Answer Key

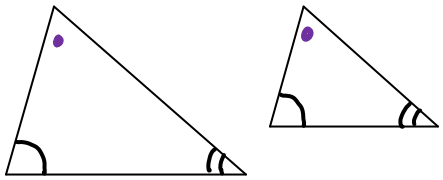
# Review (9.7, 7.1 – 7.3)

## Warm-Up (7.3)

- ☐ Prove certain triangles are similar by using AA~, SSS~, SAS~
- ☐ Use triangle similarity to solve problems.

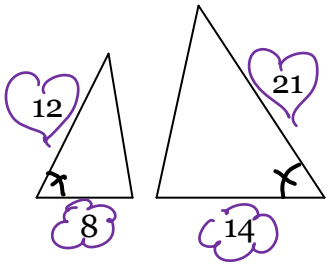
1. For each pair of triangles, state the theorem that proves they are similar. If you cannot say they are similar by the information given, write "none."

a. AA~

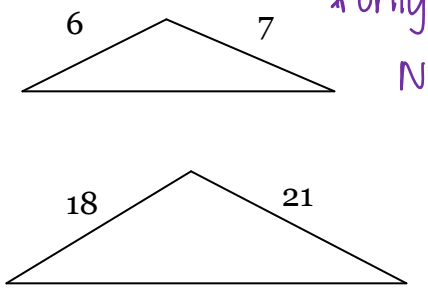


b. SAS~ $\frac{8}{14} = \frac{12}{21}$

$\frac{4}{7} = \frac{4}{7}$ ✓



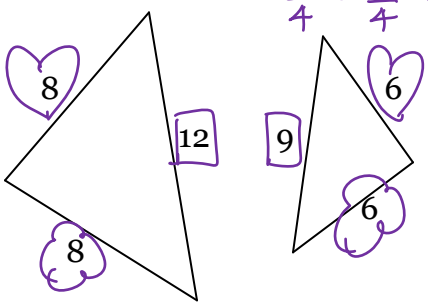

c. NOT ~




*only two sides given
Not enough info

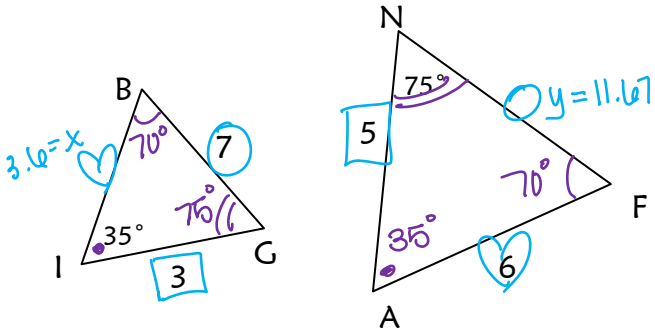
d. SSS~ $\frac{6}{8} = \frac{6}{8} = \frac{9}{12}$

$\frac{3}{4} = \frac{3}{4} = \frac{3}{4}$ ✓




2. ΔBIG ~ ΔFAN Find all the missing sides and angles

Corr. ∠s ≅




∠B ≅ ∠F → 180 − (75+35)

∠I ≅ ∠A

∠G ≅ ∠N

180 − 110

m∠B = 70°

m∠F = 70°

Corr. sides proportional

$\frac{BI}{FA} = \frac{IG}{AN} = \frac{GB}{NF}$

$\frac{x}{6} = \frac{3}{5} = \frac{7}{y}$

Find x: $\cancel{\frac{x}{6} = \frac{3}{5}}$

$5x = 18$

$\boxed{x = 3.6}$

Find y: $\cancel{\frac{3}{6} = \frac{7}{y}}$

$3y = 35$

$\boxed{y = 11.67}$

## 9.7 & 7.2 Dilations in the Coordinate Plane

- ☐ Identify and draw translations. (9.7)
- ☐ Draw and describe similarity transformations in the coordinate plane. (7.2)

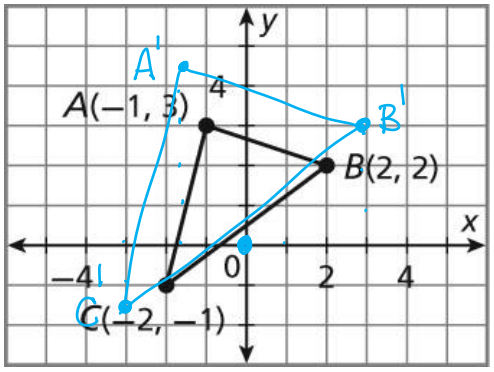
**Plot and label the image triangle A'B'C'**

a) Dilate ΔABC with a scale factor of 3/2 with origin as the center

$A(-1, 3)$, $B(2, 2)$, $C(-2, -1)$

A'(-1.5, 4.5) B'(3, 3) C'(-3, -1.5)

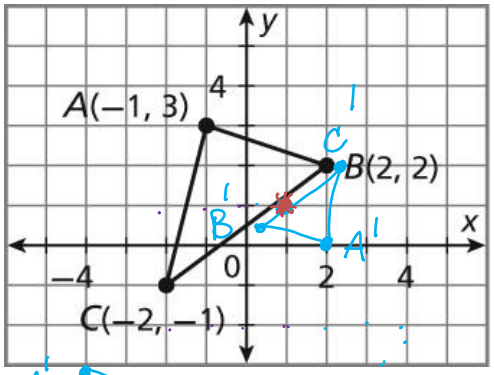
| P | I |
|---|---|
| A<-1,3> | A'<-1.5,4.5> |
| B<2,2> | B'<3,3> |
| C<-2,-1> | C'<-3,-1.5> |




b) Dilate ΔABC with a scale factor of -1/2 with (1, 1) as the center.

