Name: Key Date:
Geometry Band:

Unit 7: Right Triangles & Trigonometry PBA Practice

The lengths of the sides of a triangle are given. Classify each triangle as *acute, right,* or *obtuse*.

1. 4, 5, 6

$6^2 \square 4^2+5^2$

$36 \square 41$

acute

2. 0.3, 0.4, 0.6

$0.6^2 \square 0.3^2+0.4^2$

$0.36 \square .25$

obtuse

3. 11, 12, 15

$15^2 \square 11^2+12^2$

$225 \square 265$

acute

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

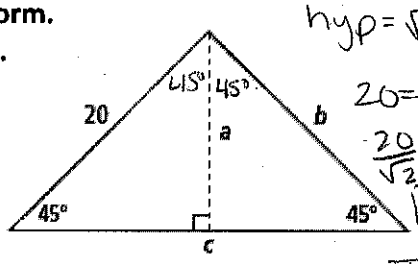
$3^2 \square \sqrt{3}^2+2^2$

$9 \square 7$

obtuse

Find the value of each variable. If your answer is not an integer, express it in simplest radical form.

5.



hyp = leg · $\sqrt{2}$

$20 = a\sqrt{2}$

$\frac{20}{\sqrt{2}} = a$

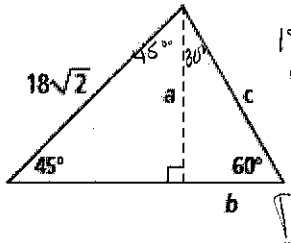
$a = 10\sqrt{2}$

$c = 10\sqrt{2} + 10\sqrt{2}$

$c = 20\sqrt{2}$

$b = 20$

6.



hyp = leg · $\sqrt{2}$

$18\sqrt{2} = a\sqrt{2}$

$18 = a$

$c = 2 \cdot 6\sqrt{3}$

$c = 12\sqrt{3}$

hyp = 2 · shortleg

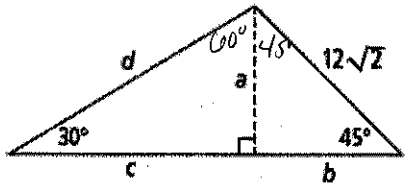
long leg = $\sqrt{3}$ · shortleg

$18 = \sqrt{3} \cdot b$

$\frac{18}{\sqrt{3}} = b$

$b = 6\sqrt{3}$

7.



hyp = leg · $\sqrt{2}$

$12\sqrt{2} = a\sqrt{2}$

$a = b = 12$

hyp = 2 · shortleg

$d = 2 \cdot 12$

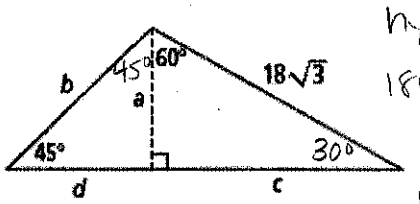
$d = 24$

long leg = $\sqrt{3}$ · shortleg

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

$c = 12\sqrt{3}$

8.



hyp = 2 · shortleg

$18\sqrt{3} = 2 \cdot a$

$a = 9\sqrt{3} = d$

hyp = leg · $\sqrt{2}$

$b = \sqrt{2} \cdot 9\sqrt{3}$

$b = 9\sqrt{6}$

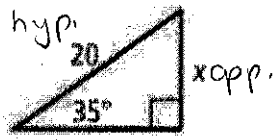
long leg = $\sqrt{3}$ · shortleg

$c = \sqrt{3} \cdot 9\sqrt{3}$

$c = 27$

Find the value of x. Round to the nearest tenth for side lengths or degree for angle measures.

9.

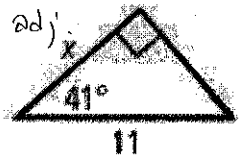


$\sin 35° = \frac{x}{20}$

$x = 20 \sin 35°$

$x \approx 11.5$

10.

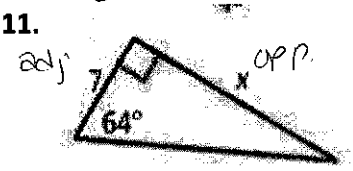


$\cos 41° = \frac{x}{11}$

$x = 11 \cos 41°$

$x \approx 8.3$

11.

