Day 20 – HW – Unit 6 Review

Pg. 537 1-21 all

Do you know HOW?

Algebra Find the value of each variable. Express your answer in simplest radical form.

1.
$7^2 + 11^2 = x^2$
$\boxed{x = \sqrt{170}}$

7, 11, x

2.
$13^2 + x^2 = 15^2$
$x \boxed{x = 2\sqrt{14}}$
15, 13

3.
$\frac{11}{12} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \boxed{\frac{11\sqrt{2}}{2}}$
$11 \div \sqrt{2}$
45-45-90
y, x

4.
$\frac{24\sqrt{3}(\sqrt{3})}{2\sqrt{3}} = \frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{12\sqrt{3}}{3}$
$\boxed{S = 4\sqrt{3}}$
S 60, y
$4\sqrt{3}$
30°
$12 = S\sqrt{3}$
30-60-90

Given the following triangle side lengths, identify the triangle as *acute, right, or obtuse.*

5. 9 cm, 10 cm, 12 cm $12^2 < 9^2 + 10^2$ $\boxed{\text{acute}}$

6. 8 m, 15 m, 17 m $17^2 = 15^2 + 8^2$ $\boxed{\text{Right}}$

7. 5 in., 6 in., 10 in. $10^2 > 6^2 + 5^2$ $\boxed{\text{obtuse}}$

Express sin B, cos B, and tan B as ratios.

8.
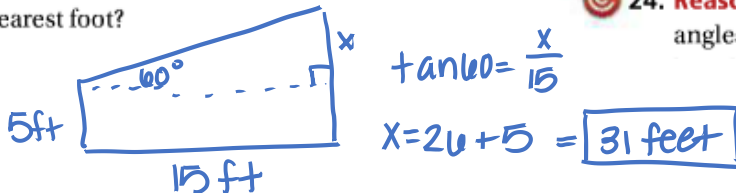$\tan B = \boxed{\frac{2\sqrt{57}}{8}}$
O, C, A, 16, $2\sqrt{57}$, A, 22, H, B
$\sin B = \frac{2\sqrt{57}}{22} = \boxed{\frac{\sqrt{57}}{11}}$ $\cos B = \frac{16}{22} = \boxed{\frac{8}{11}}$

9.
$\sin B = \frac{\sqrt{33}}{7}$
O, A, $\sqrt{33}$, H, 7
$\cos B = 4/7$
$\tan B = \frac{\sqrt{33}}{4}$
C, 4, B, A

Find each missing value to the nearest tenth.

10. $\tan \blacksquare° = 1.11$ $\tan^{-1}(1.11) \approx \boxed{48}$

11. $\sin 34° = \frac{5}{\blacksquare}$ $x = \frac{5}{\sin 34}$ $x \approx \boxed{8.9}$

12. $\cos \blacksquare° = \frac{12}{15}$ $\cos^{-1}(12/15) = \boxed{36.9}$

13. A woman stands 15 ft from a statue. She looks up at an angle of 60° to see the top of the statue. Her eye level is 5 ft above the ground. How tall is the statue to the nearest foot?

60°, x, 5ft, 15 ft
$\tan 60 = \frac{x}{15}$
$x = 26 + 5 = \boxed{31 \text{ feet}}$

Find the value of x. Round lengths to the nearest tenth and angle measures to the nearest degree.

14.
$\tan x = \frac{6}{7}$
$\tan^{-1}(6/7) = \boxed{41°}$
6, x°, 7

15.
$\sin 40 = \frac{12}{x}$
x, 12, 40°
$\boxed{x \approx 18.7}$

16.
$\cos 58 = \frac{x}{18}$
A, x, 58°, 18, H
$\boxed{x \approx 9.5}$

17.
$2\sqrt{70}$, x°, H, 19, O, 9
$\sin x = \frac{9}{19}$
$\sin^{-1}(9/19) = \boxed{28°}$

18. Find the $m\angle A$ to the nearest tenth.   LOS
38 yd, C, 9 yd, A, B, 72°
$\frac{\sin A}{9} = \frac{\sin 72}{38}$
$\boxed{m\angle A = 13.0°}$

19. Find *TU* to the nearest tenth.   LOC
T, 24 mm, 38°, U, 12 mm, V
$v^2 = 24^2 + 12^2 - 2(12)(24)\cos 38$
$\boxed{v \approx 16.3 \text{mm}}$

use Law of Cos
20. In $\triangle KLP$, $k = 13$ mi, $\ell = 10$ mi, and $p = 8$ mi. Find $m\angle K$ to the nearest tenth.
$13^2 = 10^2 + 8^2 - 2(8)(10)\cos K$
$\boxed{m\angle K \approx 91.8°}$

21. In $\triangle ABC$, $a = 8$, $b = 10$, and $m\angle B = 120$. Find the $m\angle C$ to the nearest tenth.
use Law of Sines! $\boxed{m\angle C \approx 16.1°}$

Do you UNDERSTAND?

Ⓒ 22. **Writing** Explain why $\sin x° = \cos(90 - x)°$. Include a diagram with your explanation.

Ⓒ 23. **Reasoning** Suppose that you know all three angle measures of a triangle. Can you use Law of Sines or Law of Cosines to find the side lengths? Explain.

Ⓒ 24. **Reasoning** If you know the measures of both acute angles of a right triangle, can you determine the