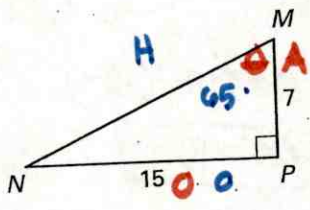


Name _____ Date _____ - make sure your calculator is in degree mode

LESSON 7.7 Practice
For use with pages 483-489

Use the diagram to find the indicated measurement. Round your answer to the nearest tenth.

- MN
16.6
- $m\angle M$
65°
- $m\angle N$
25°



$$(MN)^2 = 15^2 + 7^2$$

$$(MN)^2 = 225 + 49$$

$$\sqrt{(MN)^2} = \sqrt{274}$$

$$MN = \sqrt{274} = 16.6$$

$$\angle M = \tan^{-1}\left(\frac{15}{7}\right)$$

$$\angle M = 65^\circ$$

$$\angle N = 90 - 65$$

$$\angle N = 25^\circ$$

$$\sin(65) = \frac{15}{MN}$$

Solve the right triangle. Round decimal answers to the nearest tenth.

Find ALL missing sides and angles

4. $\angle P = 90 - 37$
 $\angle P = 53^\circ$

$\sin(37) = \frac{PQ}{22}$
 $PQ = 13.2$

$\cos(37) = \frac{QR}{22}$
 $QR = 17.6$

5. $m\angle N = 90 - 58.6$
 $m\angle N = 31.4^\circ$

$\cos(58.6) = \frac{11}{PN}$
 $PN = 21.1$

$m\angle P = \tan^{-1}\left(\frac{18}{11}\right)$
 $m\angle P = 58.6^\circ$

6. $(UT)^2 = 23^2 - 7^2$
 $UT^2 = 480$
 $UT = 21.9$

$m\angle U = \sin^{-1}\left(\frac{7}{23}\right)$
 $m\angle U = 17.7^\circ$

$m\angle S = 90 - 17.7$
 $m\angle S = 72.3^\circ$

7. $m\angle V = 90 - 51$
 $m\angle V = 39^\circ$

$\tan(51) = \frac{14}{x}$
 $MD = 11.3$

$\sin(51) = \frac{14}{y}$
 $VD = 18$

8. $m\angle T = 90 - 24$
 $m\angle T = 66^\circ$

$\tan(24) = \frac{x}{33}$
 $TR = 14.7$

$\cos(24) = \frac{33}{y}$
 $TA = 36.1$

9. $m\angle U = \sin^{-1}\left(\frac{19}{28}\right)$
 $m\angle U = 42.7^\circ$

$\cos(42.7) = \frac{UM}{28}$
 $UM = 20.6$

$m\angle E = 90 - 42.7$
 $m\angle E = 47.3^\circ$

10. $m\angle C = 90 - 26$
 $m\angle C = 64^\circ$

$\sin(26) = \frac{x}{4.5}$
 $BC = 2$

$\cos(26) = \frac{4}{4.5}$
 $AB = 4$

11. $\angle V = 90 - 20$
 $\angle V = 70^\circ$

$\cos(20) = \frac{WX}{12}$
 $WX = 11.3$

$\sin(20) = \frac{WV}{12}$
 $WV = 4.1$

12. $m\angle J = 90 - 31.6$
 $m\angle J = 58.4^\circ$

$\tan(31.6) = \frac{x}{7}$
 $LK = 11.4$

$\sin(31.6) = \frac{7}{y}$
 $JL = 13.4$

*= make sure your calculator is in degree mode
 you must press the **[2nd]** key to get \sin^{-1}
 \cos^{-1}
 \tan^{-1}*

LESSON 7.7

Practice *continued*
 For use with pages 483-489

Let $\angle A$ be an acute angle in a right triangle. Approximate the measure of $\angle A$ to the nearest tenth of a degree.

13. $\sin A = 0.36$ 14. $\tan A = 0.8$ 15. $\sin A = 0.27$ 16. $\cos A = 0.35$

$m\angle A = \sin^{-1}(.36)$
 $m\angle A = 21.10^\circ$

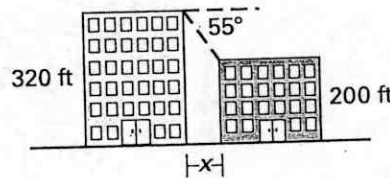
$m\angle A = \tan^{-1}(.8)$
 $m\angle A = 38.7^\circ$

