

Geometric Mean Worksheet

Name: Key

Write a proportion for each problem. Show all work for each problem.

No work = no credit. Round to tenths place

1. Find the geometric mean of 8 and 18.

$$\sqrt{144} = 12$$

2. Find the geometric mean of 20 and 25.

$$\sqrt{500} = 22.36$$

3. 15 is the geometric mean of 25 and what other number?

$$\frac{25}{15} = \frac{15}{x} \quad x = 9$$

$$\frac{x}{15} = \frac{15}{25}$$

4. Find the geometric mean of 3 and 7.

$$\sqrt{21}$$

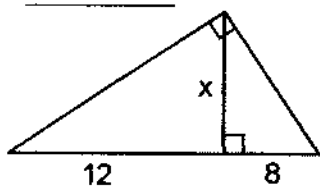
5. 32 is the geometric mean of 16 and what other number?

$$\frac{x}{32} = \frac{32}{16} \quad 16x = 1024 \quad x = 64$$

Solve for the missing variable.

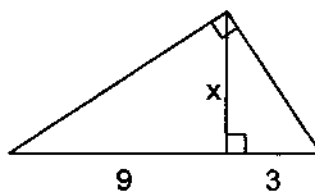
6. $x = 4\sqrt{6}$

$$x = \sqrt{128} = \sqrt{96} = 4\sqrt{6}$$

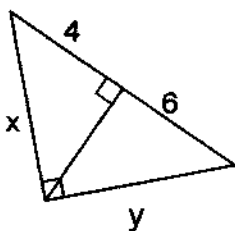


7. $x = 3\sqrt{3}$

$$\sqrt{27} = 3\sqrt{3}$$



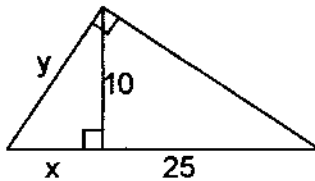
8. $x = 2\sqrt{10}$ $y = \sqrt{60}$



$$y = \sqrt{6 \cdot 10} = \sqrt{60}$$

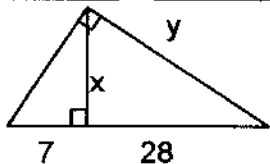
$$x = \sqrt{4 \cdot 10} = \sqrt{40} = 2\sqrt{10}$$

9. $x = 4$ $y = 2\sqrt{29}$



$$\frac{x}{10} = \frac{10}{25} \quad 25x = 100 \quad x = 4$$

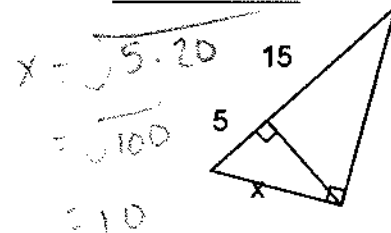
10. $x = 2\sqrt{13}$ $y = 2\sqrt{45}$



$$y = \sqrt{7 \cdot 28} = \sqrt{196} = 14$$

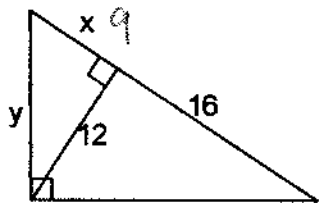
$$x = \sqrt{7 \cdot 28} = \sqrt{196} = 14$$

