

Chapter 7 Study Guide

Geometry



Name: _____

Target 7.1: Determine if polygons are similar and write a similarity statement.

Self-Assess: 1 (Uh Oh)

2

3 (I am okay)

4

5 (I got this!!!!)

1) Two polygons are similar only if the:

corresponding angles are equal and their corresponding sides are proportional. = ratios

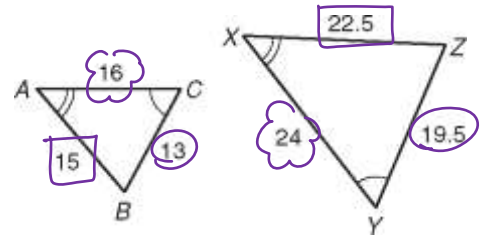
2) Give the similarity ratio and write a similarity statement.

Ratio: $\frac{2}{3}$

Similarity Statement: $\triangle ABC \sim \triangle XZY$

$$\frac{13}{19.5} = \frac{15}{22.5} = \frac{16}{24}$$

$$\frac{2}{3} = \frac{2}{3} = \frac{2}{3} \checkmark$$



Target 7.2: Draw and describe a dilation.

Self-Assess: 1 (Uh Oh)

2

3 (I am okay)

4

5 (I got this!!!!)

3) Step 1: Plot $\triangle ABC$: A(2, 4), B(-2, 0), C(-1, -3)

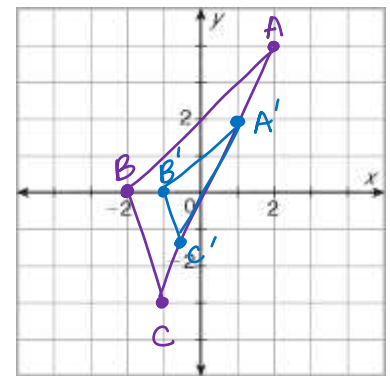
Step 2: Apply the dilation and plot the new vertices.

$$D: (x, y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y) \quad A'(1, 2) \quad B'(-1, 0) \quad C'(-\frac{1}{2}, -\frac{3}{2})$$

Step 3: Is it a reduction/enlargement?

Explain your answer.

The dilation is a reduction. The scale factor of $\frac{1}{2}$ makes the image ($\triangle A'B'C'$) half the size of the preimage ($\triangle ABC$).



4) Step 1: Plot $\triangle ABC$: A(-3, 1), B(-2, -1), C(-1, 2)

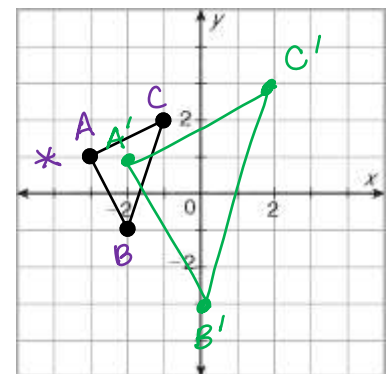
Step 2: Apply the dilation from (-4, 1) and plot the new vertices.

$$D: (x, y) \rightarrow (2x, 2y)$$

Step 3: Is it a reduction/enlargement?

Explain your answer.

	H	V
A	$1 \cdot 2 = 2$	$0 \cdot 2 = 0$
B	$2 \cdot 2 = 4$	$-2 \cdot 2 = -4$
C	$3 \cdot 2 = 6$	$1 \cdot 2 = 2$



Target 7.3: Identify the postulate used to show triangles are similar and write a similarity statement.

Self-Assess: 1 (Uh oh)

2

3 (I am okay)

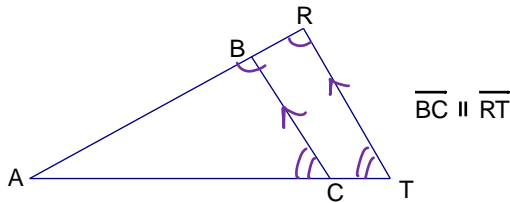
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5 (I got this!!!)

