Name Key Hour

Chapter 7 Review

Multiple Choice

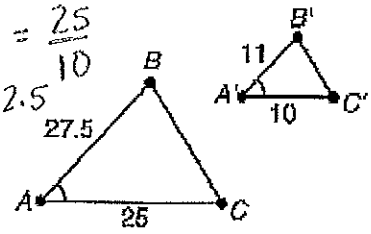
A 1. If two polygons are SIMILAR, then the corresponding sides must be _____.

(a.) proportional
b. congruent
c. parallel
d. similar

D 2. This drawing illustrates _____.

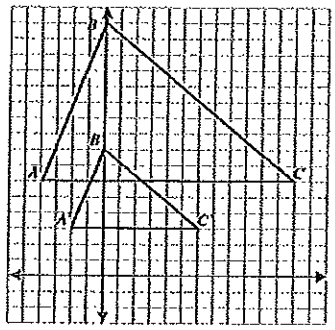
$\frac{27.5}{11} = \frac{25}{10}$

$2.5 = 2.5$



a. AA Similarity
b. ~~SAS Congruence~~
c. SSS Similarity
(d.) SAS Similarity

D 3. In the figure below, $\Delta ABC \sim \Delta A'B'C'$.



got Smaller
Reduction

Which statement is true of the transformation from ΔABC to $\Delta A'B'C'$?

a. ~~The measures of all corresponding angles change by a scale factor of 2.~~
b. ~~The measures of all corresponding angles change by a scale factor of $\frac{1}{2}$.~~
c. The lengths of all corresponding sides change by a scale factor of 2.
(d.) The lengths of all corresponding sides change by a scale factor of $\frac{1}{2}$.

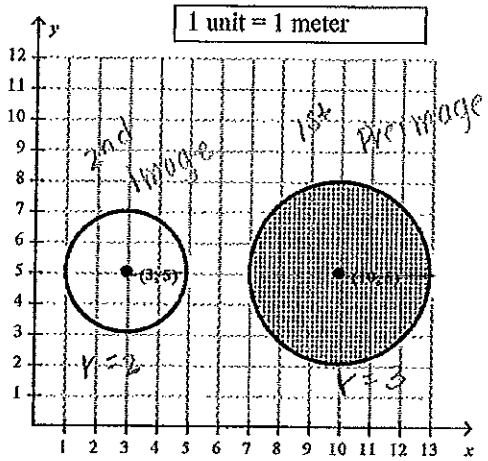
A 4. Sean has two circular flower beds, as shown below.
How can the larger flower bed be transformed to show that the two flower beds are similar in shape?

(a.) translation: $(x,y) \rightarrow (x-7,y)$;
dilation with center (3, 5) and scale factor $\frac{2}{3}$

b. translation: $(x,y) \rightarrow (x,y-7)$;
dilation with center (3, 5) and scale factor $\frac{2}{3}$

c. translation: $(x,y) \rightarrow (x,y-7)$;
dilation with center (3, 5) and scale factor $\frac{3}{2}$

d. translation: $(x,y) \rightarrow (x-7,y)$;
dilation with center (3, 5) and scale factor $\frac{3}{2}$



Reduction $\frac{2}{3}$

2nd im / 1st prim

(3,5) (10,5)

10 − 7 = 3 ⟨−7, 0⟩

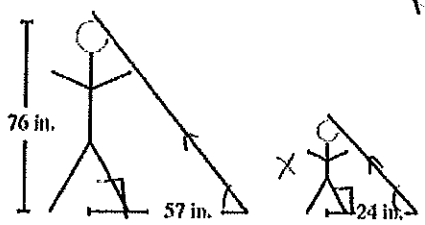
5 − 0 = 5 (x−7, y)

B 5. At the same time of day, a man who is 76 inches tall casts a 57-inch shadow and his son casts a 24-inch shadow. What is the height of the man's son? (Figures may not be drawn to scale.)

a. 33 in. (b. 32 in.) c. 81 in. d. 108 in.

similar by AA

$\frac{76}{x} \times \frac{57}{24}$ $76(24) = 57x$ $1824 = 57x$ $32 = x$



C 6. The ratio of the length of the legs of the smaller triangle to that of the larger triangle is 4 : 5. If the length of the hypotenuse of the larger triangle is 2 feet, what is the length of the hypotenuse of the small triangle to the nearest tenth of a foot?