11. $x = 10$



$$x = \sqrt{5 \cdot 20} = \sqrt{100} = 10$$

12. $x = 9$ $y = 15$



$$\frac{x}{12} = \frac{12}{16}$$

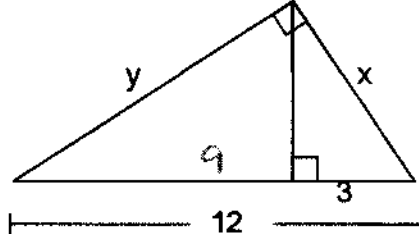
$$16x = 144$$

$$x = 9$$

$$y = \sqrt{9 \cdot 25}$$

$$\sqrt{225} = 15$$

13. $x = 6$ $y = 6\sqrt{3}$



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

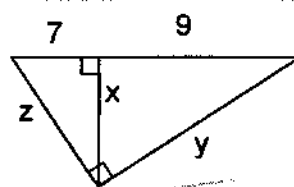
$$x = \frac{81}{12} = \frac{9}{4}$$

$$y = \sqrt{9 \cdot 12}$$

$$\sqrt{108}$$

$$= 6\sqrt{3}$$

15. $x = 3\sqrt{7}$ $y = 12$



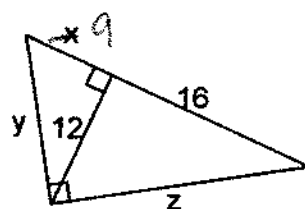
$$z = 4\sqrt{7}$$

$$x = \sqrt{63} = 3\sqrt{7}$$

$$z = \sqrt{7 \cdot 16} = 4\sqrt{7}$$

$$y = \sqrt{9 \cdot 16} = 12$$

17. $x = 9$ $y = 15$ $z = 20$



$$\frac{x}{12} = \frac{12}{16}$$

$$16x = 144$$

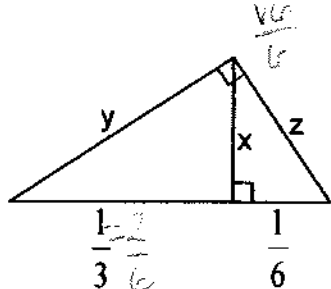
$$x = 9$$

$$z = \sqrt{16 \cdot 25}$$

$$= 20$$

$$y = \sqrt{9 \cdot 25}$$

16. $x = \frac{\sqrt{2}}{6}$ $y = \frac{\sqrt{6}}{6}$ $z = \frac{\sqrt{6}}{6}$



$$x = \frac{1}{\sqrt{18}}$$

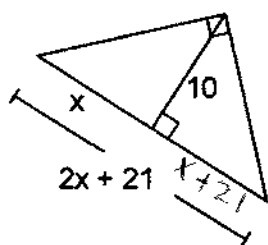
$$x = \frac{\sqrt{1}}{3\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{6}$$

$$y = \sqrt{\frac{1}{3} \cdot \frac{1}{2}}$$

$$\frac{1}{\sqrt{6}} = \frac{\sqrt{1}}{\sqrt{3} \cdot \sqrt{2}}$$

$$\frac{1}{\sqrt{6}} = \frac{1}{\sqrt{6}}$$

18. $x = 4$



$$x^2 + 21x - 100 = 0$$

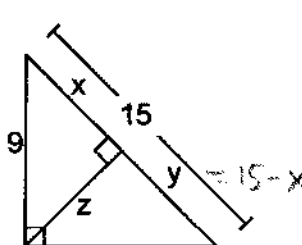
$$(x+25)(x-4) = 0$$

$$-25 = 4$$

$$\frac{x}{10} = \frac{10}{2x+21}$$

$$x^2 + 21x - 100 = 0$$

19.



$$x = \frac{27}{5}$$

$$y = \frac{48}{5}$$

$$z = \frac{36}{5}$$

$$y = 15 - \frac{27}{5}$$

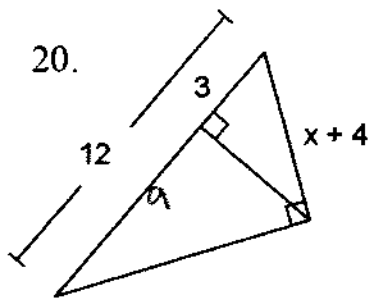
$$9 = \sqrt{x \cdot 15}$$

$$81 = 15x$$

$$x = \frac{81}{15} = \frac{27}{5}$$

$$z = \sqrt{\frac{27}{5} \cdot \frac{48}{5}}$$

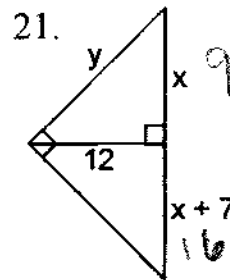
$$\sqrt{\frac{1296}{25}} = \frac{36}{5}$$