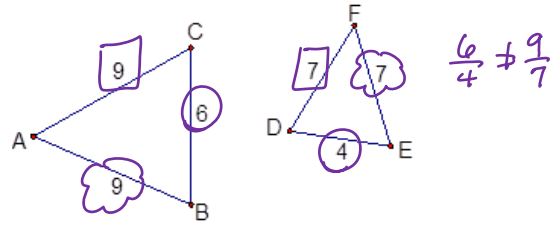
SHOW YOUR WORK TO PROVE WHY THE TRIANGLES ARE (OR ARE NOT) SIMILAR!!!

5) $\triangle ABC \sim \triangle \underline{ART}$ by $\underline{AA^\sim}$

6) $\triangle ABC \sim \triangle \underline{X}$ by $\underline{Not^\sim}$

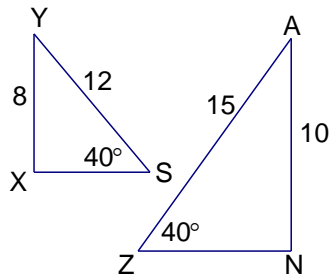


If \parallel lines, then $\angle ABC \cong \angle R$
 $\angle ACB \cong \angle T$ } b/c corr $\angle s \cong$

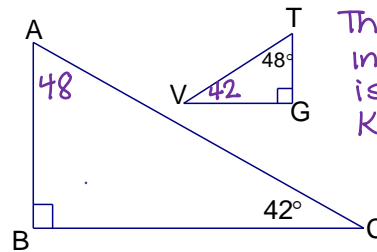


7) $\triangle YXS \sim \triangle \underline{\hspace{2cm}}$ by $\underline{Not^\sim}$

8) $\triangle ABC \sim \triangle \underline{TGV}$ by $\underline{AA^\sim}$



cannot use SSA!



The sum of the interior $\angle s$ of a \triangle is 180° . Since we know

Target 7.3: Find side lengths of similar triangles.

Self-Assess: 1 (Uh oh)

2

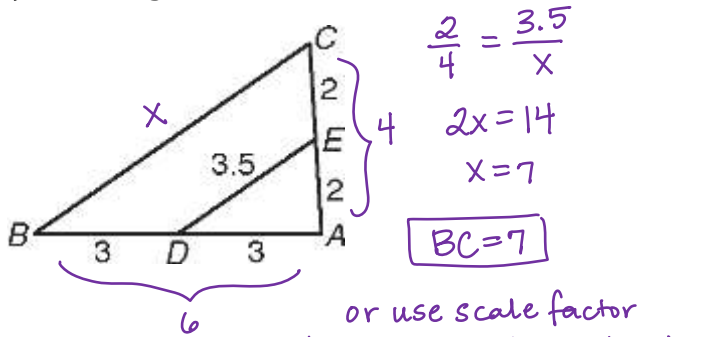
3 (I am okay)

4

5 (I got this!!!)

9) Find BC given that $\triangle EAD \sim \triangle CAB$.

10) Why are the triangles similar? Find GK.



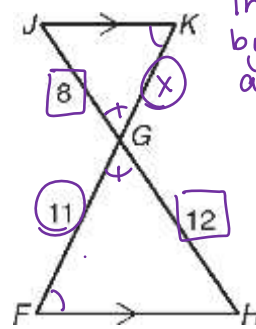
$$\frac{2}{4} = \frac{3.5}{x}$$

$$2x = 14$$

$$x = 7$$

BC = 7

or use scale factor that $\triangle ABC$ is twice the size of $\triangle ADE$.



The triangles are similar by AA^\sim , because $\angle J$ and $\angle F$ are \cong and since $\overline{JK} \parallel \overline{FH}$, $\angle K \cong \angle H$.