$m\angle A = \sin^{-1}(.27)$
 $m\angle A = 15.7^\circ$

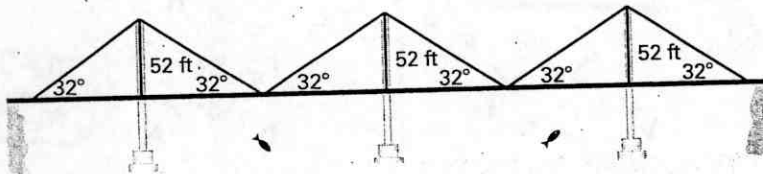
$m\angle A = \cos^{-1}(.35)$
 $m\angle A = 69.5^\circ$

17. $\tan A = 0.42$ 18. $\cos A = 0.11$ 19. $\sin A = 0.94$ 20. $\cos A = 0.77$

21. **Office Buildings** The angle of depression from the top of a 320 foot office building to the top of a 200 foot office building is 55° . How far apart are the buildings?



22. **Suspension Bridge** Use the diagram to find the distance across the suspension bridge.

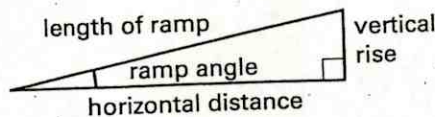


LESSON
7.7

Practice *continued*
For use with pages 483-489

In Exercises 23 and 24, use the following information.

Ramps The Uniform Federal Accessibility Standards specify that the ramp angle used for a wheelchair ramp must be less than or equal to 4.78° .

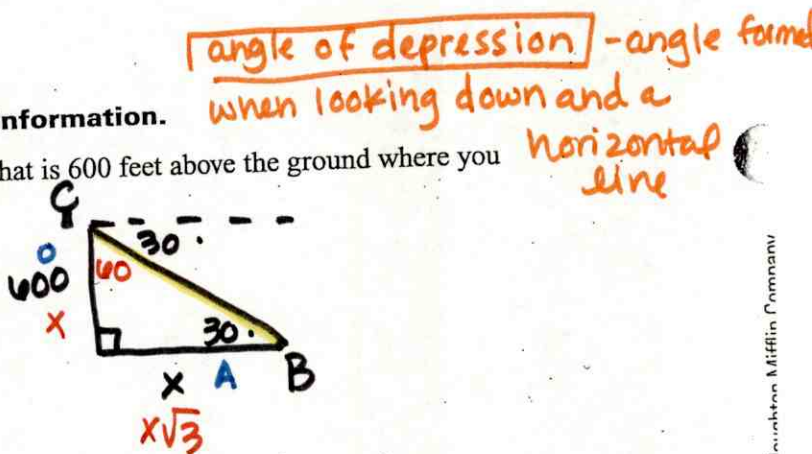
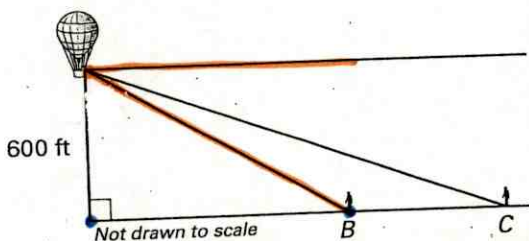


23. The length of one ramp is 16 feet. The vertical rise is 14 inches. Estimate the ramp's horizontal distance and its ramp angle. Does this ramp meet the Uniform Federal Accessibility Standards?

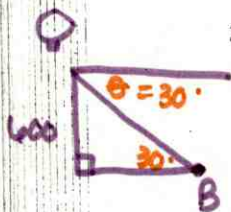
24. You want to build a ramp with a vertical rise of 6 inches. You want to minimize the horizontal distance taken up by the ramp. Draw a sketch showing the approximate dimensions of your ramp.

In Exercises 25-27, use the following information.

Hot Air Balloon You are in a hot air balloon that is 600 feet above the ground where you can see two people.



25. If the angle of depression from your line of sight to the person at B is 30° , how far is the person from the point on the ground below the hot air balloon?

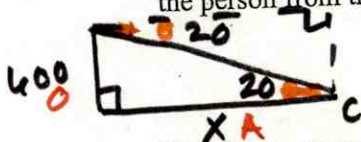


$x = 600$
 $x\sqrt{3} = 600\sqrt{3}$

$\tan(30) = \frac{600}{x}$
directly

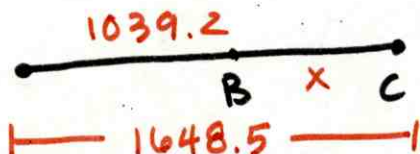
$x = 1039.2$

26. If the angle of depression from your line of sight to the person at C is 20° , how far is the person from the point on the ground below the hot air balloon?



$\tan(20) = \frac{600}{x}$
 $x = 1648.5$

27. How far apart are the two people?



$BC = 1648.5 - 1039.2$

$x = 609.3$