

Chapter 3 Review

Name: key

Answer each of the following questions completely. Round to the nearest tenth if you have to.

1. a. Write an equation of a line that passes through $(-6, 3)$ and $(9, 8)$?

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8 - 3}{9 - (-6)} = \frac{5}{15} = \frac{1}{3}$$

$$y = mx + b$$

$$3 = \frac{1}{3}(-6) + b$$

$$3 = -2 + b$$

$$\begin{array}{r} 3 \\ +2 \\ \hline 5 = b \end{array}$$

$$y = \frac{1}{3}x + 5$$

- B. What is the equation of a line parallel to the previous line and goes through $(-3, 5)$?

* Same Slope $\rightarrow \frac{1}{3}$

$$5 = \frac{1}{3}(-3) + b$$

$$5 = -1 + b$$

$$\begin{array}{r} 5 \\ +1 \\ \hline 6 = b \end{array}$$

$$y = \frac{1}{3}x + 6$$

- C. What is the equation of a line PERPENDICULAR to that line and goes through $(5, -8)$?

* opposite reciprocal Slope

$$\frac{1}{3} \rightarrow -\frac{3}{1}$$

$$-8 = -3(5) + b$$

$$-8 = -15 + b$$

$$\begin{array}{r} -8 \\ +15 \\ \hline 7 = b \end{array}$$

$$y = -3x + 7$$

*These have been in your homework and you did this last year, I will also make sure I do these in class and go over them. If you need more practice, google "equations of parallel and perpendicular lines" or come in for help.

2. Given $PQ = 8$ in and the area of $\triangle PQR$ is 24 square inches, then the length of QR is 10 in.

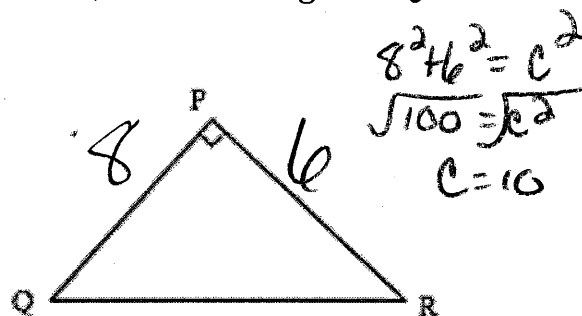
$$A = \frac{1}{2}bh$$

$$24 = \frac{1}{2}(8)h$$

$$24 = 4h$$

$$\frac{24}{4} = \frac{4h}{4}$$

$$h = 6$$

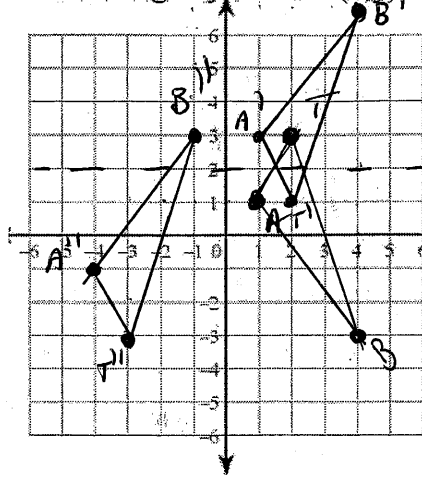


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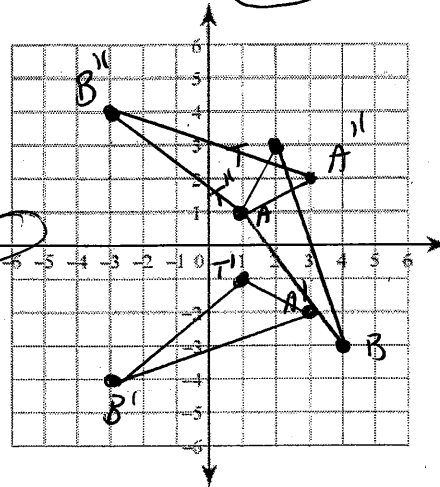
3

A Reflect $\triangle TAB$ if $T(2,3)$, $A(1,1)$, and $B(4,-3)$ over the line $y=2$, then translate the image by the rule $(x,y) \rightarrow (x-5, y-4)$



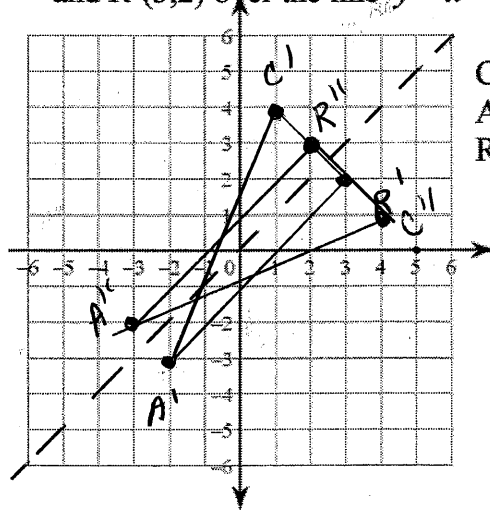
$$\begin{aligned} T' & (2, 1) \\ A' & (1, 3) \\ B' & (4, 7) \\ T'' & (-3, -3) \\ A'' & (-4, -1) \\ B'' & (-1, 3) \end{aligned}$$

B Rotate $\triangle TAB$ if $T(2,3)$, $A(1,1)$, $B(4,-3)$ 90° clockwise about the origin, then reflect the image over the line x -axis.