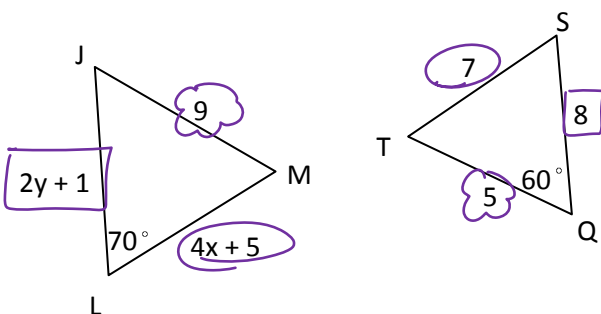
$$\frac{28}{3\sqrt{2}} = \frac{x}{11}$$

$$3x = 22$$

$$x = \frac{22}{3}$$

$KG = \frac{22}{3}$

11) If $\triangle JLM \sim \triangle QST$ find x and y.



$$\frac{9}{5} = \frac{2y+1}{8}$$

$$5(2y+1) = 72$$

$$10y+5 = 72$$

$$10y = 67$$

$$y = 6.7$$

$$\frac{9}{5} = \frac{4x+5}{7}$$

$$5(4x+5) = 63$$

$$20x+25 = 63$$

$$20x = 38$$

$$x = 1.9$$

Target 7.4.a: Use the Triangle Proportionality Theorem to find lengths of segments.

Self-Assess: 1(Uh oh)

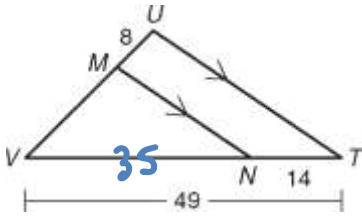
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12) Find the length of segment MV:



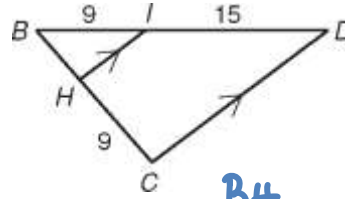
$$\frac{MV}{8} = \frac{35}{14}$$

$$14MV = 280$$

$$MV = 20$$

Easier to reduce to $\frac{5}{2}$
 $\frac{MV}{8} = \frac{5}{2}$
 $2MV = 40$
 $MV = 20$
 No calculator necessary

13) Find the length of segment BH.



$$\frac{BH}{9} = \frac{9}{15}$$

$$15BH = 81$$

$$BH = 5.4$$

Target 7.4.b: Use the Two Transversal Proportionality Corollary to find lengths of segments.

Self-Assess: 1(Uh oh)

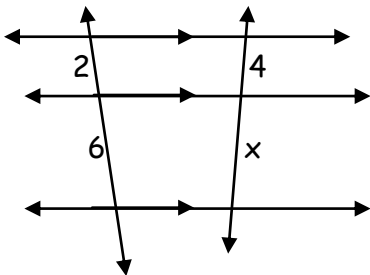
2

3(I am okay)

4

5(I got this!!!)

14) Find x.

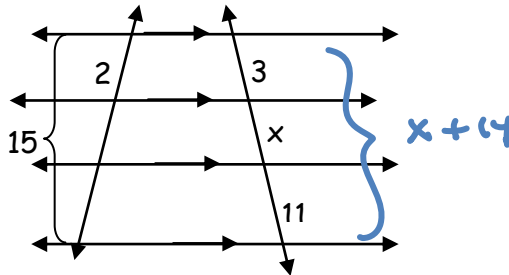


$$\frac{2}{6} = \frac{4}{x}$$

$$2x = 24$$

$$x = 12$$

15) Find x.



$$\frac{2}{15} = \frac{3}{x+14}$$

$$2x + 28 = 45$$

$$2x = 17$$

$$x = 8.5$$

Target 7.4.c: Use the Angle Bisector Theorem to find lengths of segments.

Self-Assess: 1(Uh oh)

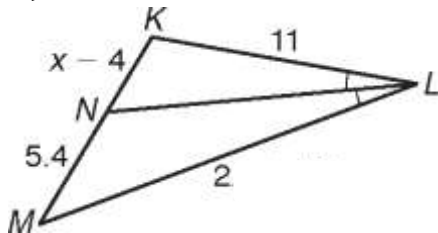
2

3(I am okay)

4

5(I got this!!!)

16) Find x.



