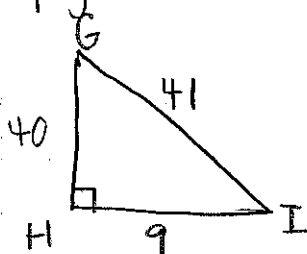


pg. 782 # 3-42 x3, 8, 34, 41, 54

3.



$$\begin{aligned}41^2 &= 40^2 + g^2 \\1681 &= 1600 + g^2 \\81 &= g^2 \\9 &= g\end{aligned}$$

$$\sin \theta = \frac{o}{h} = \frac{9}{41} = 0.22$$

$$\csc \theta = \frac{h}{o} = \frac{41}{9} = 4.56$$

$$\sin I = \frac{o}{h} = \frac{40}{41} = 0.98$$

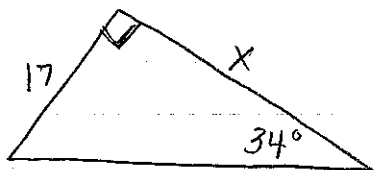
$$\cos I = \frac{a}{h} = \frac{9}{41} = 0.22$$

$$\cot \theta = \frac{a}{o} = \frac{40}{9} = 4.\bar{4}$$

Sec H = Undefined.

H is the right angle \therefore

6.



$$\tan 34 = \frac{17}{x}$$

$$\begin{aligned}\frac{x(\tan 34)}{\tan 34} &= \frac{17}{\tan 34} \\x &= 25.2\end{aligned}$$

8. $\tan 55 = \frac{y}{210}$

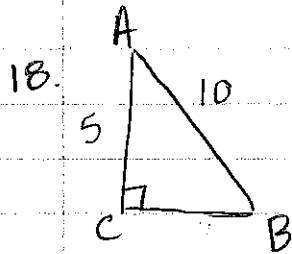
a) $210(\tan 55) = y$
 ≈ 300 feet

b) $\tan 34 = \frac{300}{x}$

$$\begin{aligned}\frac{x(\tan 34)}{\tan 34} &= \frac{300}{\tan 34} \\x &= 445 \text{ feet}\end{aligned}$$

c) that the flagpole & ground are perpendicular

9. $\cos^{-1} \frac{\sqrt{2}}{2} = 45^\circ$ (use calculator)



$$10^2 = 5^2 + a^2$$

$$100 = 25 + a^2$$

$$75 = a^2$$

$$8.7 = a$$

$$\cos A = \frac{5}{10}$$

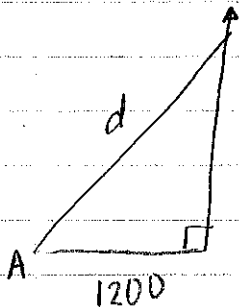
$$\cos^{-1}(\cos A) = \cos^{-1}(.5)$$

$$A = 60^\circ$$

$$B = 30^\circ$$

24.

a)



$$\cos A = \frac{1200}{d}$$

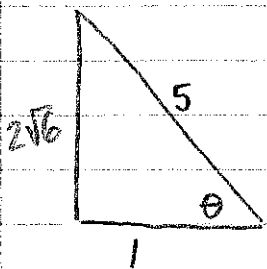
$$\cos^{-1}(\cos A) = \cos^{-1}\left(\frac{1200}{d}\right)$$

$$A = \cos^{-1}\left(\frac{1200}{d}\right)$$

b) $\cos^{-1}\left(\frac{1200}{1500}\right) = 37^\circ$

c) $\cos^{-1}\left(\frac{1200}{2000}\right) = 53^\circ$

27.



$$5^2 = 1^2 + b^2$$

$$25 = 1 + b^2$$

$$24 = b^2$$

$$2\sqrt{6} = b$$

$$\sin \theta = \frac{2\sqrt{6}}{5}$$

$$\csc \theta = \frac{5}{2\sqrt{6}} = \frac{10\sqrt{6}}{12} = \frac{5\sqrt{6}}{6}$$

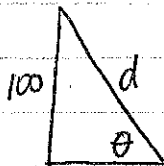
$$\tan \theta = \frac{2\sqrt{6}}{1}$$

$$\sec \theta = \frac{5}{1}$$

$$\cot \theta = \frac{1 \cdot \sqrt{6}}{2\sqrt{6}} = \frac{\sqrt{6}}{12}$$

34.

a)



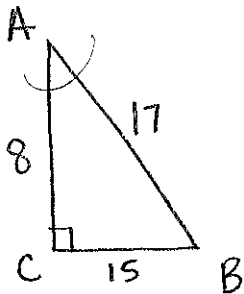
$$\sin \theta = \frac{100}{d}$$

$$d \frac{(\sin \theta)}{\sin \theta} = \frac{100}{\sin \theta}$$

$$d = \frac{100}{\sin \theta}$$

b) $d = \frac{100}{\sin 60} = 115.5 \text{ ft}$ $d = \frac{100}{\sin 50} = 130.5 \text{ ft}$

35.



