5.7-5.8 Key

Study Guide

Name _____

Date _____

Square #'s: 4, 9, 16, 25, 36, 49, 64, 81, 100 . . . .

Simplify.

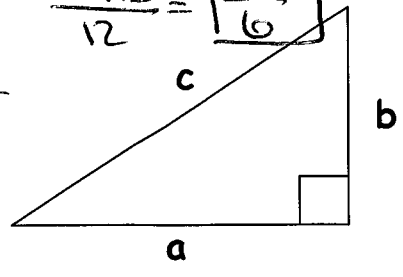
1. $\sqrt{49}$ → 7

2. $\sqrt{48}$ → $\sqrt{16}\sqrt{3}$ → $4\sqrt{3}$

3. $\sqrt{\frac{2}{15}} = \frac{\sqrt{2}}{\sqrt{15}} \cdot \frac{\sqrt{15}}{\sqrt{15}}$ → $\frac{\sqrt{30}}{15}$

4. $\sqrt{\frac{5}{12}} = \frac{\sqrt{5}}{\sqrt{12}} \cdot \frac{\sqrt{12}}{\sqrt{12}}$ → $\frac{\sqrt{60}}{12} = \frac{\sqrt{4}\sqrt{15}}{12}$ → $\frac{2\sqrt{15}}{12} = \frac{\sqrt{15}}{6}$

Use the right triangle shown to find each value.



4. If a = $\sqrt{2}$ and b = $\sqrt{6}$, find c.

$a^2+b^2=c^2$

$(\sqrt{2})^2+(\sqrt{6})^2=c^2$

$2+6=c^2$

$8=c^2$

$\sqrt{8}=c$

$c=2\sqrt{2}$

5. If b = 10 and c = 11, find a.

$a^2+10^2=11^2$

$a^2=21$

$a=\sqrt{21}$

State whether a triangle with the given lengths is <u>acute</u>, <u>right</u>, or <u>obtuse</u>.

6. 4, 6, 8

$8^2 \_\_ 4^2+6^2$

$64 \_\_ 52$

obtuse

7. 8, 10, 12

$12^2 \_\_ 8^2+10^2$

$144 \_\_ 64+100$

$144 < 164$

acute

8. $\sqrt{7}, \sqrt{7}, \sqrt{14}$

$(\sqrt{14})^2 \_\_ (\sqrt{7})^2+(\sqrt{7})^2$

$\sqrt{196} \_\_ \sqrt{49}+\sqrt{49}$

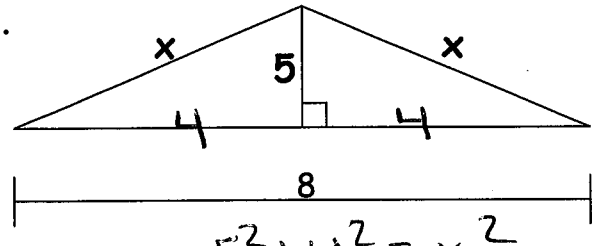
$14 \_\_ 7+7$

$14 = 14$

right

Find each missing value.

9.

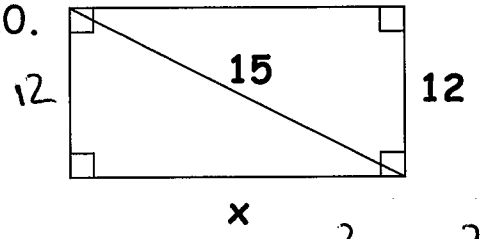


$5^2+4^2=x^2$

$41=x^2$

$x=\sqrt{41}$

10.

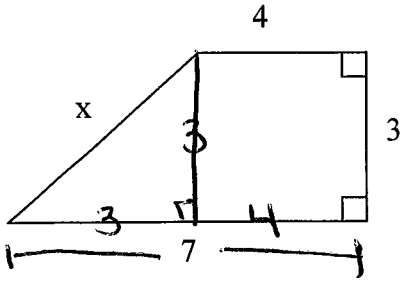


$x^2+12^2=15^2$

$x^2=81$

$x=9$

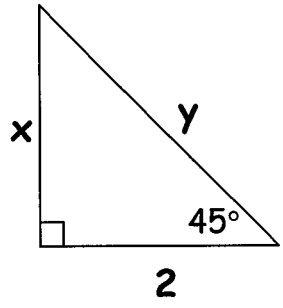
11.



