

Chapter 2 Review

(* denotes questions that should be completed without a calculator)

- 1.* Sketch an angle in standard position with each given measure.
 a) 24° b) 104° c) 204° d) 304°
2. State the reference angle for each angle in standard position.
 a) 55° b) 155° c) 255° d) 355°
3. Determine the measure of the three other angles in standard position, $0^\circ < \theta < 360^\circ$, that have a reference angle of
 a) 40° b) 72° c) 88° d) 3°

- 4.* Complete the table. Determine the measure of each angle in standard position given its reference angle and the quadrant in which the terminal arm lies.

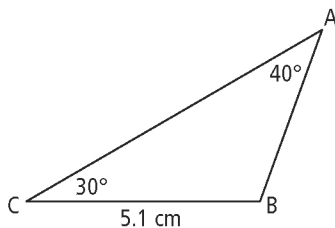
	Reference Angle	Quadrant	Angle in Standard Position
a)	30°	II	
b)	45°	III	
c)	60°	IV	

5. Determine if the pair of angles have the same reference angle.
 a) $50^\circ, 140^\circ$ b) $200^\circ, 290^\circ$ c) $216^\circ, 324^\circ$ d) $91^\circ, 181^\circ$
- 6.* Sketch angles in standard position so that the terminal arm passes through each point.
 a) $(1, 5)$ b) $(4, -3)$ c) $(-5, 12)$ d) $(2, 0)$
7. Determine the exact values of the sine, cosine, and tangent ratios for each angle in #6.
- 8.* Determine each exact value.
 a) $\sin 300^\circ$ b) $\tan 180^\circ$ c) $\cos 225^\circ$ d) $\tan 150^\circ$
- 9.* State whether each ratio is positive or negative.
 a) $\sin 100^\circ$ b) $\cos 200^\circ$ c) $\tan 300^\circ$ d) $\sin 350^\circ$
10. An angle is in standard position with its terminal arm in the stated quadrant. Determine the exact values for the other two primary trigonometric ratios for each.
 a) $\sin \theta = -\frac{3}{5}$; quadrant III b) $\cos \theta = \frac{2}{3}$; quadrant IV c) $\tan \theta = -\frac{5}{12}$; quadrant II
- 11.* Solve each equation, for $0^\circ \leq \theta < 360^\circ$. (Use a diagram involving a special right triangle.)
 a) $\sin \theta = -\frac{1}{\sqrt{2}}$ b) $\tan \theta = \frac{1}{\sqrt{3}}$ c) $\cos \theta = \frac{\sqrt{3}}{2}$ d) $\sin \theta = -1$
12. Solve each equation, to the nearest degree, for $0^\circ \leq \theta < 360^\circ$.
 a) $\sin \theta = 0.7760$ b) $\cos \theta = -0.8090$ c) $\tan \theta = -0.9004$ d) $\sin \theta = -0.9848$

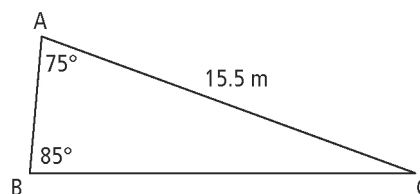
#13-#23: Where necessary, express lengths to the nearest tenth of a unit and angle measures to the nearest degree.

13. Determine the length of AB in each triangle.

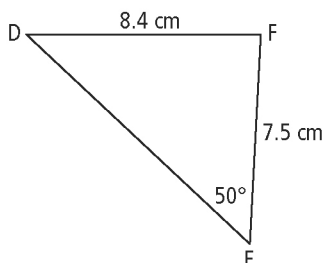
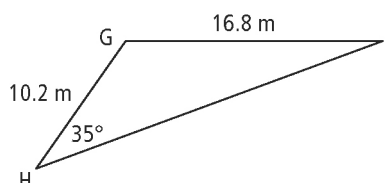
a)



b)



14. Determine the measure of the indicated angle.

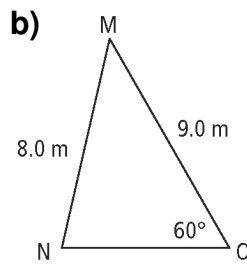
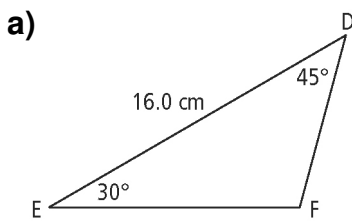
a) $\angle D$ b) $\angle G$ 

15. Sketch each triangle. Then, determine the indicated value.

a) In $\triangle ABC$, $AB = 80$ m, $AC = 100$ m, and $\angle B = 40^\circ$. Determine $\angle C$.

b) In $\triangle PQR$, $PQ = 15.1$ cm, $\angle P = 25^\circ$, and $\angle Q = 70^\circ$. Determine QR .

