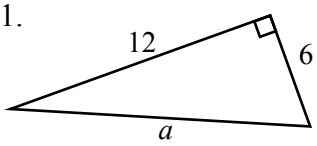
Name: _____ Date: _____ Period: _____

Geometry **Topic 8 Review WS** Right Triangles and Trig

8.1: I can apply the Pythagorean Theorem, its converse, and properties of special right triangles.

Solve for the missing variable, expressing your answer in reduced radical form. Do not round!

1.



$6^2+12^2=a^2$

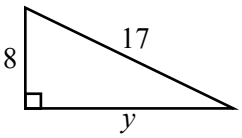
$36+144=a^2$

$180=a^2$

$\sqrt{36}\cdot\sqrt{5}=a$

$9\sqrt{5}=a$

2.



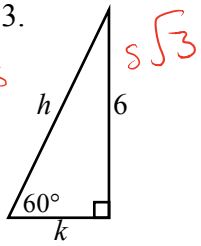
$17^2=8^2+y^2$

$289=64+y^2$

$225=y^2$

$15=y$

3.



25 $5\sqrt{3}$

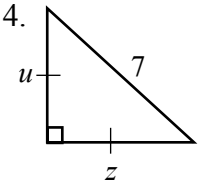
$\frac{5\sqrt{3}}{\sqrt{3}}=\frac{6}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}$

$5=2\sqrt{3}$

$h=4\sqrt{3}$

5

4.



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

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

5. Do the following sides form a right triangle? 3.5; 2.1; 2.8

$2.1^2+2.8^2=3.5^2$

$12.25=12.25$ ✓

yes

6. List a Pythagorean Triple and show that the three sides will form a right triangle.

3, 4, 5

$3^2+4^2=5^2$

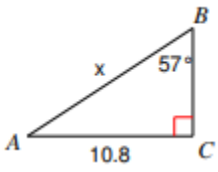
$9+16=25$

$25=25$ ✓

8.2: I can apply the three trigonometric functions and their inverses.

Solve for the missing sides and angles indicated by the variable.

7.

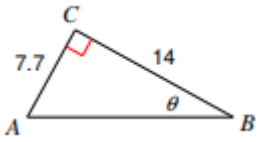


$\sin 57=\frac{10.8}{x}$

$x=\frac{10.8}{\sin 57}$

$x\approx 12.88$

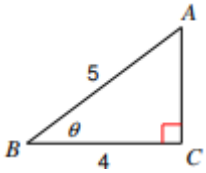
8.



$\tan^{-1}\left(\frac{7.7}{14}\right)=\theta$

$\theta=28.81°$

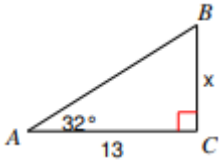
9.



$\cos^{-1}\left(\frac{4}{5}\right)=\theta$

$\theta=36.87°$

10.



$13\cdot\tan 32=\frac{x}{13}\cdot 13$

$13\tan 32=x$

$x=8.12$

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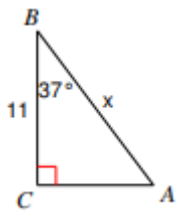
11.

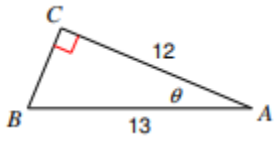


$\cos 37 = \frac{11}{x}$

$x = \frac{11}{\cos 37}$

$x = 13.77$

12.



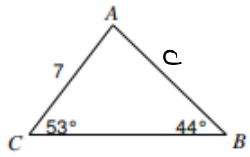
$\cos^{-1}\left(\frac{12}{13}\right) = \theta$

$\theta = 22.62°$

8.3-8.4: I can apply the Law of Sines and Law of Cosines to solve problems in any triangle.

13.

Find AB



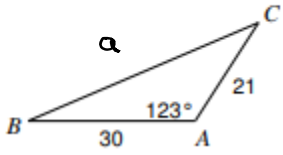
$\frac{\sin 53}{AB} = \frac{\sin 44}{7}$

$AB = \frac{7 \sin 53}{\sin 44}$

$AB = 8.05$

14.

Find BC



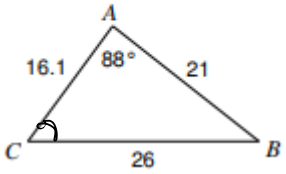
$a^2 = 21^2 + 30^2 - 2(21)(30)\cos 123$

$a^2 = 2027.25$

$a \approx 45.02$

15.

Find $m\angle C$



$\frac{\sin 88}{26} = \frac{\sin C}{21}$

$\sin C = \frac{21 \sin 88}{26}$

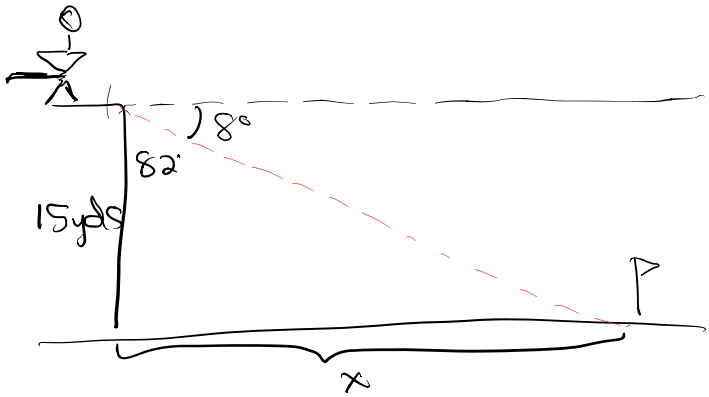
$\sin C = 0.807$

$\sin^{-1}(.807) = m\angle C$

$m\angle C = 53.82°$

8.5: I can solve application problems involving triangles using right triangles or the Laws of Sines and Cosine.

16. Mr. Bachman goes to the driving range to hit golf balls. From the third deck, his angle of depression to a flag is 8°. The third deck is about 15 yards above the ground. How far away is the flag from the base of the driving range?

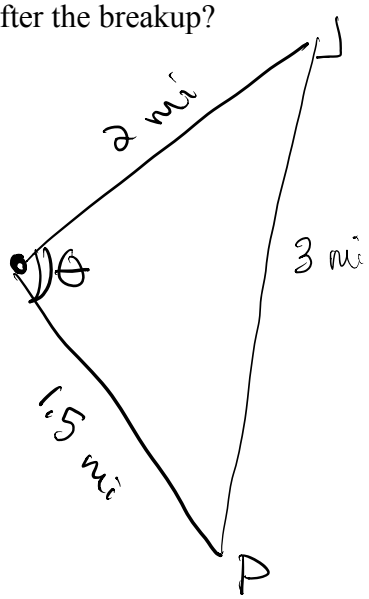


$\tan 82° = \frac{x}{15}$

$15 \tan 82° = x$

$x = 106.73 \text{ yds}$

17. Jim and Pam break up. Jim walks away from her at 4 mph; Pam walks away from him at 3 mph. After 30 minutes, they have a change of heart. They are 3 miles apart at this time. What was the angle they formed when they stormed off after the breakup?



$3^2 = 2^2 + 1.5^2 - 2(2)(1.5)\cos C$

$9 = 4 + 2.25 - 6\cos C$

$9 = 6.25 - 6\cos C$

$2.75 = -6\cos C$

$-0.4583 = \cos C$

$\cos^{-1}(-.4583) = 117.28°$

$\theta = 117.28°$