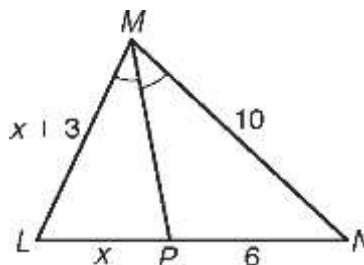
$$\frac{11}{2} = \frac{x-4}{5.4}$$

$$59.4 = 2x - 8$$

$$67.4 = 2x$$

$$x = 33.7$$

17) Find LP and LM.



$$\frac{10}{x+3} = \frac{6}{x}$$

$$10x = 6x + 18$$

$$4x = 18$$

$$x = 4.5$$

$$LP = 4.5$$

$$LM = 7.5$$

Target 7.5.a: Use ratios to make indirect measurements.

Self-Assess: 1 (Uh oh) 2 3 (I am okay) 4 5 (I got this!!!)

18) John, who is 5 ft. 9 in. tall, wanted to know the height of the MacDonald's sign. At the same time of day, he measured his shadow and the sign's shadow. He found that his shadow was 7 ft. 8 in. and the the sign's shadow was 38 ft. 4 in. shadow. What is the height of the sign in inches? In feet?

$$\frac{92}{460} = \frac{69}{x}$$

$$92x = 31740$$

$$x = 345$$

$$\frac{345''}{12''} = 28.75'$$

19) Lady Liberty holds a tablet in her left hand. The tablet is 7.19 m long and 4.14 m wide. If you made a scale drawing using the scale 1 cm : 0.75 m, what would be the dimensions of the length and the width to the nearest tenth? (Hint: you need to set up two proportions)

$$\frac{1}{0.75} = \frac{l}{7.19}$$

$$0.75l = 7.19$$

$$l = 9.6$$

$$\frac{1}{0.75} = \frac{w}{4.14}$$

$$0.75w = 4.14$$

$$w = 5.5$$

length = 9.6 cm
width = 5.5 cm

Target 7.5.b: Find measurements of similar polygons.

Self-Assess: 1 (Uh oh) 2 3 (I am okay) 4 5 (I got this!!!)

20) Given that $\triangle LMN \sim \triangle QRS$, find the perimeter and area of $\triangle QRS$.

Similarity ratio : $\frac{13}{9.1} = \frac{10}{7}$

Perimeters are in the same ratio

$$\frac{10}{7} = \frac{36}{P_2}$$

$$10P_2 = 252$$

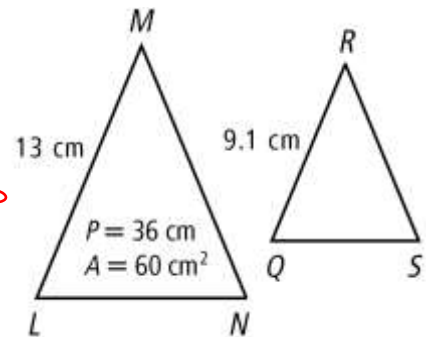
$P_2 = 25.2 \text{ cm}$

Areas are in the square of the ratio

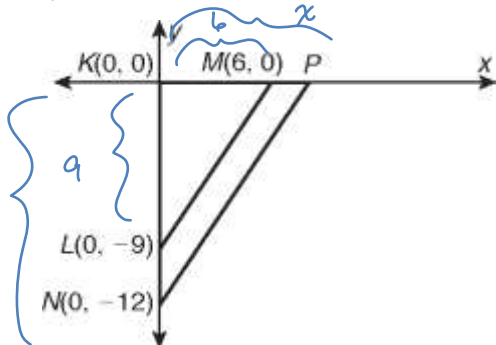
$$\frac{100}{49} = \frac{60}{A_2}$$

$$100A_2 = 2940$$

$A_2 = 29.40 \text{ cm}^2$



21) Given that $\triangle LKM \sim \triangle NKP$, find the coordinates of P and the scale factor.



$$\frac{9}{12} = \frac{6}{x}$$

$$9x = 72$$

$$x = 8$$

$P(8,0)$

$$\text{Scale factor of } \frac{12}{9} = \frac{4}{3}$$