Adv. Geometry 7.7 Solve Right △'s Key

Use a calculator to approximate the measure of ∠A to the nearest tenth of a degree.

1. $\tan A = \frac{37}{29}$

$m\angle A = \tan^{-1}\left(\frac{37}{29}\right)$

$m\angle A = 51.9°$

2. $\cos A = \frac{6}{23}$

$m\angle A = \cos^{-1}\left(\frac{6}{23}\right)$

$m\angle A = 74.9°$

3. $\sin A = \frac{12}{60}$

$m\angle A = \sin^{-1}\left(\frac{12}{60}\right)$

$m\angle A = 11.5°$

Solve the right triangle. Round decimal answers to the nearest tenth. Answers & work on seperate sheet.

4.

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12.

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

13. $\sin A = 0.16$

14. $\tan A = 1.8$

15. $\sin A = 0.97$

16. $\cos A = 0.25$

17. $\tan A = 8.4$

18. $\cos A = 0.81$

19. $\sin A = 0.44$

20. $\cos A = 0.05$

21. $\tan A = 1.0$

22. $\cos A = 0$

23. $\sin A = 1.0$

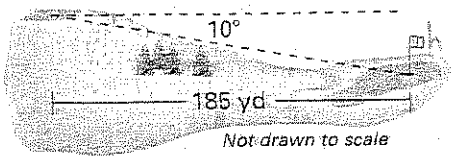
24. $\sin A = 0$

(13) $m\angle A = 9.2°$ (14) $m\angle A = 60.9°$ (15) $75.9°$ (16) $75.5°$

(17) $83.2°$ (18) $35.9°$ (19) 26.1 (20) $87.1°$

(21) $45°$ (22) $90°$ (23) $90°$ (24) $0°$

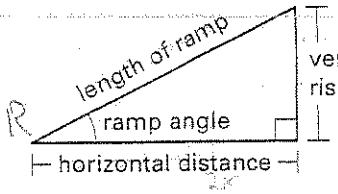
25. Golf The angle of depression from the tee box to the green is 10° on a par 3, 185 yard hole. How much higher is the tee box than the green? Round to the nearest yard.



$\tan 10 = \frac{h}{185}$

$h = 33$ yd

26. Ramp You are designing a ramp where the horizontal distance is twice as long as the vertical rise. What will be the ramp angle to the nearest tenth of a degree?

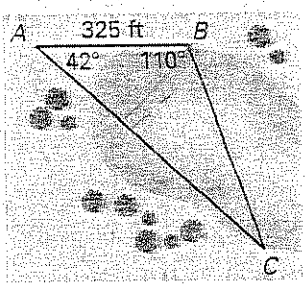


$\tan R = \frac{x}{2x} = \frac{1}{2}$

$\angle R = \tan^{-1}\left(\frac{1}{2}\right)$

$\angle R = 26.5°$

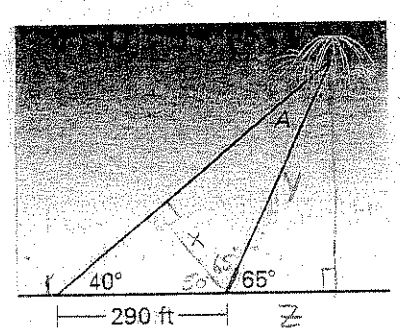
27. Bridge A surveyor needs to find the distance BC across a lake as part of a project to build a bridge. The distance from point A to point B is 325 feet. The measurement of angle A is 42° and the measurement of angle B is 110°. What is the distance BC across the lake to the nearest foot?



See separate sheet

In Exercises 28–30, use the following information.

Fireworks You are watching a fireworks display where you are standing 290 feet behind the launch pad. The launch tubes are aimed directly away from you at an angle of 65° with the ground. The angle of elevation for you to see the fireworks is 40°.



$\sin 40 = \frac{x}{290}$

$x = 186.408$

$\cos 65 = \frac{186.408}{y}$

$y = 441.0798$

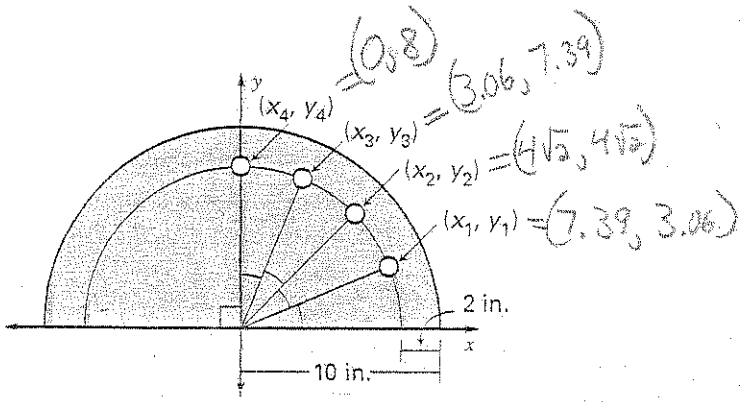
$\cos 65 = \frac{z}{441.0798}$ $z = 186$