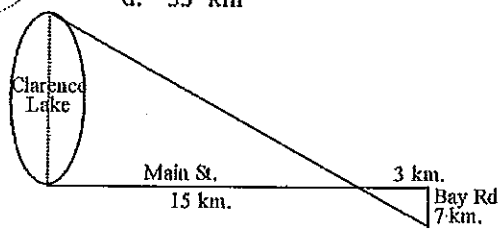
a. 0.1 ft (c. 1.6 ft)
b. 0.6 ft d. 2.5 ft

Smaller $\frac{4}{5} = \frac{x}{2 ft}$ larger $4(2) = 5x$ $\frac{8}{5} = \frac{5x}{5}$ $x = 1.6$ ft

C 7. The triangles in the diagram below are similar. Which is the distance across Clarence Lake? (The figure may not be drawn to scale.)

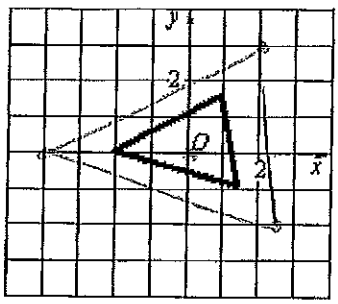
a. 6 km b. 38 km (c. 35 km) d. 33 km

$\frac{7}{x} \times \frac{3}{15}$ $3x = 7(15)$ $\frac{3x}{3} = \frac{105}{3}$ $x = 35$



Short Answer

8. Draw the image of the given figure after a dilation with center O and the a scale factor of 2.

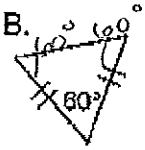


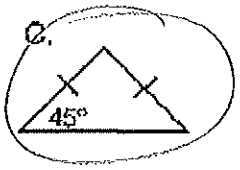
P	(2x, 2y)
(1.25, -1)	(2.5, -2)
(1, 1.5)	(2, 3)
(-2, 0)	(-4, 0)

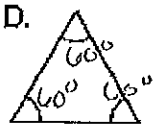
9. Which triangle below is not similar to any of the others?

$180-60=\frac{120}{2}=60°$ $\frac{180}{3}=60°$

A. 

B. 

C. 

D. 

10. Determine whether the triangles are similar. If the are, write a similarity statement.

$\angle CEB \cong \angle AED$ Similar by AA

$\angle B \cong \angle D$ $\triangle BEC \sim \triangle DEA$.

BC ∥ AD

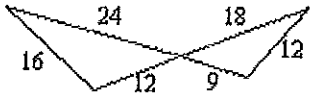
11. Determine whether the triangles are similar. Explain your reasoning.

is $\frac{9}{12}=\frac{18}{24}=\frac{12}{16}$

$0.75=0.75=0.75$

Triangles are similar by SSS.

All sides lengths are proportional

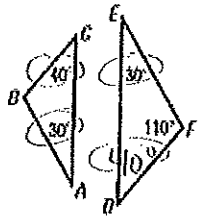


12. Tell whether each pair of triangles is similar. Explain your reasoning.

Triangles are Similar by AA

$30+110=140°$

$180-140=40°$



13. Standing next to each other, a woman casts a 41.4-inch shadow and her 40-inch-tall son casts a 24-inch shadow. What is the height of the woman to the nearest inch?

Similar by AA

$\frac{40}{x}=\frac{24}{41.4}$ $24x=40(41.4)$

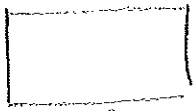
$\frac{24x}{24}=\frac{1656}{24}$

$x=69$ inches

14. A photo needs to be enlarged from an original with a length of 7 inches and a width of 5 inches to a size where the new width is 15 inches. What is the new length? What is the scale factor?

1st  $w=5$ in

$l=7$ in

 $w=15$ in

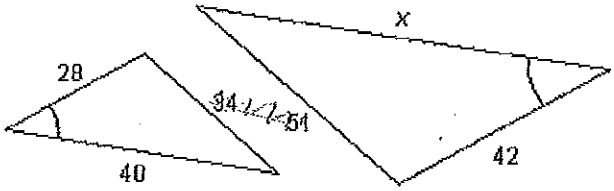
2nd $l=?$

$SF=\frac{2nd}{1st}$ $\frac{15}{5}=3=$ scale factor

$7\times3=21$ in

15. What value of x will make the two triangles similar?

Similar by SAS



$\frac{40}{x}=\frac{28}{42}$ $28x=40(42)$

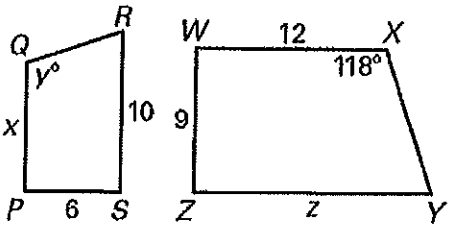
$\frac{28x}{28}=\frac{1680}{28}$

$x=60$

Therefore:
1. Angles congruent
2. Side lengths proportional

Are similar

16. In the diagram, $PQRS \sim WXYZ$, find the values of x, y, and z.

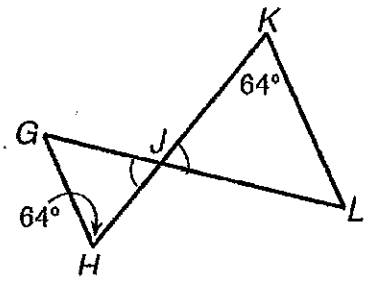


$y = 118°$

$\frac{x}{12} \overset{?}{=} \frac{6}{9}$ $\quad \frac{9x}{9} = \frac{72}{9}$ $\quad x = 8$