Pythagorean Triple 8-15-17

$CB = 15$

$\cos A = \frac{8}{17}$

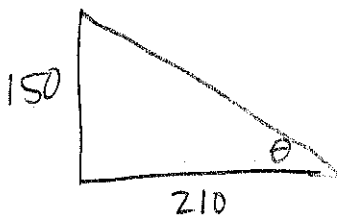
$A = \cos^{-1}\left(\frac{8}{17}\right)$

$A = 61.9$

$$\frac{180 - (90 + 61.9)}{28.1}$$

Sorry, you can use as example still.

41.

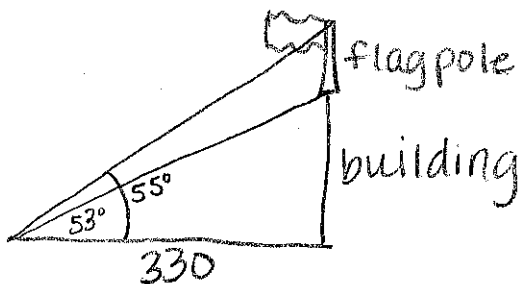


$\tan \theta = \frac{150}{210}$

$\tan^{-1}(\tan \theta) = \tan^{-1}\left(\frac{5}{7}\right)$

$\theta = 35.5^\circ$

42.



$\tan 55 = \frac{f+b}{330}$

$\tan 53 = \frac{b}{330}$

$330(\tan 55) = f+b$

$330(\tan 53) = b$

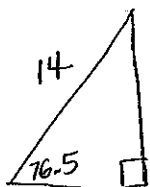
$471.3 = f+b$

$437.9 = b$

$-437.9 \quad -b$

$33.4 \text{ ft} = f$

54.



$\sin 76.5 = \frac{y}{14}$

$\cos 76.5 = \frac{x}{14}$

$13.6 = y$ C is true

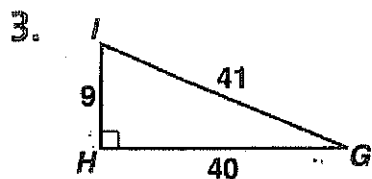
$3.3 = x$ B is true

$$\frac{180 - (90 + 76.5)}{13.5^\circ} \text{ D is true}$$

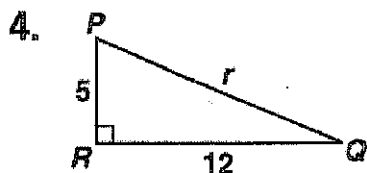
A is NOT true

Answers for Lesson 14-3, pp. 782–785 Exercises

1. a. ≈ 8333 ft
 b. ≈ 8824 ft
2. a. $\approx \frac{15}{17} \approx 0.88$ b. $\approx \frac{17}{8} \approx 2.13$ c. $\frac{8}{15} \approx 0.53$
 d. $\frac{17}{8} \approx 2.13$ e. $\frac{17}{15} \approx 1.13$ f. $\frac{8}{15} \approx 0.53$



- (a) $\frac{9}{41} \approx 0.22$ (b) $\frac{40}{41} \approx 0.98$ (c) $\frac{40}{9} \approx 4.44$
 (d) $\frac{41}{9} \approx 4.56$ (e) $\frac{9}{41} \approx 0.22$ (f) not defined



$$\sin P = \frac{12}{13} \approx 0.92,$$

$$\cos P = \frac{5}{13} \approx 0.38,$$

$$\tan P = \frac{12}{5} = 2.4,$$

$$\csc P = \frac{13}{12} \approx 1.08,$$

$$\sec P = \frac{13}{5} = 2.6$$

5. 41.8 (6) 25.2 7. 10.6

8. (a) 300 ft
 (b) 445 ft
 (c) Answers may vary. Sample: The flagpole must be straight, the ground must be flat, and the flagpole and the ground must be perpendicular. You assume these things so that the flagpole and the ground form a right triangle. By having a right triangle you can use its properties to find the missing parts.

Answers for Lesson 14-3, pp. 782–785 Exercises (cont.)