16. Solve each triangle by determining the unknown sides and angles.

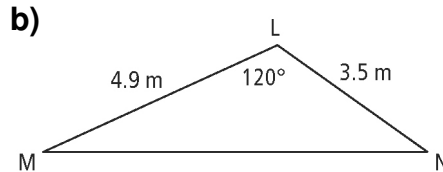
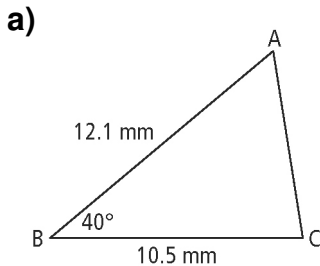


17. Solve each triangle. There are two possible solutions.

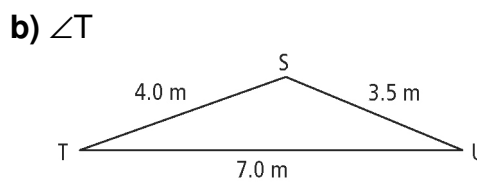
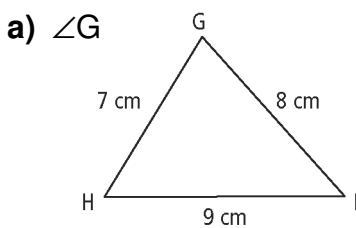
a) In $\triangle DEF$, $DE = 8.0$ cm, $EF = 6.0$ cm, and $\angle D = 40^\circ$.

b) In $\triangle RST$, $RS = 4.3$ mm, $ST = 4.0$ mm, and $\angle R = 65^\circ$.

18. Determine the length of the unknown side of each triangle.



19. Determine the measure of the indicated angle.

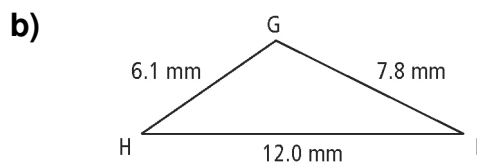
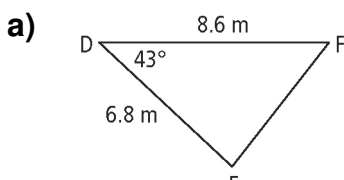


20. Sketch each triangle. Then, determine the indicated value.

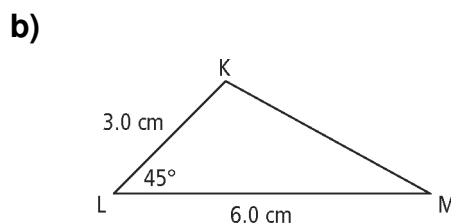
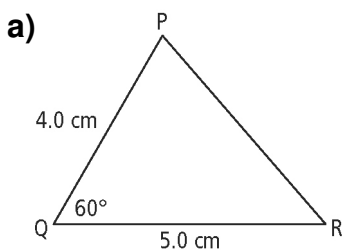
a) In $\triangle ABC$, $AB = 7$ cm, $AC = 7$ cm, and $\angle A = 60^\circ$. Determine the length of BC .

b) In $\triangle DEF$, $DE = 14.6$ cm, $EF = 12.0$ cm, and $DF = 18.5$ cm. Determine $\angle D$.

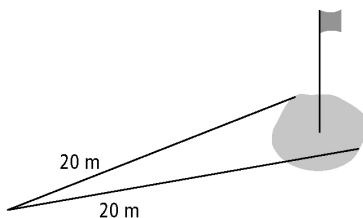
21. Determine the length of the unknown side and the measure of the unknown angles.



22. Determine the exact length of the unknown side in each triangle.

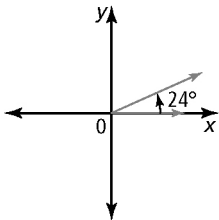


23. A golf green is 6 m wide. Within what angle must a player hit the ball in order to land on the green from a position about 20 m from the green?