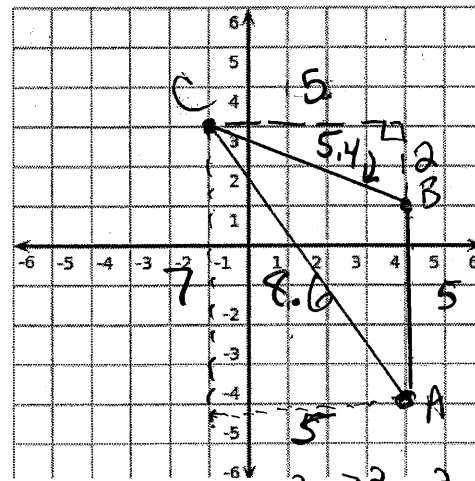
$$\begin{aligned} T' & (3, -2) \\ A' & (2, -1) \\ B' & (3, 4) \\ T'' & (3, 2) \\ A'' & (2, 1) \\ B'' & (3, -4) \end{aligned}$$

C Reflect $\triangle C'A'R'$ if $C'(1,4)$, $A'(-2,-3)$, and $R'(3,2)$ over the line $y=x$



$$\begin{aligned} C'' & (4, 1) \\ A'' & (-3, -2) \\ R'' & (2, 3) \end{aligned}$$

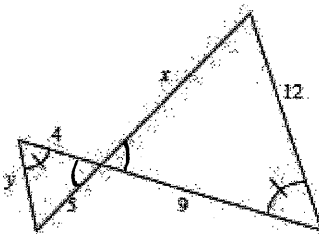
D What is the area and the perimeter of the shape? $\triangle 90^\circ \angle$ w/ Flat Side



$$\begin{aligned} \text{Area} & = 12.5 \\ A & = \frac{1}{2}(5)(5) \\ A & = \frac{1}{2}(25) \end{aligned}$$

$$\begin{aligned} \text{Perimeter} & = 19 \\ 2^2 + 5^2 & = c^2 \\ c & = \sqrt{29} \\ c & = 5.4 \\ P & = 5.4 + 8.6 + 5 \\ & = 19 \end{aligned}$$

4. What is the value of x and y ?

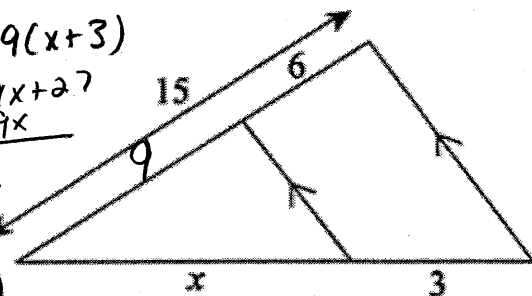


$$\begin{aligned} \frac{B}{S} \frac{9}{4} & = \frac{x}{5} = \frac{12}{7} \\ \frac{48}{4} & = \frac{4x}{4} \\ 12 & = x \\ x & = 11.25 \end{aligned}$$

5. What is the value of x ?

$$\begin{aligned} \frac{B}{S} \frac{15}{9} & = \frac{x+3}{x} \\ 15x & = 9(x+3) \\ 15x & = 9x+27 \\ -9x & -9x \end{aligned}$$

$$\begin{aligned} \frac{6x}{6} & = \frac{27}{6} \\ x & = 4.5 \end{aligned}$$

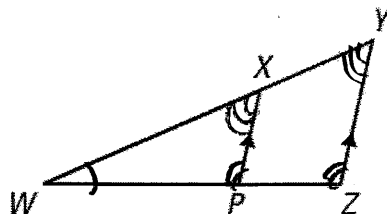


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6. Are the following triangles similar? If they are, explain how you know. If angles are not originally marked, explain how you know they are equal. If they are, complete the similarity statement. (NOTE: YOU CAN ONLY USE SIDE LENGTHS THAT ARE GIVEN, YOU CANNOT USE UNKNOWN SIDES UNLESS YOU PROVE THEY ARE SIMILAR)

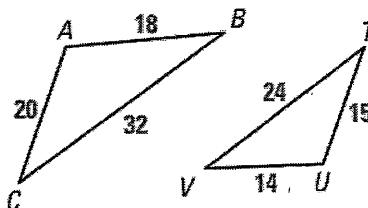
a.



$$\triangle WXP \sim \triangle YZ$$

- 1.) $\angle W$ is shared AA
- 2.) $\angle WPX = \angle ZYX \rightarrow$ Corresponding
- 3.) $\angle P X W = \angle Z Y W$

b.