$x = \underline{2}$

$$\frac{3}{x+4} = \frac{x+4}{12}$$

$$36 = x^2 + 8x + 16 \quad \checkmark \quad x^2 + 8x - 20 = 0 \quad (x-2)(x+10)$$



$$\frac{12}{12} = \frac{12}{x+7}$$

$$x^2 + 7x - 144 = 0$$

$$x = \underline{9}$$

$$y = \underline{15}$$

$(x-9)(x+16)$
 $\uparrow$
 $x=9$

$y = \sqrt{25 \cdot 9}$
 $= 5 \cdot 3 = 15$

Determine if the triangle side lengths can form a triangle. If so, then use Triangle Inequalities to classify the triangles as right, acute or obtuse. Show work.

22. 10, 12, 15 yes 23. 1.5, 2, 2.5 yes 24. 0.7, 1.1, 1.7 yes 25. 8, 13, 23 no

$15^2 > 10^2 + 12^2$

$2.5^2 > 1.5^2 + 2^2$

$1.7^2 > 0.7^2 + 1.1^2$

$23^2 > 8^2 + 13^2$

$6.25 < 6.25$

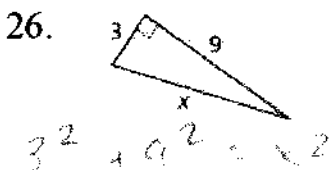
$2.89 < 1.7$

obtuse

Right

obtuse

Find the missing side lengths. Tell if the side lengths form a Pythagorean Triple.



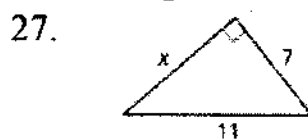
$$3^2 + 9^2 = x^2$$

$$9 + 81 = x^2$$

$$90 = x^2$$

$$\sqrt{90} = x$$

not a triple

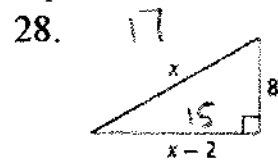


$$7^2 + x^2 = 11^2$$

$$\sqrt{x^2} = \sqrt{72}$$

$$x = 6\sqrt{2}$$

not a triple



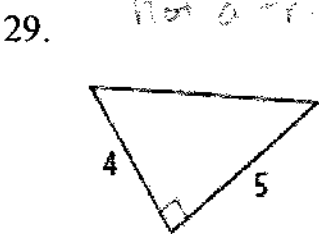
$$(x-2)^2 + 8^2 = 17^2$$

$$x^2 - 4x + 4 + 64 = 289$$

$$-4x = -68$$

$$x = 17$$

yes, it is a triple

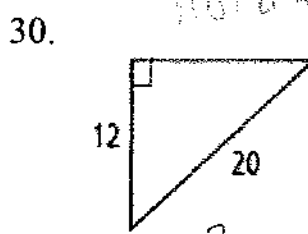


$$4^2 + 5^2 = x^2$$

$$16 + 25 = x^2$$

$$\sqrt{41} = x$$

not a triple

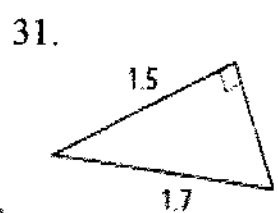


$$12^2 + x^2 = 20^2$$

$$x^2 = 256$$

$$x = 16$$

yes



$$1.5^2 + 1.7^2 = x^2$$

$$2.25 + 2.89 = x^2$$

$$x^2 = 5.14$$

$$x = 2.27$$

no