

Name _____

Comparison Problems

I Can draw models and write equations to help solve comparison problems.

Florida's B.E.S.T.

- Algebraic Reasoning 4.AR.1.1, 4.AR.2.2, 4.AR.2.1
- Number Sense & Operations 4.NSO.2.1
- Mathematical Thinking & Reasoning MTR.3.1, MTR.4.1, MTR.5.1, MTR.6.1



UNLOCK the Problem Real World

Evan's dog weighs 7 times as much as Oxana's dog. Together, the dogs weigh 72 pounds. How much does Evan's dog weigh?

Example 1 Use a multiplication model.

STEP 1 Draw a model. Let n represent the unknown.

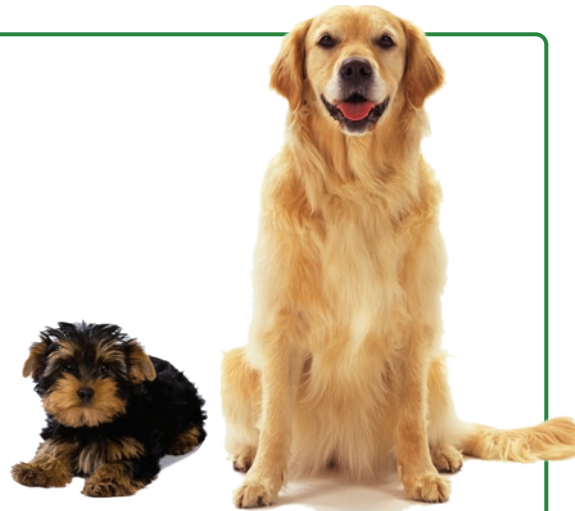
Think: Let n represent how much Oxana's dog weighs. Together, the dogs weigh 72 pounds.

Evan's

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Oxana's

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STEP 2 Use the model to write an equation. Find the value of n .

_____ $\times n =$ _____ **Think:** There are 8 parts. The parts together equal 72.

$8 \times$ _____ $= 72$ **Think:** 8 times what number equals 72?

The value of n is 9.

n is how much _____ weighs.

STEP 3 Find how much Evan's dog weighs.

Think: Evan's dog weighs 7 times as much as Oxana's dog.

Evan's dog $=$ _____ $\times$ _____ **Multiply.**

$=$ _____

So, Evan's dog weighs 63 pounds.

Math Talk

MTR 4.1

Engage in discussions on mathematical thinking.

How can you tell if you found the correct weight of Evan's dog?

To find how many times as much, use a multiplication model. To find how many more or fewer, model the addition or subtraction.

Evan's dog weighs 63 pounds. Oxana's dog weighs 9 pounds. How much more does Evan's dog weigh than Oxana's dog?



Example 2 Use an addition or subtraction model.

STEP 1 Draw a model. Let n represent the unknown.

Think: Let n represent the difference.

_____ _____

STEP 2 Use the model to write an equation. Find the value of n .

_____ - _____ = n **Think:** The model shows a difference.

63 - 9 = _____ **Subtract.**

The value of n is _____.

n is _____.

So, Evan's dog weighs 54 pounds more than Oxana's dog.

Share and Show

Math Board



MTR 4.1 Engage in discussions on mathematical thinking.

How do you know which model to use to solve a comparison problem?

- Maria's dog weighs 6 times as much as her rabbit. Together, the pets weigh 56 pounds. What does Maria's dog weigh?

Draw a model. Let n represent the unknown.

Write an equation to find the value of n . $7 \times n = \underline{\hspace{2cm}}$. n is pounds.

Multiply to find how much Maria's dog weighs. $8 \times 6 = \underline{\hspace{2cm}}$

So, Maria's dog weighs pounds.

Draw a model. Write an equation and solve.

- ✓ 2. Last month Nikita trained 3 times as many dogs as cats. If the total number of cats and dogs she trained last month is 28, how many cats did Nikita train?

Draw a model.

Write an equation and solve.

- ✓ 3. How many more dogs than cats did Nikita train?

Draw a model.

Write an equation and solve.

On Your Own**Practice: Copy and Solve** Draw a model.

Write an equation and solve.

- | | |
|---|--|
| <p>4. At the dog show, there are 4 times as many boxers as spaniels. If there are a total of 30 dogs, how many dogs are spaniels?</p> <hr/> | <p>5. There are 5 times as many yellow labs as terriers in the dog park. If there are 18 dogs at the dog park, how many yellow labs are there?</p> <hr/> |
| <p>6. Vadim has 3 times as many guppies as goldfish. If he has 28 fish, how many guppies does he have?</p> <hr/> | <p>7. Carlita saw 5 times as many robins as cardinals while bird watching. She saw a total of 24 birds. How many more robins did she see than cardinals?</p> <hr/> |

Problem Solving · Applications

8. Cienna and Sven are solving math problems using equations. Tell whether each person's equation is *true* or *false*. Explain your answer.

Cienna
 $5 \times 8 = 8 + 8 + 8 + 8 + 8$

Sven
 $56 \div 7 = 15 - 6$

9. Is the equation true or false? Explain.

$$5 \times 11 = 5 + 5 + 5 + 5 + 5$$

10. Noah built a fenced dog run that is 4 times as long as it is wide. The width is 3 yards. He placed posts at every corner and every yard along the length and width of the run. How many posts did he use?

11. Last weekend, Mandy collected 4 times as many shells as Cameron. Together, they collected 60 shells. How many shells did Mandy collect? Complete the bar model. Then, write an equation and solve.

Show the Math

Demonstrate Your Thinking

Comparison Problems

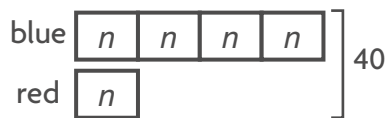
Go Online

Interactive Examples

Draw a model. Write an equation and solve.

1. Sarita 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 Sarita use?

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



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

$$4 \times 8 = 32 \text{ blue beads}$$

2. At the zoo, there were 3 times as many monkeys as lions. Tom counted a total of 11 lions. How many monkeys were there?

Problem Solving

3. 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?

4. Is the equation true or false? Explain.

$$6 \times 12 = 12 + 12 + 12 + 12 + 12 + 12$$

5.  **WRITE** *Math* Write a problem involving *how much more than* and solve it. Explain how drawing a diagram helped you solve the problem.

Lesson Check

6. Sari has 3 times as many pencil erasers as Sam. Together, they have 28 erasers. How many erasers does Sari have?
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7. Is the equation true or false? Explain.

$$3 \times 8 = 8 + 8 + 8 + 8 + 8 + 8 + 8 + 8$$

Spiral Review

8. Barbara has 9 stuffed animals. Trish has 3 times as many stuffed animals as Barbara. How many stuffed animals does Trish have?
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9. There are 104 students in the fourth grade at Suvi's school. One day, 15 fourth-graders were absent. How many fourth-graders were at school that day?
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10. Joshua has 112 rocks. Jose has 98 rocks. Albert has 107 rocks. Write the boy's names in order from the least to the greatest number of rocks owned.
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11. Alicia has 32 stickers. This is 4 times as many stickers as Benita has. How many stickers does Benita have?
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