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

$x=3\sqrt{2}$

12.

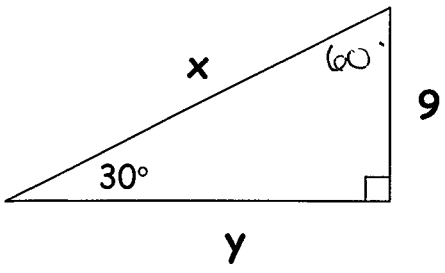


$h=l\sqrt{2}$

$y=2\sqrt{2}$

$x=2$

13.



$h = s \cdot 2$

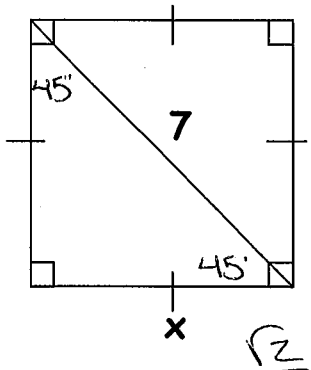
$X = 9 \cdot 2$

$\boxed{X = 18}$

$l = s\sqrt{3}$

$\boxed{y = 9\sqrt{3}}$

14.



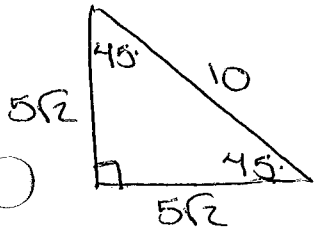
$h = l\sqrt{2}$

$\frac{7}{\sqrt{2}} = \frac{x\sqrt{2}}{\sqrt{2}}$

$\frac{\sqrt{2}}{\sqrt{2}} \cdot \frac{7}{\sqrt{2}} = x$

$\boxed{\frac{7\sqrt{2}}{2} = x}$

16. A 45°-45°-90° triangle has hypotenuse 10 ft. Find the perimeter and area.



$h = l\sqrt{2}$

$\frac{10}{\sqrt{2}} = \frac{l\sqrt{2}}{\sqrt{2}}$

$\frac{\sqrt{2}}{\sqrt{2}} \cdot \frac{10}{\sqrt{2}} = l$

$\frac{10\sqrt{2}}{2} = l$

$5\sqrt{2} = l$

$P = 5\sqrt{2} + 5\sqrt{2} + 10$

$\boxed{P = 10\sqrt{2} + 10 \text{ ft}}$

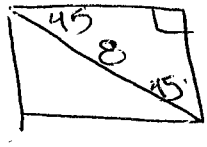
$A = \frac{1}{2}bh$

$A = \frac{1}{2}(5\sqrt{2})(5\sqrt{2})$

$A = 12.5 \cdot 4$

$\boxed{A = 25 \text{ ft}^2}$

17. Find the perimeter of a square that has diagonals 8 cm long.



$h = l\sqrt{2}$

$8 = l\sqrt{2}$

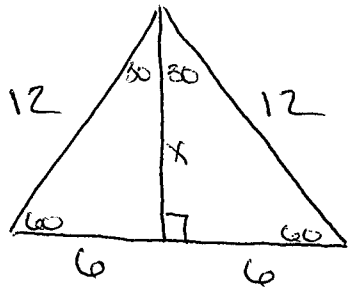
$\frac{8}{\sqrt{2}} = l$

$\frac{8\sqrt{2}}{2} = l$

$4\sqrt{2} = l$

$\boxed{P = 16\sqrt{2} \text{ cm}}$

18. The sides of an equilateral triangle are 12 cm long. Find the length of an altitude of the triangle.

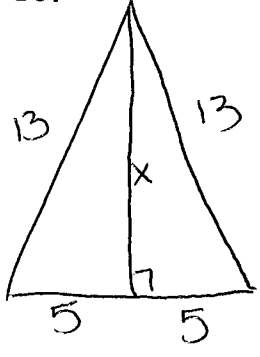


$h = s \cdot 2$

$l = s\sqrt{3}$

$\boxed{X = 6\sqrt{3}}$

19. How long is the altitude to the base of an ISOSCELES triangle if the sides are 13, 13, 10.



$x^2 + 5^2 = 13^2$

$x^2 = 144$

$\boxed{X = 12}$