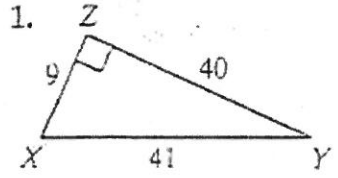
Name:_____ Period:_____

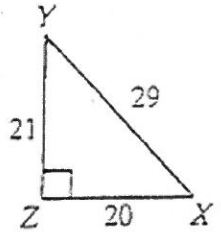
9.5 Practice Problems

Express tan X and tan Y as ratios.

1. 

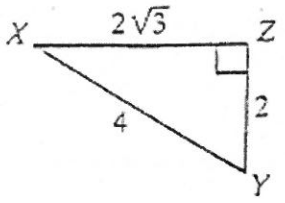
$\tan X = \frac{40}{9}$

$\tan Y = \frac{9}{40}$

2. 

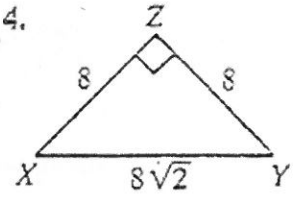
$\tan X = \frac{21}{20}$

$\tan Y = \frac{20}{21}$

3. 

$\tan X = \frac{2}{2\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

$\tan Y = \frac{2\sqrt{3}}{2} = \sqrt{3}$

4. 

$\tan X = \frac{8}{8} = 1$

$\tan Y = \frac{8}{8} = 1$

Use a calculator or trigonometric table to evaluate the following. All angles are in degrees.

5. Tan 15

0.2679

6. Tan 1

0.0175

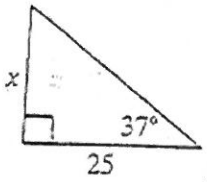
7. Tan 89

57.28996

8. Tan 62

1.8807

Find the value of x to the nearest tenth.

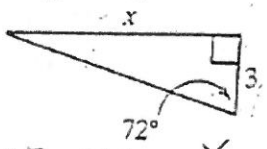
11. 

$\tan 37 = \frac{x}{25}$

$\frac{0.7536}{1} = \frac{x}{25}$

$18.84 = x$

18.8

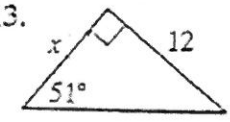
12. 

$\tan 72 = \frac{x}{3}$

$\frac{3.0777}{1} = \frac{x}{3}$

$x = 9.233$

9.2

13. 

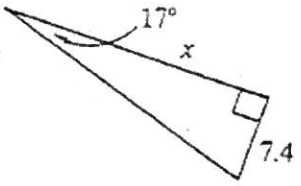
$\tan 51 = \frac{12}{x}$

$\frac{1.2349}{1} = \frac{12}{x}$

$1.2349x = 12$

$\frac{1.2349x}{1.2349} = \frac{12}{1.2349}$

$x = 9.7$

14. 

$\tan 17 = \frac{7.4}{x}$

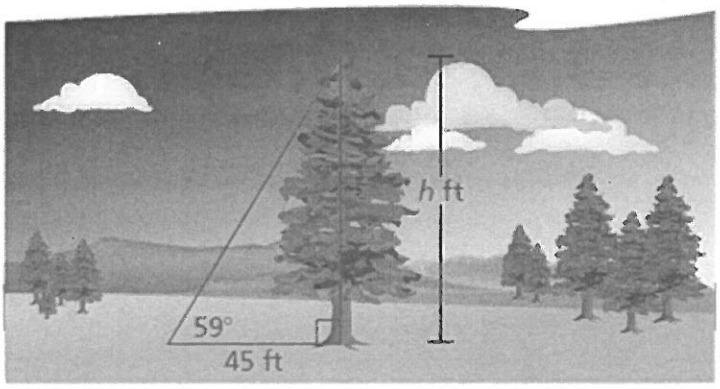
$0.3057 = \frac{7.4}{x}$

$0.3057x = 7.4$

$\frac{0.3057x}{0.3057} = \frac{7.4}{0.3057}$

$x = 24.2$

15. You are measuring the height of a spruce tree. You stand 45 feet from the base of the tree. You measure the angle of elevation from the ground to the top of the tree to be 59°. Find the height h of the tree to the nearest foot.

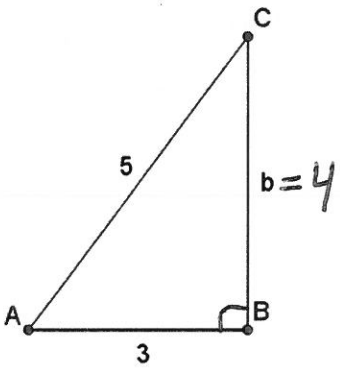


$\tan 59 = \frac{h}{45}$

$45(\tan 59) = h$

$h = 74.9$

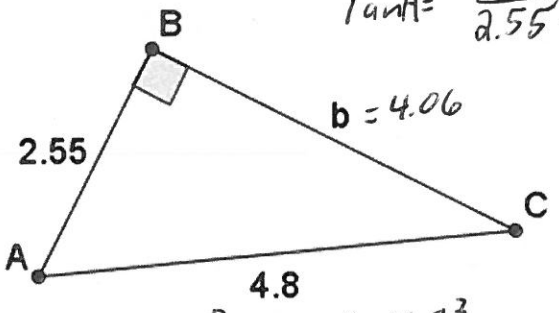
16. Find tan C as a decimal given B is a right angle.



$\tan C = \frac{3}{4}$

$= 0.75$

17. Find tan A as a decimal given B is a right angle.



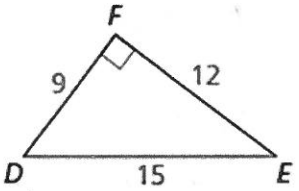
$\tan A = \frac{4.06}{2.55} \approx 1.59$

$b^2 + 2.55^2 = 4.8^2$

$b^2 = 16.5375$

$b = 4.06$

18. Find the measure of angle D.

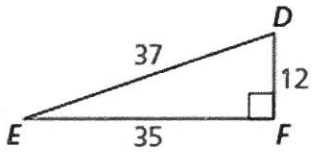


$\tan D = \frac{12}{9} = 1.\overline{333}$

$D = \tan^{-1}(1.333)$

$D = 53.1°$

19. Find the measure of angle E.

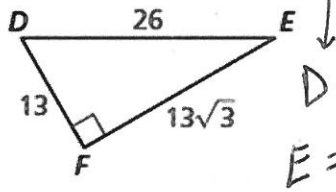


$\tan E = \frac{12}{35}$

$E = \tan^{-1}(0.3429)$

$E = 18.9°$

20. Find the measure of angle



$D = 60°$

$E = 30°$