

Grade 7 Math Sample Worksheet

Student Name _____

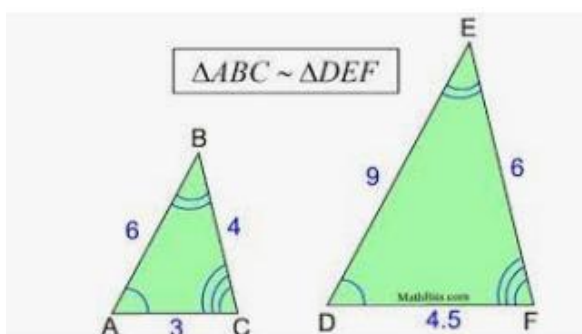
Date _____

Notes:

Similar figures are geometric shapes that have the same shape but may have different sizes. Here are some key notes on similar figures:

1. Definition of Similar Figures:

Two figures are considered similar if they have the same shape, but not necessarily the same size. The given triangles ABC and DEF are similar.



2. Corresponding Angles:

Corresponding angles of similar figures are equal. In other words, angles that occupy the same relative position in each figure are congruent. In the above figure, $\angle A$ is the same measure as $\angle D$, $\angle B$ is the same measure as $\angle E$ and $\angle C$ is the same measure as $\angle F$.

3. Corresponding Sides:

Corresponding sides of similar figures are in proportion. This means that the ratio of the lengths of corresponding sides in the two figures is constant. In the above figure, the ratio of $AB:DE$ is the same as the ratio of $AC:DF$ which is the same as the ratio of $BC:EF$.

4. Scale Factor:

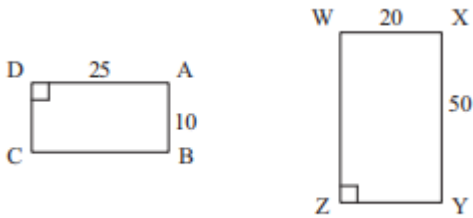
The constant ratio by which corresponding lengths of similar figures are multiplied to get from one length to the other is called the scale factor (k)

$$\text{Scale factor} = \frac{\text{length in largest figure}}{\text{length in smallest figure}}$$

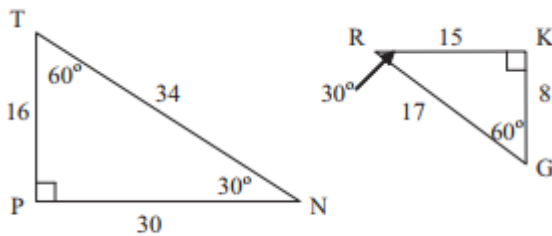
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1. Decide whether the figures below are similar. Write YES or NO. Write a proportion to prove.

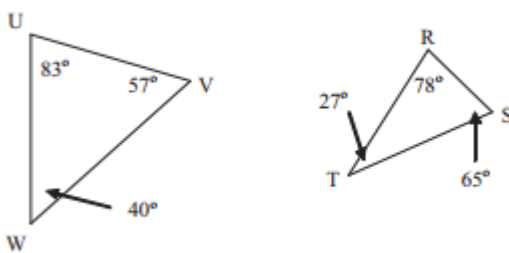
a.



b.



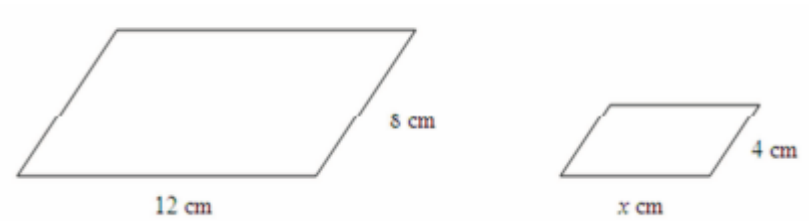
c.



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2. The pair of polygons below are similar. Solve for the length of the missing side.

a.



b.



3. A photograph measuring four inches wide, and five inches long is enlarged to make a wall mural. If the mural is 120 inches wide, how long is the mural?

Show Your Work	Rough Work/Verify Work
Final Answer (With Units):	

4. On a scale drawing, three cm represents an actual length of 20 feet. What length on the scale drawing represents 65 feet?

