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. 12

2. Find the geometric mean of 20 and 25. $\sqrt{500} = 10\sqrt{5}$

3. 15 is the geometric mean of 25 and what other number? $\frac{x}{15} = \frac{15}{25}$

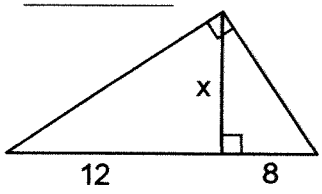
$\frac{25x}{25} = \frac{225}{25}$ $x = 9$

4. Find the geometric mean of 3 and 7. $\sqrt{21}$

5. 32 is the geometric mean of 16 and what other number? $\frac{x}{32} = \frac{32}{16}$ $\frac{16x}{16} = \frac{1024}{16}$ $x = 64$

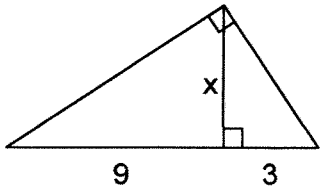
Solve for the missing variable.

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



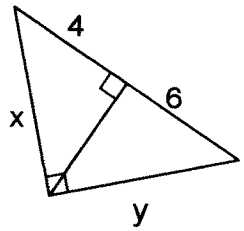
$x = \sqrt{12 \cdot 8}$
$= \sqrt{96}$
$= 4\sqrt{6}$

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



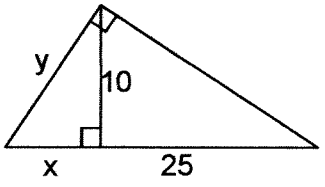
$\sqrt{27}$
$3\sqrt{3}$

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



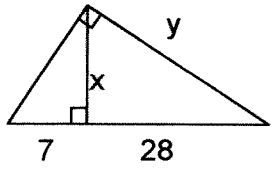
$y = \sqrt{6 \cdot 10}$
$= \sqrt{60}$
$x = \sqrt{4 \cdot 10}$
$= \sqrt{40} = 2\sqrt{10}$

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



$\frac{x}{10} = \frac{10}{25}$
$25x = 100$
$x = 4$
$y = \sqrt{4 \cdot 29}$
$= \sqrt{116}$ $2\sqrt{29}$

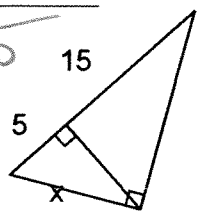
10. x= $2\sqrt{343}$ y= $2\sqrt{245}$



$y = \sqrt{28 \cdot 35}$
$= \sqrt{980} = 2\sqrt{245}$

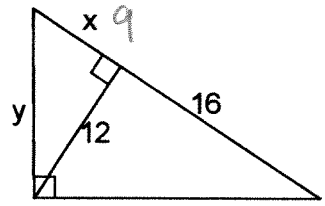
$x = \sqrt{7 \cdot 28} = \sqrt{1372} = 2\sqrt{343}$

