What did the student do wrong?

_____

_____

4 Look at problem 3. Draw a bar model. Use the model to write and solve an equation to find the correct answer.

Solution: The cook used _____ at breakfast.

5 Which problems can be solved using the equation $8 \times 2 = A$? Circle the letter of all that apply.

A In June, Ali read 8 books. In July, she read half as many books. How many books did Ali read in July?

B Cal is twice as old as his sister. Cal's sister is 8 years old. How old is Cal?

C A muffin costs $2. Dylan bought 8 muffins. How much did Dylan spend on muffins?

D Jordan has 8 apples and 2 oranges. How many pieces of fruit does she have altogether?

Name: _____

Use Division in Word Problems

Study the example showing a way to use division to solve a word problem. Then solve problems 1–5.

> ### Example
>
> The Tigers scored 36 points. They scored 4 times as many points as the Lions. How many points did the Lions score?
>
> Lions [?]
>
> Tigers [? | ? | ? | ?] $36 = 4 \times \square$
>
> |———————— 36 ————————|
>
> $36 \div 4 = \square$
> $36 \div 4 = 9$
> The Lions scored 9 points.

1 Charlie and Gabe collected cans to recycle. Charlie collected 5 times as many cans as Gabe. Charlie collected 50 cans. Draw a bar model you could use to compare the number of cans each boy collected.

2 Look at the model you drew in problem 1. Write and solve an equation to show how many cans Gabe collected.
Show your work.

Solution: _____

Vocabulary

division an operation used to separate a number of items into equal-sized groups.

equation a mathematical sentence that uses an equal sign (=) to show that two expressions have the same value.

$36 \div 4 = 9$

Solve.

3 Choose *Yes* or *No* to tell whether each equation is solved correctly.

a. $6 = 2 \times \square$ $\square = 12$ ☐ Yes   ☐ No

b. $7 \times H = 28$ $H = 4$ ☐ Yes   ☐ No

c. $2 = p \div 5$ $p = 10$ ☐ Yes   ☐ No

4 James and Chris are in the school play. James has 42 lines to memorize. That is 6 times as many lines as Chris. Write and solve an equation to find the number of lines Chris has to memorize.

Show your work.

Solution: _____

5 Choose numbers from the tiles below to fill in the bar model. Then write and solve an equation using the model.

| 24 | 12 | 8 | 6 | 4 | 3 | 2 | 1 |

Equation: _____

Solution: _____

Name: _____

Multiplication and Division in Word Problems

Solve the problems.

1 Lin and Karla are planning a party. Lin spent $20 on invitations and decorations. Karla spent 4 times that amount on food and entertainment. How much did they spend altogether on the party?

Do you need to use more than one operation to find the answer?

A $20

C $100

B $80

D $120

2 Write and solve an equation for each problem below.

Darcy earned $5. Samantha earned $30. Samantha earned _____ times as much as Darcy.

You can write either a multiplication equation or a division equation for each problem.

Equation: _____

Solution: _____

Carey teaches twice as many fitness classes as Fran. If Fran teaches 7 classes, how many classes does Carey teach?

Equation: _____

Solution: _____

Joelle practices piano for 3 times as many minutes a day as Tran. Tran practices for 20 minutes a day. How many minutes a day does Joelle practice?

Equation: _____

Solution: _____

Solve.

3 There are 12 markers in a box. Mr. Ross needs 3 times that number of markers for his 4 math classes. How many markers does Mr. Ross need altogether?

Do you need to use all the numbers given to solve the problem?

A 4 **C** 36

B 12 **D** 48

Greg chose **A** as the correct answer. How did he get that answer?

_____

_____

4 Sofia and Tim are rolling marbles down a track. Sofia has 20 marbles. She has 4 times as many marbles as Tim. Tim has m marbles.

Is the number of marbles that Sofia has greater or less than the number Tim has?

Choose *Yes* or *No* to indicate whether the equation correctly indicates how to solve for m.

a. $m = 4 \times 20$ ☐ Yes ☐ No

b. $20 \div 4 = m$ ☐ Yes ☐ No

c. $m = 5 \times 4$ ☐ Yes ☐ No

5 Use the information in the table to answer the questions.

Does it make sense to multiply or divide?

Number of Basketball Free Throws Made

	Mariah	**Lisa**
Week 1	5	3 times Mariah
Week 2	4 times Lisa	4

How many free throws did Lisa make in Week 1? _____

How many free throws did Mariah make in Week 2? _____

Who made more total free throws? Explain. _____

_____