Show Your Work	Rough Work/Verify Work
Final Answer (With Units):	

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5. A 6.5 ft tall car standing next to an adult elephant casts a 33.2 ft shadow. If the adult elephant casts a shadow that is 51.5 ft long, then how tall is it?

Show Your Work	Rough Work/Verify Work
Final Answer (With Units):	

6. The sides of a triangle measure 6, 11 and 15. If the smallest side of a similar triangle measures 4, find the length of its longest side.

Show Your Work	Rough Work/Verify Work
Final Answer (With Units):	

7. Emma started collecting stickers.
Her friend gave her 60 stickers to begin with.
Every month she buys 15 more stickers.

Which equation can be used to find y , the total number of stickers Emma has after x months?

- A. $y = 60x + 15$
- B. $y = 15x + 60$
- C. $y = 60x - 15$
- D. $y = 15x - 60$

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8. Students organized a charity sale. They sold notebooks and pens.
- Notebooks were sold for \$2 each
 - Pens were sold for \$0.25 each
 - The students sold a total of 240 items
 - Of the items sold, $\frac{3}{4}$ were notebooks and the remaining items were pens.

How much money did the students raise from the pens that were sold?

- A. \$12.00
- B. \$15.00
- C. \$18.00
- D. \$20.00

9. The maximum weight an elevator can hold is 1,200 pounds. There are already passengers inside who weigh a total of 300 pounds. Each suitcase to be loaded weighs 40 pounds.

Which inequality represents all possible values of x , the number of suitcases that can be added to the elevator?

- A. $40x + 300 \leq 1,200$
- B. $40x + 300 \geq 1,200$
- C. $300x + 40 \leq 1,200$
- D. $300x + 40 \geq 1,200$

10. Maya paid \$84 for 7 movie tickets. Each ticket cost the same amount. What was the cost of each ticket in dollars and cents?
- A. \$10.00
 - B. \$11.00
 - C. \$12.00
 - D. \$14.00

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11. Two stores are having sales on backpacks.

- At Store A, all backpacks are 20% off the original price.
- At Store B, all backpacks are $\frac{1}{4}$ off the original price.

Which store would have the better sale price for a backpack with an original price of \$60?

- A. Store A, because the sale price would be \$48
- B. Store B, because the sale price would be \$45
- C. Store A, because the sale price would be \$12
- D. Store B, because the sale price would be \$15

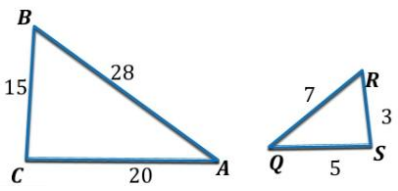
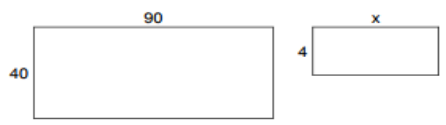
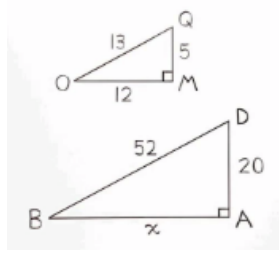
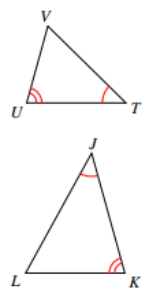
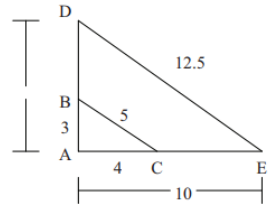
12. A smoothie recipe calls for 12 cups of milk and 3 cups of yogurt.

What is the constant of proportionality that relates the number of cups of milk, y to the number of cups of yogurt, x ?

- A. 0.25
- B. 4
- C. 9
- D. 15

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CONCEPT CHECK:

<p>1. State if the triangles in each pair are similar.</p> 	<p>2. Each pair of figures is similar. Write and solve a proportion to find the missing side.</p> 
<p>3. Each pair of figures is similar. Find the missing side.</p> 	<p>4. State if the triangles in each pair are similar.</p> 
<p>5. A pentagon has a perimeter of 20 ft. If every side is halved, find the new perimeter.</p>	<p>6. Write and solve a proportion to find the missing side.</p> 
<p>7. Daniel wants to resize a 4-inch wide by 5-inch-long photograph for the school newspaper. It is to fit in a space that is 2 inches wide. What is the length of the resized photograph?</p>	