

Geometry review 7

1. If $\frac{a}{b} = \frac{5}{3}$, then $3a =$ 56

Solve the proportion.

2. $\frac{x-2}{2x-5} = \frac{x+3}{2x+4}$ x=7

$$(2x+4)(x-2) = (2x-5)(x+3)$$

$$2x^2 + 4x - 4x - 8 = 2x^2 - 5x + 6x - 15$$

$$-8 = x - 15$$

$$7 = x$$

3. $\frac{2y-1}{5} = \frac{y}{12}$ y = 12/19

$$5y = 12(2y-1)$$

$$5y = 24y - 12$$

$$-19y = -12$$

$$x = \frac{1 \pm \sqrt{1^2 - 4(1)(-12)}}{2(1)}$$

Quad. Formula

4. $\frac{y-3}{3} = \frac{2}{y+2}$ x=4
x=-3

$$(y-3)(y+2) = 6 \rightarrow y^2 - y - 12 = 0$$

$$a=1, b=-1, c=-12$$

$$x = \frac{1 \pm \sqrt{1+48}}{2}$$

$$x = \frac{1 \pm 7}{2}$$

5. Solve the proportion. Leave answers in simplified radical form.

$\frac{2y}{10} = \frac{15}{y}$ y = 5√3

$$2y \cdot y = 15 \cdot 10$$

$$2y^2 = 150 \rightarrow y^2 = 75$$

$$y = \sqrt{75} \rightarrow y = 5\sqrt{3}$$

6. On a blueprint, the scale indicates that 6 cm represent 15 feet. What are the dimensions of a room that is 9 cm long and 4 cm wide on the blueprint?

22.5 and 10

$$\frac{6 \text{ cm}}{15 \text{ ft}} = \frac{9 \text{ cm}}{x \text{ ft}} = \frac{4 \text{ cm}}{y \text{ ft}}$$

$$6x = 135$$

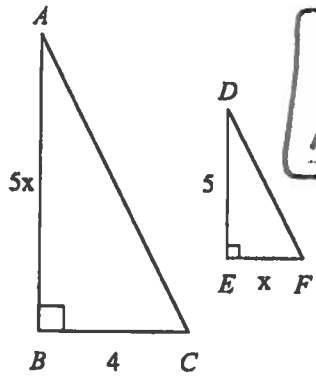
$$x = 22.5$$

$$6y = 60$$

$$y = 10$$

The polygons are similar, but not necessarily drawn to scale. Find the values of x and y.

7. Triangles ABC and DEF are similar. Find the lengths of AB and EF.



EF=2
AB=10

$$\frac{AB}{DE} = \frac{BC}{EF}$$

$$5x^2 = 20$$

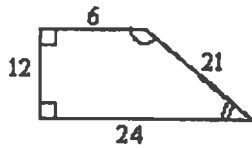
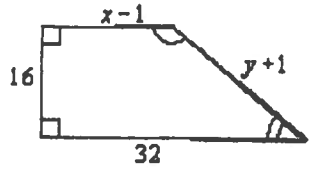
$$x^2 = 4$$

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

$x = 2$ or -2
 x can't be -2 , because EF must be positive.

$$AB = 5(2) = 10$$

8. The polygons are similar, but not necessarily drawn to scale. Find the values of x and y.



Ratio: $\frac{16}{12} = \frac{4}{3}$

$$\frac{4}{3} = \frac{x-1}{6}$$

$$\frac{4}{3} = \frac{y+1}{21}$$

$$3(x-1) = 24$$

$$84 = 3(y+1)$$

x=9

y=27

Dimensions either
8 in. by \square

Name: or

\square in. by 10 in.

$$\frac{2}{3} = \frac{8}{x}$$

$$2x = 24 \quad \text{too}$$

$$x = 12 \quad \leftarrow \text{big}$$

$$\frac{2}{3} = \frac{x}{10}$$

$$3x = 20$$

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

ID: A

9. You are reducing a map of dimensions 2 ft by 3 ft to fit to a piece of paper 8 in. by 10 in. What are the dimensions of the largest possible map that can fit on the page?

