

Unit 3 Study Guide

Unit 3 Test Study Guide

Name _____ S: _____

$$\sin \theta = \frac{\text{opp.}}{\text{hyp.}}$$

$$\cos \theta = \frac{\text{adj.}}{\text{hyp.}}$$

$$\tan \theta = \frac{\text{opp.}}{\text{adj.}}$$

Use the triangle to the right for questions 1-5.

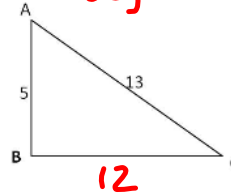
1. $\overline{BC} =$

2. $\tan C =$

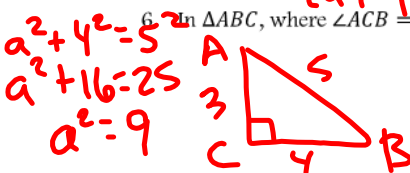
3. $\sin A =$

4. Find $m\angle A$

5. Find $m\angle C$



6. In $\triangle ABC$, where $\angle ACB = 90^\circ$, $\sin A = \frac{4}{5}$. Find $\cos A$. Draw a diagram.



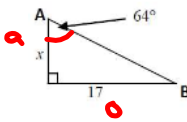
$$\cos A = \frac{3}{5}$$

Find the missing side or angle in the following triangles

7. $\tan 64 = \frac{17}{x}$

$$x = \frac{17}{\tan 64}$$

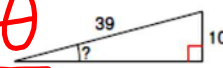
$$x = 8.29$$



8. $\sin \theta = \frac{10}{39}$

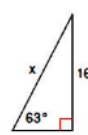
$$\sin^{-1}\left(\frac{10}{39}\right) = \theta$$

$$\theta = 14.86^\circ$$

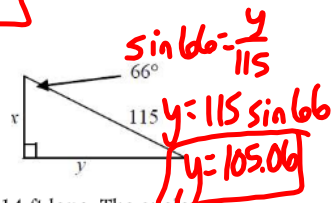


9. $\sin 63 = \frac{16}{x}$

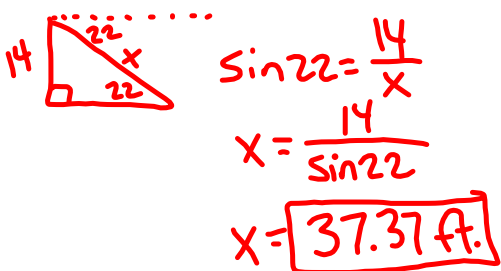
$$x = \frac{16}{\sin 63} = 17.96$$



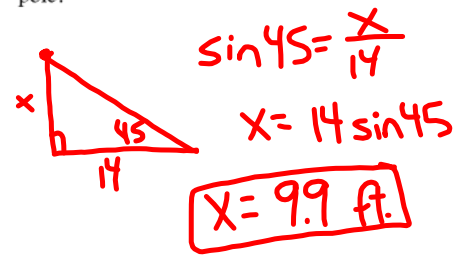
10. $\cos 66 = \frac{x}{115}$
 $x = 115 \cos 66$
 $x = 46.77$



11. The top of a waterslide is 14 ft above the ground. The angle of depression from the top of the water slide to the ground is 22° . How long is the slide?

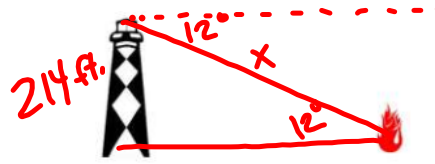


12. A pole casts a shadow that is 14 ft long. The angle of elevation is 45° . What is the length of the pole?



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13. A forest ranger is on a fire lookout tower in a national forest. His observation post is 214 ft above the ground. He spots a fire. The angle of depression from his line of sight to the fire is 12° . How far away is the fire from the lookout tower in terms of line of sight?



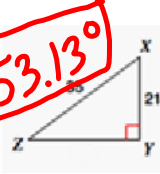
$$\sin 12 = \frac{214}{x}$$

$$x = \frac{214}{\sin 12} = 1029.28 \text{ ft.}$$

14. Find angles X and Z.

$$\cos X = \frac{21}{35}$$

$$\angle X = \cos^{-1}\left(\frac{21}{35}\right) = 53.13^\circ$$

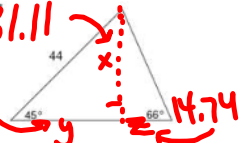


$$\sin Z = \frac{21}{35}$$

$$\angle Z = \sin^{-1}\left(\frac{21}{35}\right) = 36.87^\circ$$

Find the area of each whole triangle.

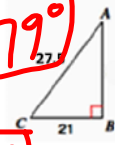
16. $\sin 45 = \frac{x}{44}$
 $x = 44 \sin 45 = 31.11$
 $\cos 45 = \frac{y}{44}$
 $y = 44 \cos 45 = 31.11$
 $\tan 66 = \frac{z}{y}$
 $z = 14.74$
 $A = \frac{1}{2}bh = \frac{1}{2}(31.11 + 14.74)(31.11) = 713.2 \text{ u}^2$



15. Find angles A and C.

$$\sin A = \frac{21}{27.5}$$

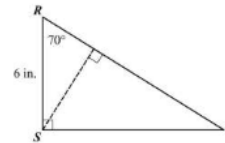
$$\angle A = \sin^{-1}\left(\frac{21}{27.5}\right) = 49.79^\circ$$



$$\cos C = \frac{21}{27.5}$$

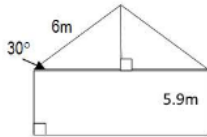
$$\angle C = \cos^{-1}\left(\frac{21}{27.5}\right) = 40.21^\circ$$

- 17.



For questions 19 - 20, use two decimals of precision.

18. What is the height of the house?

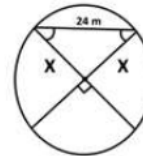


19. Find the length X.

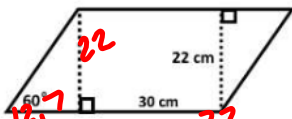
$$\sin 45 = \frac{x}{24}$$

$$x = 24 \sin 45$$

$$x = 16.97$$



20. The figure below is a parallelogram which has an area of $b \times h$. Find its area.



$$\tan 60 = \frac{22}{x}$$

$$x = \frac{22}{\tan 60} = 12.7$$

$$A = 42.7(22) = 939.4 \text{ cm}^2$$

21. What does $\sin A = \cos B$ mean? Use a diagram.