$\frac{6}{9} \overset{?}{=} \frac{10}{z}$ $\quad 6z = 9(10)$ $\quad \frac{6z}{6} = \frac{90}{6}$ $\quad z = 15$

17. Explain why the triangles are similar and write a similarity statement.



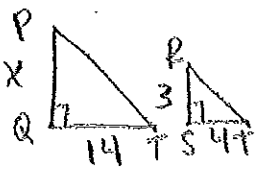
$\angle GJH \cong \angle LJK$

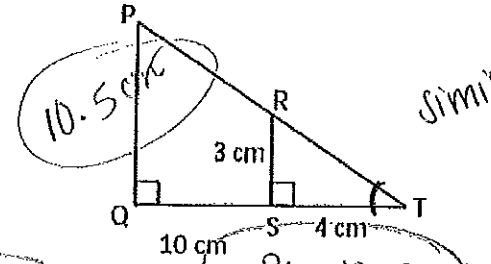
$\angle H \cong \angle K$

The triangles are similar by AA

$\triangle GHJ \sim \triangle LKJ$

18. Find the length of PQ.
RS = 3 ST = 4 QS = 10

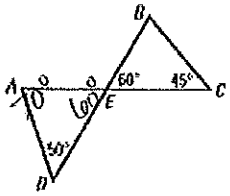




Similar by AA

$\frac{PQ}{RS} = \frac{QT}{ST}$ $\quad \frac{x}{3} \overset{?}{=} \frac{14}{4}$ $\quad 4x = 14(3)$ $\quad \frac{4x}{4} = \frac{42}{4}$ $\quad x = 10.5$ $\quad QT = 14$ $\quad PQ = 10.5$ cm

19. Determine whether the triangles are similar. If they are, write a similarity statement.



$60 + 50 = 110°$

$180 - 110° = 70°$

The Triangles are not similar.

20. Karen wanted to measure the height of her school's flagpole. She placed a mirror on the ground 46 feet from the flagpole, and then walked backwards until she was able to see the top of the pole in the mirror. Her eyes were 5 feet above the ground and she was 13 feet from the mirror. Using similar triangles, find the height of the flagpole to the nearest hundredth of a foot. (Figures may not be drawn to scale.)

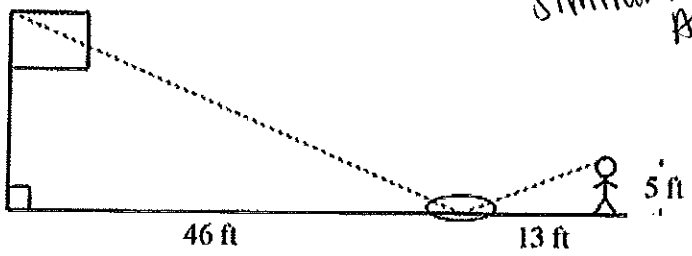
$\frac{X}{5} \times \frac{46}{13}$

$13X = 46(5)$

$\frac{13X}{13} = \frac{230}{13}$

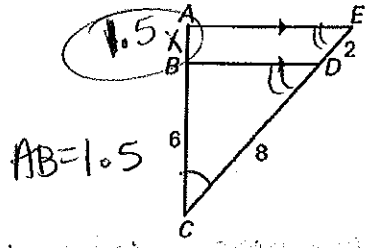
$X = 17.69$ ft

Similar by AA



21. Find the length of $\overline{AB}$.

Similar by AA



$AB = 1.5$

$\frac{X+6}{6} \times \frac{10}{8}$ $60 = 8(X+6)$

$60 = 8X + 48$

$-48 \quad -48$

$\frac{12}{8} = \frac{8X}{8}$

$X = 1.5$

22. Moody wants to find the height of the tallest building in his city. He stands 460 feet away from the building. There is a tree 42 feet in front of him, which he knows is 23 feet tall. How tall is the building? (Round to the nearest foot.)

Similar by AA

$\frac{X}{23} \times \frac{460}{42}$

$42X = 23(460)$

$\frac{42X}{42} = \frac{10580}{42}$

$X = 252$ ft