9. 45.0° 10. 18.4° 11. 48.6°

12. 60.0° 13. 19.6° 14. 7.3°

15. 74.3° 16. 3.0° 17. 68.0°

18. $a \approx 8.7, m\angle A \approx 60.0^\circ, m\angle B \approx 30.0^\circ$

19. $c \approx 7.8, m\angle A \approx 39.8^\circ, m\angle B \approx 50.2^\circ$

20. $a = 9, m\angle A \approx 36.9^\circ, m\angle B \approx 53.1^\circ$

21. $c \approx 10.2, m\angle A \approx 52.6^\circ, m\angle B \approx 37.4^\circ$

22. $a \approx 8.0, m\angle A \approx 61.8^\circ, m\angle B \approx 28.2^\circ$

23. $b \approx 14.0, m\angle A \approx 50.6^\circ, m\angle B \approx 39.4^\circ$

24. (a) $m\angle A = \cos^{-1}\left(\frac{1200}{d}\right)$

(b) 37°

(c) 53°

25. $\cos \theta = \frac{\sqrt{55}}{8},$

$\tan \theta = \frac{3\sqrt{55}}{55},$

$\csc \theta = \frac{8}{3},$

$\sec \theta = \frac{8\sqrt{55}}{55},$

$\cot \theta = \frac{\sqrt{55}}{3}$

26. $\sin \theta = \frac{3\sqrt{39}}{20},$

$\tan \theta = \frac{3\sqrt{39}}{7},$

$\csc \theta = \frac{20\sqrt{39}}{117},$

$\sec \theta = \frac{20}{7},$

$\cot \theta = \frac{7\sqrt{39}}{117}$

27. $\sin \theta = \frac{2\sqrt{6}}{5},$

$\tan \theta = 2\sqrt{6},$

$\csc \theta = \frac{5\sqrt{6}}{12}, \sec \theta = 5,$

$\cot \theta = \frac{\sqrt{6}}{12}$

28. $\sin \theta = \frac{24}{25}, \cos \theta = \frac{7}{25},$

$\csc \theta = \frac{25}{24}, \sec \theta = \frac{25}{7},$

$\cot \theta = \frac{7}{24}$

12

Answers for Lesson 14-3, pp. 782–785 Exercises (cont.)

29. $\sin \theta = \frac{4}{7}, \cos \theta = \frac{\sqrt{33}}{7},$ **30.** $\sin \theta = \frac{5\sqrt{7}}{16}, \cos \theta = \frac{9}{16},$
 $\tan \theta = \frac{4\sqrt{33}}{33},$ $\tan \theta = \frac{5\sqrt{7}}{9},$
 $\sec \theta = \frac{7\sqrt{33}}{33},$ $\csc \theta = \frac{16\sqrt{7}}{35},$
 $\cot \theta = \frac{\sqrt{33}}{4}$ $\cot \theta = \frac{9\sqrt{7}}{35}$

31. $\sin \theta = \frac{4\sqrt{41}}{41},$
 $\cos \theta = \frac{5\sqrt{41}}{41}, \tan \theta = \frac{4}{5},$
 $\csc \theta = \frac{\sqrt{41}}{4},$
 $\sec \theta = \frac{\sqrt{41}}{5}$

32. $\cos \theta = 0.937, \tan \theta = 0.374, \csc \theta = 2.857, \sec \theta = 1.068,$
 $\cot \theta = 2.676$

33. $\sin \theta = 0.192, \cos \theta = 0.981, \tan \theta = 0.196, \sec \theta = 1.019,$
 $\cot \theta = 5.103$

34. **a.** $d = \frac{100}{\sin \theta}$
b. 115.5 ft, 130.5 ft

35. $a = 15, m\angle A \approx 61.9^\circ, m\angle B \approx 28.1^\circ$

36. $c \approx 12.2, m\angle A \approx 35.0^\circ, m\angle B \approx 55.0^\circ$

37. $a \approx 7.9, b \approx 6.2, m\angle B = 38^\circ$

38. $a \approx 3.9, c \approx 6.9, m\angle B = 55.8^\circ$

39. $a \approx 26.8, c \approx 28.1, m\angle A = 72.8^\circ$

40. $a \approx 19.8, b \approx 2.9, m\angle A = 81.7^\circ$

41. 35.5°

42. 33.4 ft

43. 20.3 m^2

44. **a.** 46.6 ft

b. 136.2 ft

53. a. 72°

b. 19.0 cm

54. A

55. I

56. A

57. G

58. C

59. [2] $\tan \angle A = \frac{135}{95}$

$m\angle A \approx \tan^{-1} 1.421$

$m\angle A \approx 54.9^\circ$

$\tan \angle B \approx \frac{95}{135}$

$m\angle B \approx \tan^{-1} 0.7037$

$m\angle B \approx 35.1^\circ$

[1] answer only, without work shown

60. $180^\circ + n \cdot 360^\circ$

61. no solution

62. $45^\circ + n \cdot 180^\circ$

63. $0^\circ + n \cdot 360^\circ$ and $180^\circ + n \cdot 360^\circ$