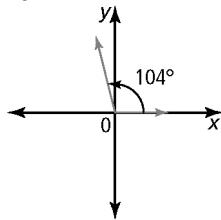


Answers

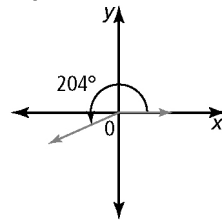
1. a)



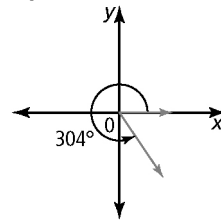
b)



c)



d)



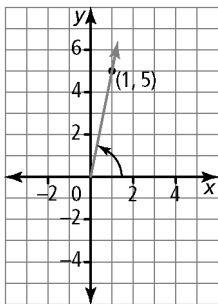
2. a) 55° b) 25° c) 75° d) 5°

3. a) $140^\circ, 220^\circ, 320^\circ$ b) $108^\circ, 252^\circ, 288^\circ$ c) $92^\circ, 268^\circ, 272^\circ$ d) $177^\circ, 183^\circ, 357^\circ$

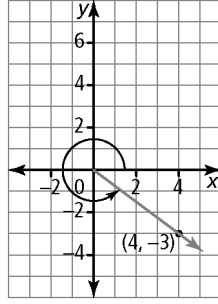
4. a) 150° b) 225° c) 300°

5. a) No b) No c) Yes d) No

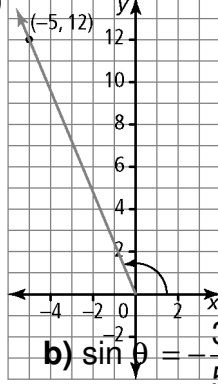
6. a)



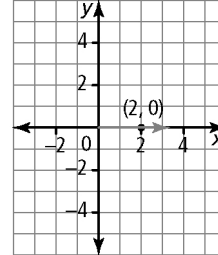
b)



c)



d)



7. a) $\sin \theta = \frac{5}{\sqrt{26}}$; $\cos \theta = \frac{1}{\sqrt{26}}$; $\tan \theta = 5$

b) $\sin \theta = -\frac{3}{5}$; $\cos \theta = \frac{4}{5}$; $\tan \theta = -\frac{3}{4}$

c) $\sin \theta = \frac{12}{13}$; $\cos \theta = -\frac{5}{13}$; $\tan \theta = -\frac{12}{5}$ d) $\sin \theta = 0$; $\cos \theta = 1$; $\tan \theta = 0$

8. a) $-\frac{\sqrt{3}}{2}$ b) 0 c) $-\frac{1}{\sqrt{2}}$ d) $-\frac{1}{\sqrt{3}}$

9. a) positive b) negative c) negative d) negative

10. a) $\cos \theta = -\frac{4}{5}$; $\tan \theta = \frac{3}{4}$ b) $\sin \theta = -\frac{\sqrt{5}}{3}$; $\tan \theta = -\frac{\sqrt{5}}{2}$ c) $\sin \theta = \frac{5}{13}$; $\cos \theta = -\frac{12}{13}$

11. a) $225^\circ, 315^\circ$ b) $30^\circ, 210^\circ$ c) $30^\circ, 330^\circ$ d) 270°

12. a) $51^\circ, 129^\circ$ b) $144^\circ, 216^\circ$ c) $138^\circ, 318^\circ$ d) $260^\circ, 280^\circ$

13. a) 4.0 cm b) 5.3 m

14. a) 43° b) 125°

15. a) 31° b) 6.4 cm

16. a) $\angle F = 105^\circ$; $DF = 8.3$ cm; $EF = 11.7$ cm b) $\angle N = 77^\circ$; $\angle M = 43^\circ$; $NO = 6.3$ m

17. a) First triangle: $\angle F = 59^\circ$; $\angle E = 81^\circ$; $DF = 9.2$ cm

Second triangle: $\angle F = 121^\circ$; $\angle E = 19^\circ$; $DF = 3.0$ cm

b) First triangle: $\angle T = 77^\circ$; $\angle S = 38^\circ$; $RT = 2.7$ mm

Second triangle: $\angle T = 103^\circ$; $\angle S = 12^\circ$; $RT = 0.9$ mm

18. a) 7.9 mm b) 7.3 m

19. a) 73° b) 20°

20. a) 7 cm b) 40°

21. a) 5.9 m; $\angle E = 85^\circ$; $\angle F = 52^\circ$ b) $\angle G = 119^\circ$; $\angle H = 35^\circ$; $\angle I = 26^\circ$

22. a) $\sqrt{21}$ cm b) $\sqrt{45 - 18\sqrt{2}}$ cm

23. 17°