A'(2, 0) B'(.5, .5) C'(2.5, 2)

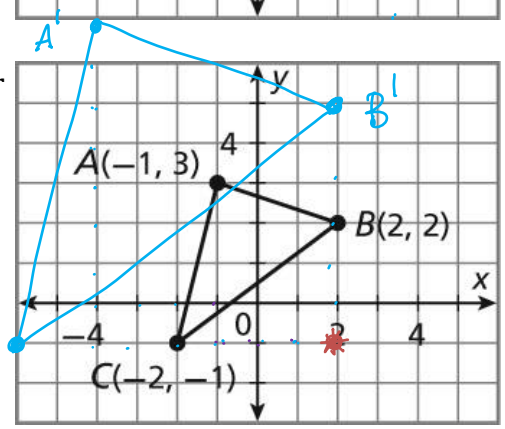
| P | I |
|---|---|
| A <-2,2> | A'<1,-1> |
| B <1,1> | B'<-.5,-.5> |
| C <-3,-2> | C'<1.5,1> |




c) Dilate ΔABC with a scale factor of 2 with the point (2, -1) as the center

A'(-4, 7) B'(2, 5) C'(-6, -1)

| P | I |
|---|---|
| A<-3,4> | A'<-6,8> |
| B<0,3> | B'<0,6> |
| C<-4,0> | C'<-8,0> |




## 7.1: Ratios in Similar Polygons

- ☐ Identify similar polygons and apply properties of similar polygons to solve problems.
- ☐ Set up and solve proportions!

1. Similar polygons are polygons in which the corresponding **sides** are Proportional and the corresponding **angles** are ≅.

2. Solve each proportion.

a. $\frac{2}{3} = \frac{x}{24}$

$48 = 3x$

$\boxed{x = 16}$

b. $\frac{2x+5}{10} = \frac{42}{20}$

$20(2x+5) = 420$

$40x + 100 = 420$

$40x = 320$

$\boxed{x = 8}$

c. $\frac{3x-6}{2} = \frac{4x-2}{4}$

$4(3x-6) = 2(4x-2)$

$12x - 24 = 8x - 4$

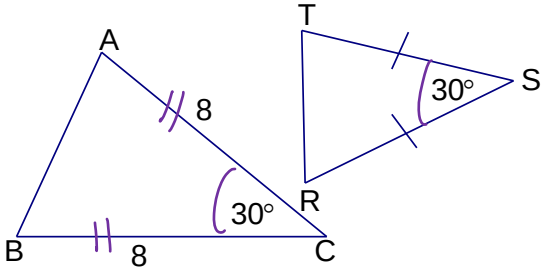
$4x = 20$

$\boxed{x = 5}$

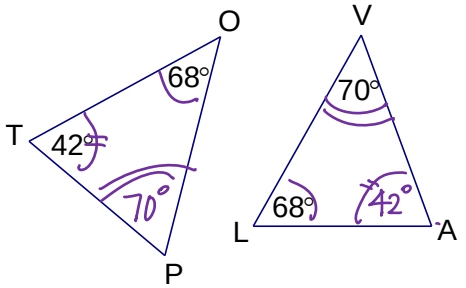
# Section 7.3: Triangle Similarity: AA~, SSS~ and SAS~

- ◻ Prove certain triangles are similar by using AA~, SSS~, SAS~
- ◻ Use triangle similarity to solve problems.

