

Geometric Mean Worksheet

Name: Answers

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.

$$\frac{8}{x} = \frac{x}{18} \quad x^2 = 144 \quad \boxed{x = 12}$$

2. Find the geometric mean of 20 and 25.

$$\frac{20}{x} = \frac{x}{25} \quad x^2 = 500 \quad \boxed{x = 22.4}$$

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

$$M(\text{geomean}) = \sqrt{a \cdot b}$$

$$15 = \sqrt{25 \cdot b} \quad 225 = 25b \quad \boxed{x = 9}$$

4. Find the geometric mean of 3 and 7.

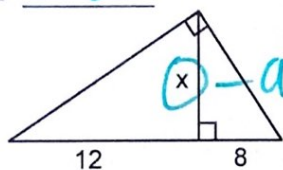
$$\frac{3}{x} = \frac{x}{7} \quad x^2 = 21 \quad \boxed{x = 4.6}$$

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

$$32 = \sqrt{16 \cdot b} \quad 1024 = 16b \quad \boxed{b = 64}$$

Solve for the missing variable.

6. $x = 9.8$

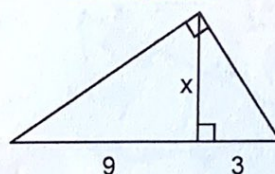


$$\frac{12}{x} = \frac{x}{8}$$

$$\sqrt{x^2} = \sqrt{96}$$

$$x = 9.8$$

7. $x = 5.2$

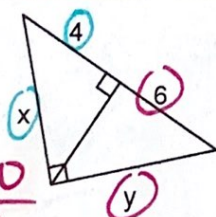


$$\frac{9}{x} = \frac{x}{3}$$

$$\sqrt{x^2} = \sqrt{27}$$

$$x = 5.2$$

8. $x = 6.3$ $y = 7.7$

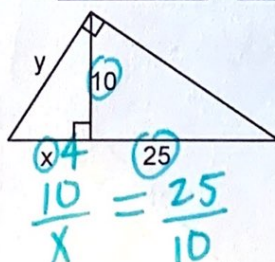


$$\frac{4}{x} = \frac{x}{6} \quad x^2 = 24 \quad x = 4.9$$

$$\frac{y}{10} = \frac{10}{y} \quad y^2 = 100 \quad y = 10$$

$$y^2 = 60 \Rightarrow y = \sqrt{60} = 7.7$$

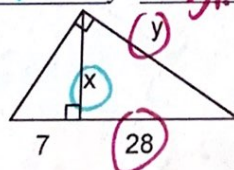
9. $x = 4$ $y = 10.8$



$$\frac{y}{10} = \frac{10}{25} \quad y = 4$$

$$\frac{4}{y} = \frac{y}{29} \quad y^2 = 116 \quad y = 10.77$$

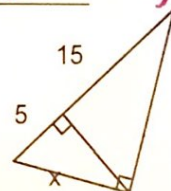
10. $x = 14$ $y = 31.3$



$$\frac{7}{x} = \frac{x}{28} \quad x^2 = 196 \quad x = 14$$

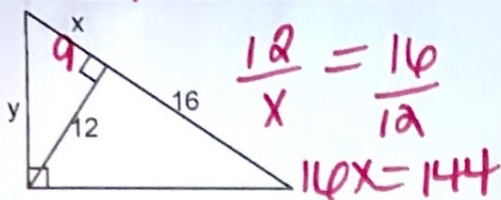
$$\frac{y}{28} = \frac{28}{y} \quad y^2 = 784 \quad y = 28$$

