NAME _____ DATE _____ PERIOD _____

8-1 Skills Practice

Geometric Mean

Find the geometric mean between each pair of numbers. * show proportion

1. 2 and 8 $\frac{2}{x} = \frac{x}{8}$ $x^2 = 16$ $x = 4$

2. 9 and 36 $\frac{9}{x} = \frac{x}{36}$ $x = \sqrt{9 \cdot 36}$ $x = 18$

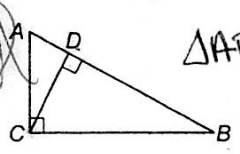
3. 4 and 7 $\frac{4}{x} = \frac{x}{7}$ $x = \sqrt{28}$ $2\sqrt{7}$

4. 5 and 10 $\frac{5}{x} = \frac{x}{10}$ $x^2 = 50$ $x = \sqrt{50}$ $x = 5\sqrt{2}$

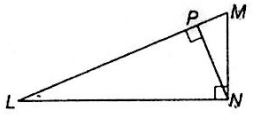
5. 28 and 14 $\frac{28}{x} = \frac{x}{14}$ $x = \sqrt{28 \cdot 14}$ $2 \cdot 14$ $x = 14\sqrt{2}$

6. 7 and 36 $\frac{7}{x} = \frac{x}{36}$ $x = 6\sqrt{7}$

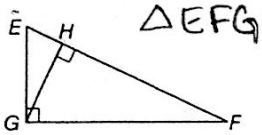
Write a similarity statement identifying the three similar triangles in the figure.

7. 

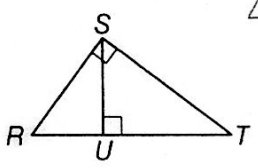
$\triangle ABC \sim \triangle ACD \sim \triangle CBC$

8. 

$\triangle LMN \sim \triangle LNP \sim \triangle NMP$

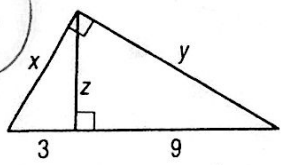
9. 

$\triangle EFG \sim \triangle EGH \sim \triangle GFH$

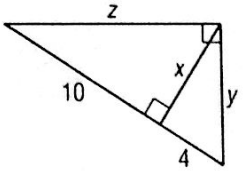
10. 

$\triangle RST \sim \triangle RUS \sim \triangle SUT$

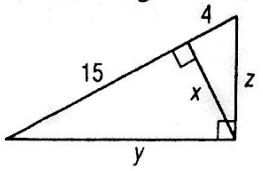
Find *x*, *y* and *z*. * must have 3 proportions for each

11. 

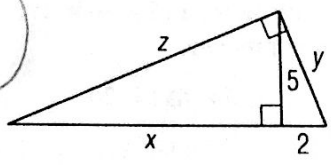
$\frac{3}{z} = \frac{z}{9}$ $z = 3\sqrt{3}$ $\frac{9}{y} = \frac{y}{12}$ $y = 6\sqrt{3}$ $\frac{3}{x} = \frac{x}{12}$ $x = 6$

12. 

$\frac{10}{x} = \frac{x}{4}$ $x = 2\sqrt{10}$ $\frac{4}{y} = \frac{y}{14}$ $y = 8\sqrt{14}$ $\frac{10}{z} = \frac{z}{14}$ $z = 2\sqrt{35}$

13. 

$\frac{4}{x} = \frac{x}{15}$ $x = 2\sqrt{15}$ $\frac{15}{y} = \frac{y}{19}$ $y = \sqrt{285}$ $\frac{4}{z} = \frac{z}{19}$ $z = 2\sqrt{19}$

14. 

$\frac{x}{5} = \frac{5}{2}$ $x = 12.5$ $\frac{2}{y} = \frac{y}{14.5}$ $y = \sqrt{29}$ ≈ 5.4 $\frac{12.5}{z} = \frac{z}{14.5}$ $z = \sqrt{181.25}$ $z \approx 13.5$

31 m

NAME _____ DATE _____ PERIOD _____

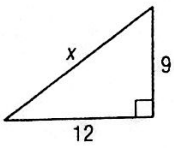
8-2 Skills Practice

The Pythagorean Theorem and Its Converse

* Show pythag. theorem for every problem

Find *x*.