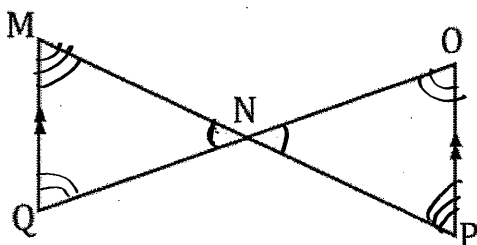
Go in order of Sides

$$\triangle BCA \sim \underline{\hspace{2cm}}$$

$$\frac{B}{S} \quad \frac{32}{24} = 1.\overline{3} \quad \frac{20}{15} = 1.\overline{3} \quad \frac{18}{14} = 1.29$$

No, Sides
Not proportional

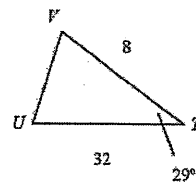
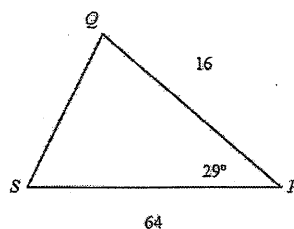
c.



$$\triangle QNM \sim \triangle PNO$$

- $\angle N = \angle N \rightarrow$ Vertical AA
- $\angle Q = \angle O \rightarrow$ Alt. interior
- $\angle M = \angle P \rightarrow$

d.

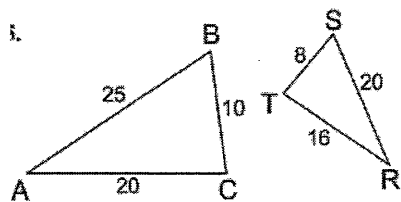


$$\triangle QRS \sim \triangle VTU$$

$$\frac{B}{S} \quad \frac{64}{32} = 2 \quad \frac{16}{8} = 2$$

SAS $\angle R = \angle T$

e.

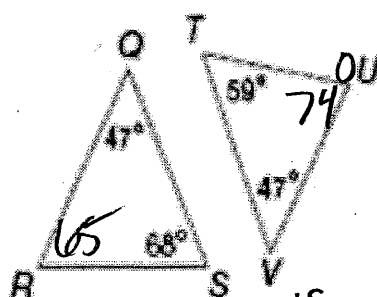


$$\frac{25}{20} = 1.25 \quad \frac{10}{8} = 1.25$$

$$\triangle ABC \sim \triangle RST \quad \frac{20}{16} = 1.25$$

SSS proportional

f.



$$\triangle QRS \sim \underline{\hspace{2cm}}$$

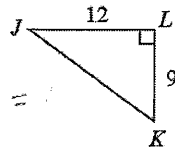
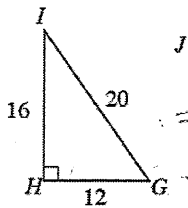
L's Not =

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7. Use a Flowchart to determine if the the triangles are similar or not. If they are not, describe why they aren't. If they are, state the theorem that makes them similar. **I MUST SEE WORK.**

a.



Work:

$$\frac{16}{12} = 1.\bar{3}$$

$$\angle H = \angle L$$

$$\frac{12}{9} = 1.\bar{3}$$

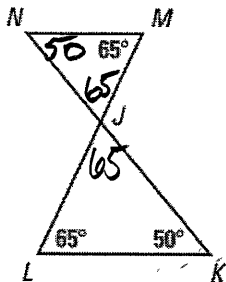
a. Similar? yes

$$\triangle JLK \sim \triangle IHG$$

by SAS

If Not, Why Not? _____

b.



Work:

$$\angle L = \angle M$$

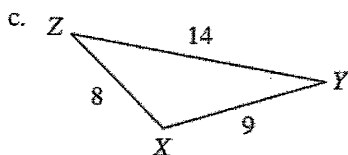
$$\angle N = \angle K$$

b. Similar? yes

$$\triangle JLK \sim \triangle JMN$$

By AA

If no, why not? _____

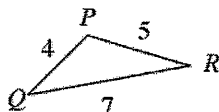


Work: $\frac{14}{7} = 2$ $\frac{9}{5} = 1.8$

c. Similar? NO

$$\triangle YXZ \sim \triangle \underline{\hspace{1cm}}$$

By _____



If not, why not?

Sides Not Proportional