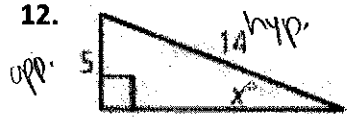


$\tan 64° = \frac{x}{7}$

$x = 7 \tan 64°$

$x \approx 14.4$

12.

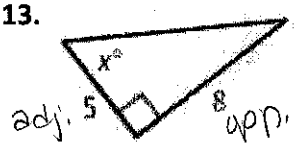


$\sin X^\circ = \frac{5}{14}$

$X = \sin^{-1}\left(\frac{5}{14}\right)$

$\boxed{X = 21^\circ}$

13.

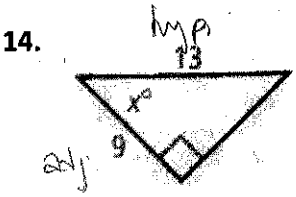


$\tan X^\circ = \frac{8}{5}$

$X = \tan^{-1}\left(\frac{8}{5}\right)$

$\boxed{X = 58^\circ}$

14.



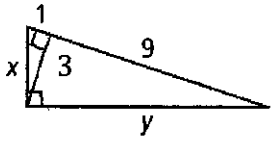
$\cos X = \frac{9}{13}$

$X = \cos^{-1}\left(\frac{9}{13}\right)$

$\boxed{X = 46^\circ}$

Solve for the value of the variables.

15.



$1^2 + 3^2 = x^2$

$10 = x^2$

$\boxed{x = \sqrt{10}}$

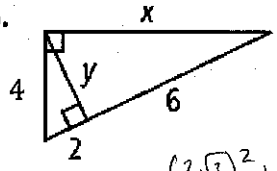
$3^2 + 9^2 = y^2$

$90 = y^2$

$\sqrt{90} = y$

$\boxed{y = 3\sqrt{10}}$

16.



$2^2 + y^2 = 4^2$

$4 + y^2 = 16$

$y^2 = 12$

$y = \sqrt{12}$

$\boxed{y = 2\sqrt{3}}$

$(2\sqrt{3})^2 + 6^2 = x^2$

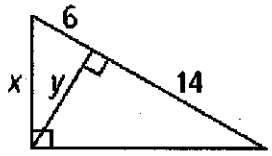
$12 + 36 = x^2$

$48 = x^2$

$\sqrt{48} = x$

$\boxed{x = 4\sqrt{3}}$

17.



$2\sqrt{70}$

$y^2 + 14^2 = (2\sqrt{70})^2$

$y^2 + 196 = 280$

$y^2 = 84$

$y = \sqrt{84}$

$\boxed{y = 2\sqrt{21}}$

$6^2 + (2\sqrt{21})^2 = x^2$

$36 + 84 = x^2$

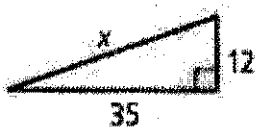
$120 = x^2$

$x = \sqrt{120}$

$\boxed{x = 2\sqrt{30}}$

What is the value of x in simplest radical form?

18.



$12^2 + 35^2 = x^2$

$1369 = x^2$

$\sqrt{1369} = x$

$\boxed{x = 37}$

19.

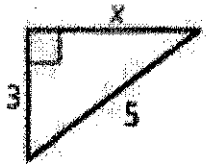
$7^2 + 9^2 = x^2$

$130 = x^2$

$x = \sqrt{130}$

$\boxed{x = \sqrt{130}}$

20.



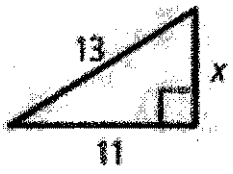
$3^2 + x^2 = 5^2$

$9 + x^2 = 25$

$x^2 = 16$

$\boxed{x = 4}$

21.



$11^2 + x^2 = 13^2$

$121 + x^2 = 169$

$x^2 = 48$

$x = \sqrt{48}$

$\boxed{x = 4\sqrt{3}}$