Ratio $\frac{2}{3}$

$6\frac{2}{3}$ in. by 10 in.

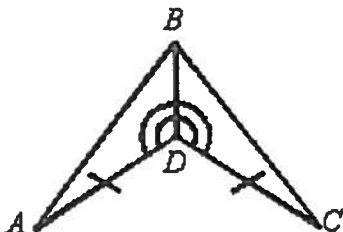
State whether the triangles are similar. If so, write a similarity statement and the postulate or theorem you used.

10.

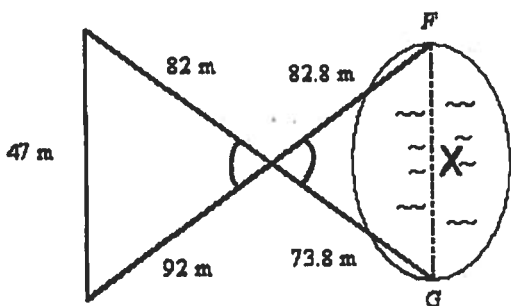
$BD \cong BD$ by reflexive prop.

so, yes $\triangle ABD \sim \triangle CBD$

by SAS \sim postulate



11. Campsites F and G are on opposite sides of a lake. A survey crew made the measurements shown on the diagram. How do they know that the two triangles are similar? What is the distance between the two campsites? The diagram is not to scale.



$$\frac{82}{73.8} = \frac{92}{82.8}$$

Δ 's similar,
sides proportional $(\frac{10}{9})$
 \sphericalangle vertical angles

$$\frac{10}{9} = \frac{47}{x}$$

$$10x = 423$$

$$x = 42.3 \text{ m}$$

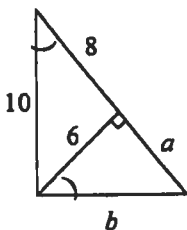
Find the geometric mean of the pair of numbers.

12. 175 and 7

$$\sqrt{175 \cdot 7} = \sqrt{1225} = 35$$

Solve for a and b.

- 13.



	S Δ	M Δ	L Δ
SL	a	6	b
ML	6	8	10
H	b	10	8+a

$$\frac{a}{6} = \frac{6}{8}$$

$$\frac{6}{8} = \frac{b}{10}$$

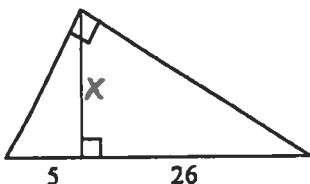
$$36 = 8a$$

$$8b = 60$$

$$4.5 = a$$

$$b = 7.5$$

14. Find the length of the altitude drawn to the hypotenuse. The triangle is not drawn to scale.



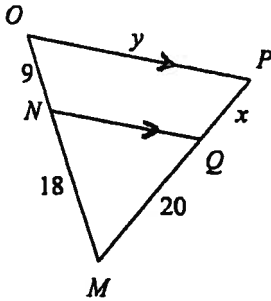
	S Δ	M Δ	L Δ
SL	5	x	?
ML	x	26	?
H	?	?	31

$$\frac{5}{x} = \frac{x}{26}$$

$$x^2 = 130$$

$$x = \sqrt{130}$$

15. Given that $\overline{OP} \parallel \overline{NQ}$ tell the theorem or postulate that proves two triangles similar.
Write the triangle similarity statement.
Find the values of x and y ,



Side Splitter Thm.

$$\triangle MNQ \sim \triangle MOP$$

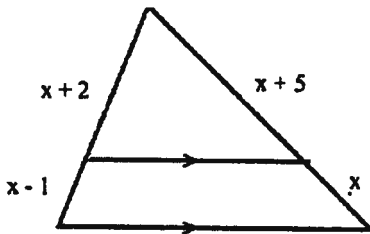
$$\frac{9}{18} = \frac{x}{20}$$

$$18x = 180$$

$$\boxed{x = 10}$$

Write a proportion and solve for x .