11. x= 10



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

12. x= 9 y= 15



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

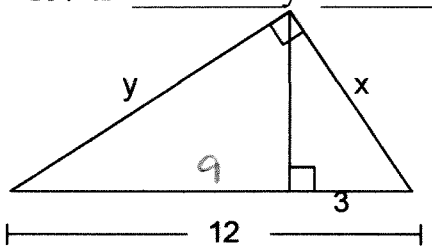
$16x = 144$

$x = 9$

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

$= \sqrt{225} = 15$

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



$x = \sqrt{3 \cdot 12}$

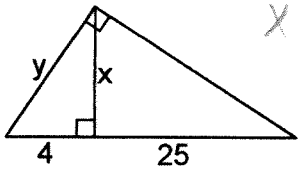
$= \sqrt{36} = 6$

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

$= \sqrt{108}$

$= 6\sqrt{3}$

14. x= 10 y=



$x = \sqrt{100}$

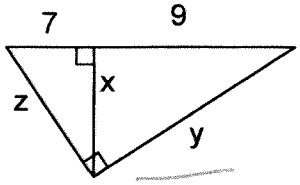
$= 10$

$y = \sqrt{4 \cdot 29}$

$= \sqrt{116}$

$= 2\sqrt{29}$

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



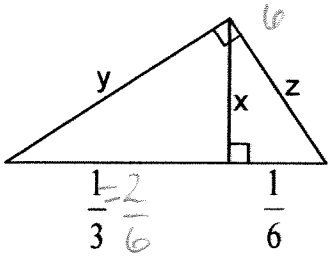
$z = 4\sqrt{7}$

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

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

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

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



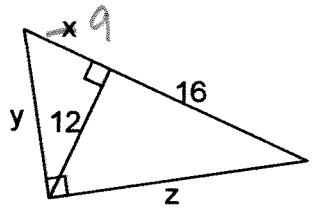
$x = \sqrt{\frac{1}{18}}$

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

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

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

17. x= 9 y= 15 z= 20



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

$16x = 144$

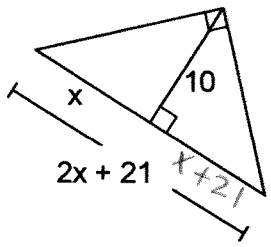
$x = 9$

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

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

$= 20$

18. x= 4



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

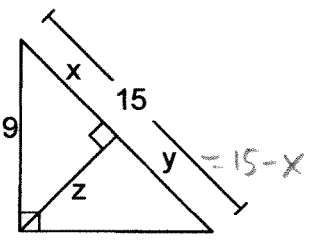
$(x+25)(x-4)$

-25 or 4

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

$x^2 + 21x = 100$

19.



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

y = 48/5

z = 36/5

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

$= \frac{75}{5} - \frac{27}{5} = \frac{48}{5}$

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

$9^2 = \sqrt{15x}^2$

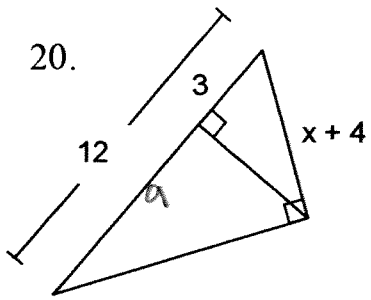
$81 = 15x$

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

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

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

20.



$x = 2$

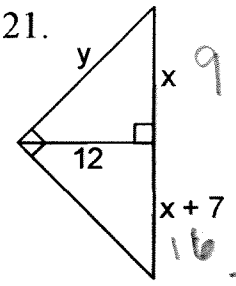
$\frac{3}{x+4} = \frac{x+4}{12}$

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

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

$(x-2)(x+10)$

21.



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

$x^2 + 7x = 144$

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

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

$x = 9$

$y = 15$

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

$= 5 \cdot 3 = 15$

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

$15^2 \bigcirc 10^2 + 12^2$

$225 \ (>) \ 244$

obtuse

23. 1.5, 2, 2.5 yes

$2.5^2 \bigcirc 1.5^2 + 2^2$

$6.25 \ (=) \ 6.25$

Right

24. 0.7, 1.1, 1.7 yes

$1.7^2 \bigcirc .7^2 + 1.1^2$

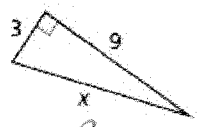
$2.89 \ (>) \ 1.7$

obtuse

25. 8, 13, 23 NO

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

26.



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

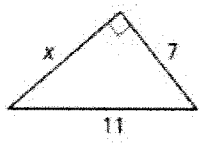
$9 + 81 = x^2$

$90 = x^2$

$3\sqrt{10} = x$

not a triple

27.



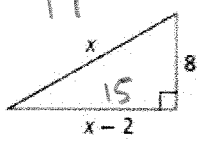
$7^2 + x^2 = 11^2$

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

$x = 6\sqrt{2}$

not a triple

28. 17



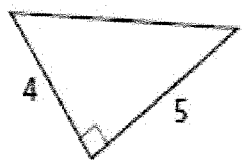
$(x-2)^2 + 8^2 = x^2$

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

$-4x = -68$

$x = 17$

29.



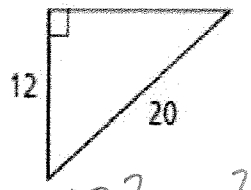
$4^2 + 5^2 = x^2$

$16 + 25 = x^2$

$\sqrt{41} = \sqrt{x^2}$

$\sqrt{41}$ not a triple

30.



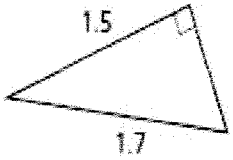
$12^2 + x^2 = 20^2$

$x^2 = 256$

$x = 16$

yes

31.



yes, it is a triple

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

$2.25 + x^2 = 2.89$

$x^2 = .64$

$x = .8$ NO