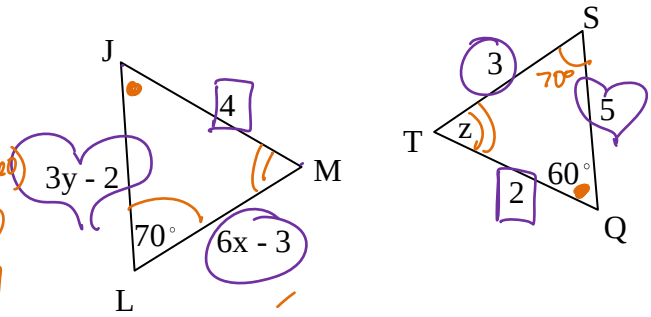
1. Δ ACB ~ Δ TSR by SAS ~




2. Δ TOP ~ Δ ALV by AA ~




3. Given: $\Delta JLM \sim \Delta QST$




a. Find x, y, and z

$\frac{LM}{ST} = \frac{MJ}{TQ}$

$\frac{6x-3}{3} = \frac{4}{2}$

$2(6x-3) = 12$

$12x - 6 = 12$

$12x = 18$

$\boxed{x = 3/2}$

$\frac{JL}{QS} = \frac{MJ}{TQ}$

$\frac{3y-2}{6} = \frac{4}{2}$

$2(3y-2) = 20$

$6y - 4 = 20$

$6y = 24$

$\boxed{y = 4}$

$m\angle z = 180 - (70 + 60)$

$= 180 - 130$

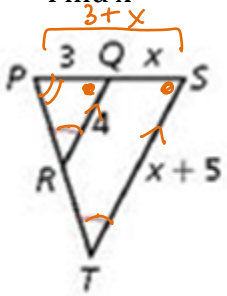
$\boxed{m\angle z = 50°}$

b. What is the ratio of the sides?

$\frac{2}{1}$ or 2:1

4. Find x

ΔPQR ~ ΔPST Triangles similar by AA ~




$\frac{PQ}{PS} = \frac{QR}{ST}$

$\frac{3}{3+x} = \frac{4}{x+5}$

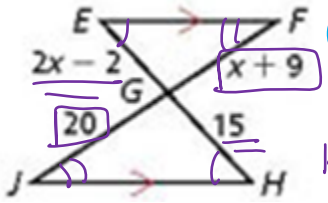
$3(x+5) = 4(3+x)$

$3x + 15 = 12 + 4x$

$3 = x$

$\boxed{x = 3}$

5. Find x ΔEFG ~ ΔHJG by AA ~




$\frac{x+9}{20} = \frac{2x-2}{15}$

$15(x+9) = 20(2x-2)$

$15x + 135 = 40x - 40$

$175 = 25x$

$\boxed{x = 7}$

**Self Reflect:** What section was the easiest for you? _____ What section was the most challenging for you? _____

What are you going to do to study for the quiz on Friday?? Look back on notes, homework, & come in to ask questions :)

Dilations, 7.1, 7.3 Study Guide Key

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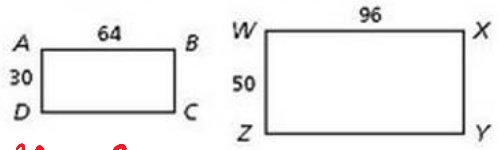
## 7-1 Ratios in Similar Polygons

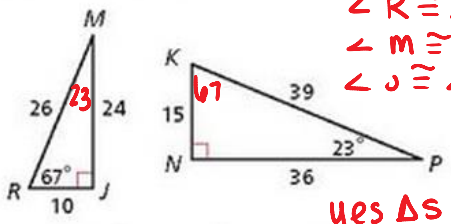
Determine whether the two polygons are similar. If so, write the similarity ratio and a similarity statement.

1. rectangles *ABCD* and *WXYZ*




$\frac{30}{50} = \frac{3}{5}$ $\frac{64}{96} = \frac{2}{3}$ NO

2. △*JMR* and △*KNP*




$\triangle RMJ \sim \triangle KPN$

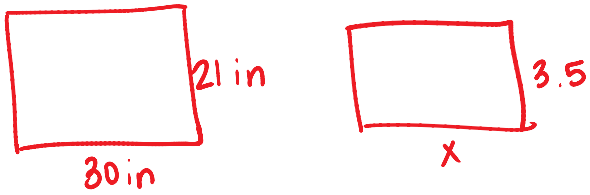
$\angle R \cong \angle K$
$\angle M \cong \angle P$
$\angle J \cong \angle N$

$\frac{10}{15} = \frac{2}{3}$
$\frac{24}{36} = \frac{2}{3}$
$\frac{26}{39} = \frac{2}{3}$

yes △s ~

3. Leonardo da Vinci's famous portrait the *Mona Lisa* is 30 in. long and 21 in. wide. Janelle has a refrigerator magnet of the painting that is 3.5 cm wide. What is the length of the magnet?

=




$\frac{30}{x} = \frac{21}{3.5}$

$105 = 21x$

$\boxed{x = 5}$

5 cm

## 7-2 Similarity and Transformations

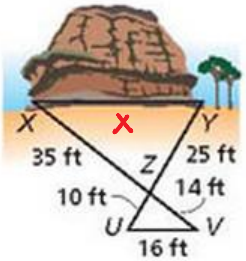
Apply the dilation to the polygon with the given vertices. Name the coordinates of the points. Identify and describe the transformation.

4. $D: (x, y) \rightarrow (3x, 3y)$; $A(0, 0)$, $B(1, 2)$, $C(3, -2)$
5. $D: (x, y) \rightarrow (0.5x, 0.5y)$; $A(10, 6)$, $B(8, -4)$, $C(-2, 0)$

4 A'(0,0), B'(3,6), C'(9,-6) } enlargement

5 A'(5,3), B'(4,-2), C'(-1,0) } reduction

10. A geologist wants to measure the length *XY* of a rock formation. To do so, she locates points *U*, *V*, *X*, *Y*, and *Z* as shown. What is *XY*?




$\frac{10}{25} = \frac{16}{x}$

$10x = 400$

$x = 40$

40 feet