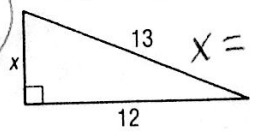
1.



$9^2+12^2=x^2$

$15=x$

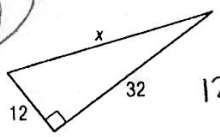
2.



$13^2-12^2=x^2$

$x=5$

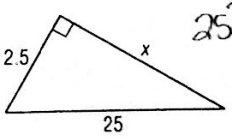
3.



$12^2+32^2=x^2$

$x=\sqrt{1168}\approx 34.2$

4.

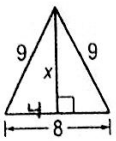


$25^2-12.5^2=x^2$

$x=\sqrt{468.75}$

≈ 21.7

5.

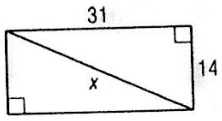


$9^2-4^2=x^2$

$x=\sqrt{65}$

$x\approx 8.1$

6.

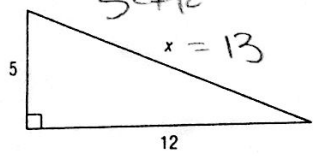


$14^2+31^2=x^2$

$x=\sqrt{1157}\approx 34$

Use a Pythagorean Triple to find *x*.

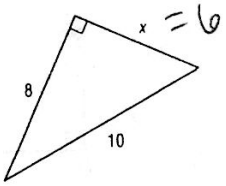
7.



5^2+12^2

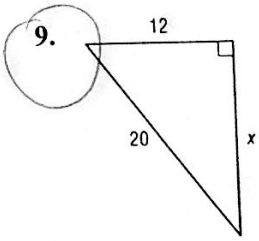
$x=13$

8.



$x=6$

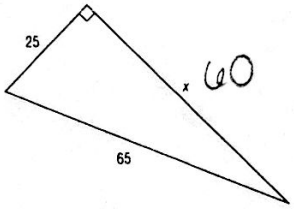
9.



$20^2-12^2=x^2$

$x=16$

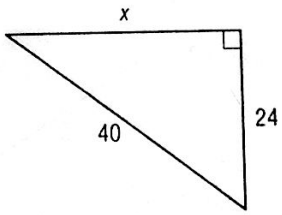
10.



$65^2-25^2=x^2$

60

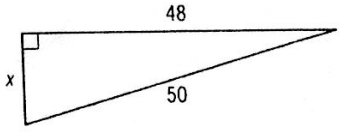
11.



$40^2-24^2=x$

$32=x$

12.



$50^2-48^2=x^2$

$14=x$

Determine whether each set of numbers can be measure of the sides of a triangle. If so, classify the triangle as *acute, obtuse, or right*. Justify your answer.

13. 7, 24, 25

$49+576=625$

right

14. 8, 14, 20

$64+196<400$

obtuse

15. 12.5, 13, 26

NO △

16. $3\sqrt{2}, \sqrt{7}, 4$

$18+7>16$

acute

17. 20, 21, 29

$400+441=841$

right

18. 32, 35, 70

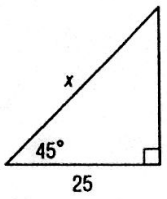
NO △

NAME _____ DATE _____ PERIOD _____

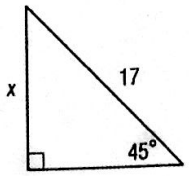
8-3 Skills Practice

Special Right Triangles

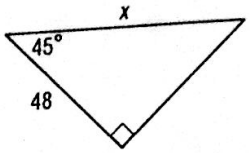
Find x.

1. 

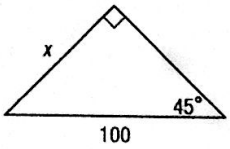
$25\sqrt{2}$

2. 

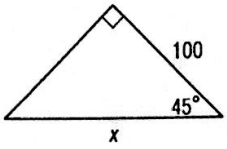
$8.5\sqrt{2}$ or $\frac{17\sqrt{2}}{2}$

3. 

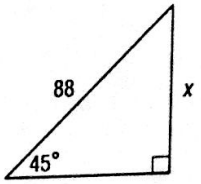
$48\sqrt{2}$

4. 

$50\sqrt{2}$

5. 