11. $x = 10$



$$\frac{5}{x} = \frac{x}{10} \quad x^2 = 50 \quad x = 7.1$$

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



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

$$12x = 144$$

$$x = 9$$

$$\frac{y}{9} = \frac{25}{y} \quad y^2 = 225$$

$$y = 15$$

14. $x = 10$ $y = 10.8$



$$\frac{x}{4} = \frac{25}{x}$$

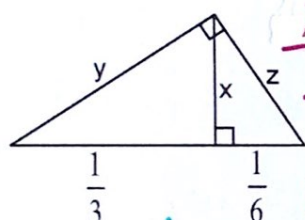
$$x^2 = 100$$

$$x = 10$$

$$\frac{y}{4} = \frac{29}{y} \quad y^2 = 116$$

$$y = 10.8$$

16. $x = .24$ $y = .41$ $z = .29$



$$\frac{x}{1/6} = \frac{1/3}{x}$$

$$x^2 = \frac{1}{18}$$

$$x = .24$$

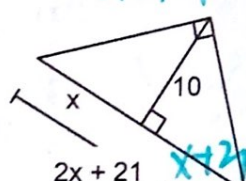
$$\frac{z}{1/4} = \frac{1/2}{z}$$

$$z^2 = \frac{1}{12}$$

$$\frac{y}{1/3} = \frac{1/2}{y}$$

$$y^2 = \frac{1}{6} \quad y = .41$$

18. $x = -25, 4$



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

$$100 = x(x+21)$$

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

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

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

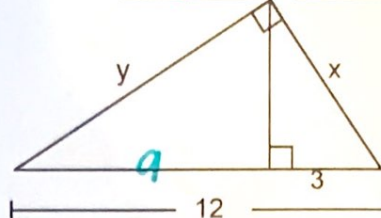
$$2x+21-x$$

$$x+21$$

$$-100$$

$$25x-4$$

13. $x = 6$ $y = 10.4$



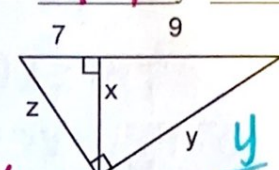
$$\frac{x}{3} = \frac{12}{x}$$

$$x^2 = 36$$

$$\frac{y}{9} = \frac{12}{y} \quad y^2 = 108$$

$$y = 10.4$$

15. $x = 7.9$ $y = 12$ $z = 10.6$



$$\frac{x}{7} = \frac{9}{x}$$

$$x^2 = 63$$

$$x = 7.9$$

$$\frac{y}{9} = \frac{16}{y}$$

$$y^2 = 144$$

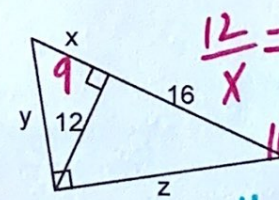
$$y = 12$$

$$\frac{z}{7} = \frac{16}{z}$$

$$z^2 = 112$$

$$z = 10.6$$

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



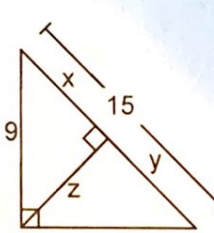
$$\frac{12}{x} = \frac{16}{12}$$

$$12x = 144$$

$$\frac{z}{16} = \frac{25}{z} \quad z^2 = 400$$

$$z = 20$$

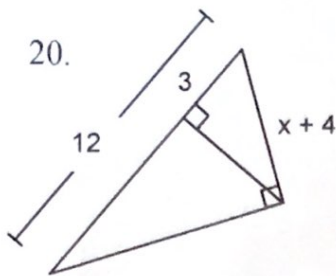
19.



$$x = 5.4$$

$$y = 9.6$$

$$z = 7.2$$



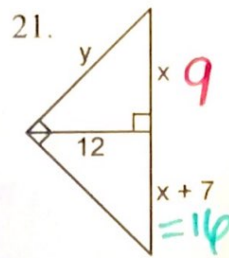
$x = 2$

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

$$(x+4)(x+4) = 36$$

$$x^2 + 8x + 16 = 36$$

$$x^2 + 8x - 20 = 0$$



$$\frac{y}{9} = \frac{25}{4}$$

$$y^2 = 225$$

$x = 9$

$y = 15$

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

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

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

$$(x+16)(x-9) = 0$$

$x = -16, 9$

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.

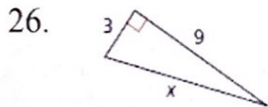
22. 10, 12, 15

23. 1.5, 2, 2.5

24. 0.7, 1.1, 1.7

25. 8, 13, 23

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

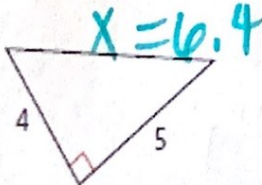


$$3^2 + 9^2 = x^2$$

$$x = 9.5$$

no

29.

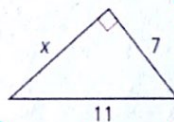


$$4^2 + 5^2 = x^2$$

$$16 + 25 = x^2$$

no

27.



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

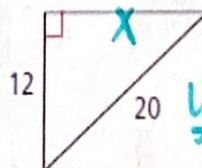
$$x^2 + 49 = 121$$

$$x^2 = 72$$

$$x = 8.5$$

no

30.



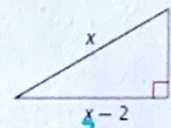
$$12^2 + x^2 = 20^2$$

$$144 + x^2 = 400$$

$$x^2 = 256$$

$$x = 16$$

28.



$$(x-2)^2 + 64 = x^2$$

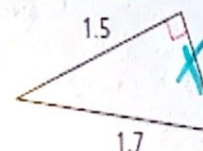
$$x^2 - 4x + 4 + 64 = x^2$$

$$x^2 - 4x + 68 = x^2$$

$$68 = 4x$$

$$x = 17$$

31.



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

$$x^2 = 0.4$$

no

→ must be whole #s

yes