16.



$$\frac{x+2}{x-1} = \frac{x+5}{x}$$

$$x(x+2) = (x-1)(x+5)$$

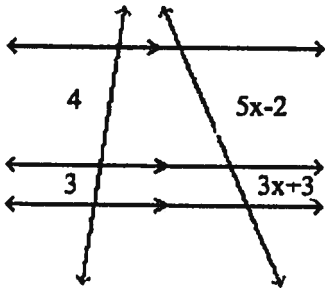
$$x^2 + 2x = x^2 + 5x - x - 5$$

$$2x = 4x - 5$$

$$-2x = -5$$

$$\boxed{x = \frac{5}{2}}$$

17.



$$\frac{4}{3} = \frac{5x-2}{3x+3}$$

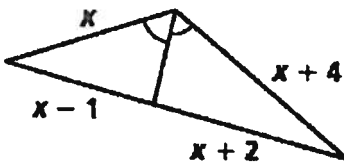
$$4(3x+3) = 3(5x-2)$$

$$12x + 12 = 15x - 6$$

$$18 = 3x$$

$$\boxed{6 = x}$$

18. Find x to the nearest tenth.



$$\frac{x}{x-1} = \frac{x+4}{x+2}$$

$$x(x+2) = (x-1)(x+4)$$

$$x^2 + 2x = x^2 + 4x - x - 4$$

$$2x = 3x - 4$$

$$-x = -4$$

$$\boxed{x = 4}$$

19. What is the product of the two solutions?

$$3x^2 + 9x - 30 = 0$$

$$x = \frac{-9 \pm \sqrt{(9)^2 - 4(3)(-30)}}{2(3)}$$

$$x = \frac{-9 \pm \sqrt{81 + 360}}{6}$$

$$x = \frac{-9 \pm \sqrt{441}}{6} = \frac{-9 \pm 21}{6}$$

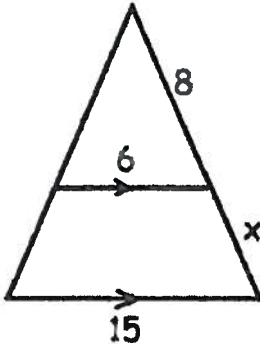
$$\frac{-9 + 21}{6} = \frac{12}{6} = 2$$

$$\frac{-9 - 21}{6} = \frac{-30}{6} = -5$$

product of solutions
 -10

quad. formula
 $a = 3$
 $b = 9$
 $c = -30$

20. Aiden set up this proportion to solve for x in the picture below.
If his proportion is correct, use it to solve for x .
If his proportion is not correct, write the correct proportion and solve for x .



correct

$$\frac{8}{6} = \frac{8+x}{15}$$

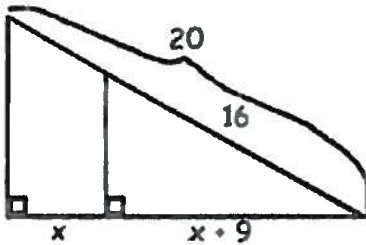
$$6(8+x) = 120$$

$$48 + 6x = 120$$

$$6x = 72$$

$$x = 12$$

21. Samantha set up this proportion to solve for x in the picture below.
If her proportion is correct, use it to solve for x .
If her proportion is not correct, write the correct proportion and solve for x .



$$\frac{16}{x+9} = \frac{20}{x^2+9}$$

not correct

$$\frac{16}{x+9} = \frac{20}{2x+9}$$

$$16(2x+9) = 20(x+9)$$

$$32x + 144 = 20x + 180$$

$$12x = 36$$

~~$$x = 3$$~~

$$x = 3$$

22. What are the triangle similarity theorems/postulates?

AA ~ Angle Angle similarity
 SAS ~ Side Angle Side similarity
 SSS ~ Side Side Side Similarity

Now go to the following website to check your answers. Use pen and give yourself a score for the percent correct.

<http://mssnydersmathpage.weebly.com/>

elymathpage.wordpress.com

<http://nvhstruelove-tedham.weebly.com/geometry>

<http://ottenmath.weebly.com/>

Redo any problems that you missed on a separate piece of paper and hand that in with this packet.

You may also take a multiple choice practice test at phschool.com using webcode aua-0752.