$100\sqrt{2}$

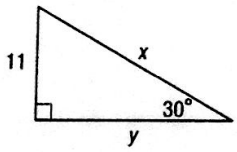
6. 

$44\sqrt{2}$

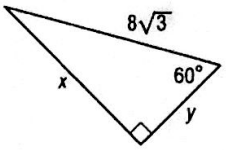
7. Determine the length of the leg of 45°-45°-90° triangle with a hypotenuse length of 26. $13\sqrt{2}$

8. Find the length of the hypotenuse of a 45°-45°-90° triangle with a leg length of 50 centimeters.
$50\sqrt{2}$ cm

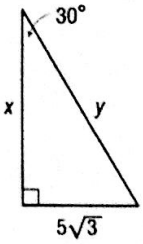
Find x and y.

9. 

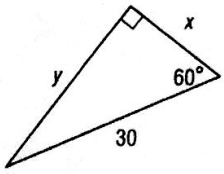
22; $11\sqrt{3}$

10. 

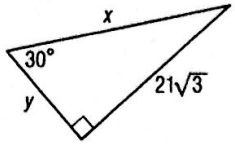
12; $4\sqrt{3}$

11. 

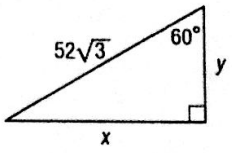
15; $10\sqrt{3}$

12. 

15; $15\sqrt{3}$

13. 

42; 21

14. 

78; $26\sqrt{3}$

15. An equilateral triangle has an altitude length of 27 feet. Determine the length of a side of the triangle.
$18\sqrt{3}$

16. Find the length of the side of an equilateral triangle that has an altitude length of $11\sqrt{3}$ feet.
22

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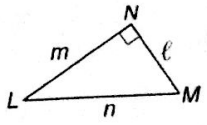
8-4 Practice

Trigonometry

Find sin L, cos L, tan L, sin M, cos M, and tan M. Express each ratio as a fraction and as a decimal to the nearest hundredth.



1. $\ell = 15$, $m = 36$, $n = 39$

$\sin L = \frac{5}{13} \approx 0.38$;

$\cos L = \frac{12}{13} \approx 0.92$;

$\tan L = \frac{5}{12} \approx 0.42$;

$\sin M = \frac{12}{13} \approx 0.92$;

$\cos M = \frac{5}{13} \approx 0.38$;

$\tan M = \frac{12}{5} \approx 2.4$

2. $\ell = 12$, $m = 12\sqrt{3}$, $n = 24$

$\sin L = \frac{1}{2} = 0.50$;

$\cos L = \frac{\sqrt{3}}{2} \approx 0.87$;

$\tan L = \frac{1}{\sqrt{3}}$ or $\frac{\sqrt{3}}{3} \approx 0.58$;

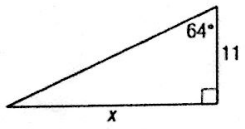
$\sin M = \frac{\sqrt{3}}{2} \approx 0.87$;

$\cos M = \frac{1}{2} = 0.50$;

$\tan M = \sqrt{3} \approx 1.73$

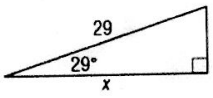
Find x. Round to the nearest hundredth.

3.



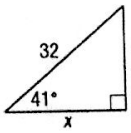
22.55

4.



25.36

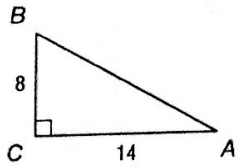
5.



24.15

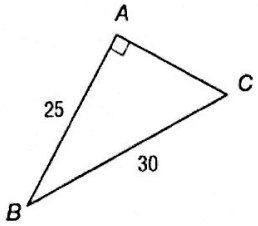
Use a calculator to find the measure of $\angle B$ to the nearest tenth.

6.



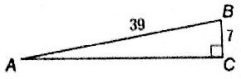
60.3°

7.



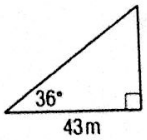
33.6°

8.



79.7°

9. **GEOGRAPHY** Diego used a theodolite to map a region of land for his class in geomorphology. To determine the elevation of a vertical rock formation, he measured the distance from the base of the formation to his position and the angle between the ground and the line of sight to the top of the formation. The distance was 43 meters and the angle was 36°. What is the height of the formation to the nearest meter?



31 m

Lesson 8-4

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