28. To the nearest foot, what is the horizontal distance from the launch pad to the ignition point of the fireworks? 186 Ft

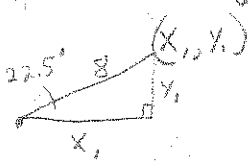
29. To the nearest foot, what is the height of the fireworks when they ignite? $\tan 65 = \frac{h}{186.408}$ $h = 400$ Ft

30. What is the measure of angle A? 25°

4. Machine Part A machine part is in the shape of a half-circle with a radius of 10 inches. Small holes are drilled as shown in the figure. Find the coordinates of each hole.



$\frac{90}{4} = 22.5$ each angle is 22.5° & each hypotenuse is 8



$\sin 22.5 = \frac{y_1}{8}$ $y_1 = 3.06$

$\cos 22.5 = \frac{x_1}{8}$ $x_1 = 7.39$

See separate sheet for rest of work

7.7 Seperate sheet

(4) $\sin 33 = \frac{PQ}{18}$

$9.8 = PQ$

$\cos 33 = \frac{QR}{18}$

$15.1 = QR$

$m\angle P = 57°$

(5) $\tan P = \frac{12}{7}$

$\angle P = \tan^{-1}\left(\frac{12}{7}\right)$

$m\angle P = 59.7°$

$m\angle N = 30.3°$

$7^2 + 12^2 = (PN)^2$

$49 + 144 = (PN)^2$

$13.9 = PN$

(6) $\sin 62.3 = \frac{9}{JL}$

$JL = 10.2$

$\tan 62.3 = \frac{9}{KL}$

$KL = 4.7$

$m\angle J = 27.7°$

(7) $\cos 17 = \frac{WX}{34}$

$WX = 32.5$

$\sin 17 = \frac{WV}{34}$

$WV = 9.9$

$m\angle V = 73°$

(8) $\sin 25.5 = \frac{BC}{\sqrt{17}}$

$BC = 1.8$

$\cos 25.5 = \frac{AB}{\sqrt{17}}$

$AB = 3.7$

$m\angle C = 64.5°$

(9) $(UM)^2 + (2\sqrt{7})^2 = 18^2$

$(UM)^2 + 28 = 324$

$(UM)^2 = 296$

$UM = 17.2$

$\sin U = \frac{2\sqrt{7}}{18}$

$m\angle U = \sin^{-1}\left(\frac{2\sqrt{7}}{18}\right)$

$m\angle U = 17.1°$

$m\angle E = 72.9°$

(10) $m\angle T = 70°$

$\sin 20° = \frac{TR}{13.2}$

$TR = 2.2$

$\cos 20 = \frac{RA}{13.2}$

$RA = 6.1$

(11) $m\angle V = 62.8°$

$\sin 27.2 = \frac{10.6}{DV}$

$DV = 23.2$

$\tan 27.2 = \frac{10.6}{MD}$

$MD = 20.6$

(12) $\sin U = \frac{7.5}{31.3}$

$\angle U = \sin^{-1}\left(\frac{7.5}{31.3}\right)$

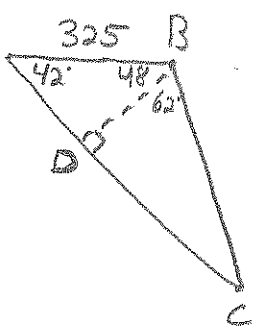
$m\angle U = 13.9°$

$m\angle S = 76.1°$

$(UT)^2 + (7.5)^2 = (31.3)^2$

$UT = 30.4$

(27)



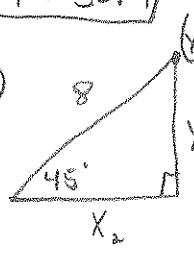
$\sin 42° = \frac{BD}{325}$

$BD = 217.467$

$\cos 62 = \frac{217.467}{BC}$

$BC = 463$ feet

(4)

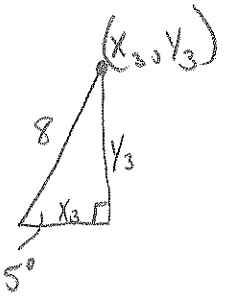


(X_2, Y_2)

$X_2 \cdot \sqrt{2} = 8$

$X_2 = \frac{8}{\sqrt{2}} = 4\sqrt{2}$

$X_2 = Y_2$



$\cos 67.5 = \frac{X_3}{8}$ $\quad X_3 = 3.06$

$\sin 67.5 = \frac{Y_3}{8}$ $\quad Y_3 = 7.39$