Chapter 2 Answers

Get Set, page 19

1. a) 43° **b)** 67° **c)** $r = 35°$, $s = 75°$

2. a) 1.2 m **b)** 2.3 cm

3. a) 0.8090 **b)** 0.9703 **c)** 1.8040 **d)** 0.7071

4. a) 76° **b)** 23° **c)** 45° **d)** 37°

5. a) 12.5 **b)** 1.8 **c)** 10.1 **d)** 8.6

6. a) 11.7 **b)** 6.2 **c)** 10.9

2.1 Trigonometric Ratios With Acute Angles, pages 20–22

Warm-Up

1. D

2. a) 12 **b)** 4.5 **c)** 1

3. 4

4. a) 73° **b)** 25° **c)** 42° **d)** 81°

5. a) 17.5° **b)** 17.6° **c)** 17.5° **6.** 6.5 m

7. acute triangle

8. a) 0.9903 **b)** 0.9986 **c)** 0.9657

Practise

1. $\sin\theta = \frac{5}{13}$, $\cos\theta = \frac{12}{13}$, $\tan\theta = \frac{5}{12}$

2. $a = 9.2$, $\sin A = 0.8$, $\cos A = 0.6$, $\tan A = 1.33$

3. a) 3.5 **b)** 5.0

4. a) 47° **b)** 19°

5. $A = 55°$, $a = 8.2$ cm, $c = 5.7$ cm

6. 7.8 m

7. 6.7 m

8. 5.4 m

2.2 Trigonometric Ratios With Obtuse Angles, pages 23–25

Warm-Up

1. a) –0.25 **b)** –2.73 **c)** –0.27 **d)** –2.99

2. a) –7.2 **b)** –1.6 **c)** –1.3

3. $x = -7$

4. 1.41 cm

5. 30º: 8.33%; 45º: 12.5%; 75º: 20.8%; 90º: 25.0%; 120º: 33.3%

6. 14.1 cm

7. obtuse triangle

8. 26º

Practise

1. a) Sketches may vary. **b)** 4.472 **c)** $\sin\theta = 0.894$, $\cos\theta = 0.447$, $\tan\theta = 2$

2. a) Sketches may vary. **b)** 7.810 **c)** $\sin\theta = 0.768$, $\cos\theta = -0.640$, $\tan\theta = -1.2$

3.

Angle	Sine	Cosine	Tangent
60º	**0.866**	**0.5**	**1.732**
120º	**0.866**	**–0.5**	**–1.732**
98º	**0.990**	**–0.139**	**–7.115**
145º	**0.574**	**–0.819**	**–0.700**
162º	**0.309**	**–0.951**	**–0.325**

4. a) Sketches may vary. **b)** Answers may vary. For example, (–4, 3).
c) $\cos\theta = -\frac{4}{5}$, $\tan\theta = -\frac{3}{4}$ **d)** 143º

5. a) Sketches may vary. **b)** Answers may vary. For example, (–1, 1).
c) $\sin\theta = 0.707$, $\cos\theta = -0.707$ **d)** 135º

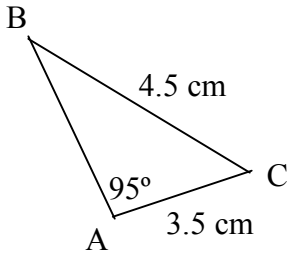
2.3 Sine Law, pages 26–28

Warm-Up

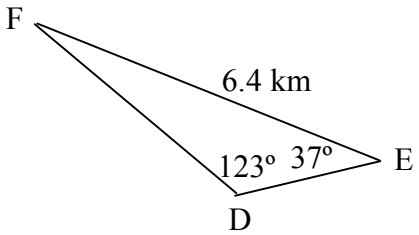
1. a) B **b)** C **c)** A
2. a) 18 **b)** 4.90 **c)** 7.07
3. a) $x = 0, x = 5$ **b)** $x = 3, x = 7$ **c)** $x = -2, x = -4$
4. equilateral, acute
5. $\frac{1}{2}$
6. 30.6 m
7. B
8. a) $\sin\theta = 0.999$, $\cos\theta = -0.017$, $\tan\theta = -57.290$
b) $\sin\theta = 0.342$, $\cos\theta = -0.940$, $\tan\theta = -0.364$
c) $\sin\theta = 0.819$, $\cos\theta = -0.574$, $\tan\theta = -1.428$

Practise

1. a) 39º **b)** 19º
2. a)

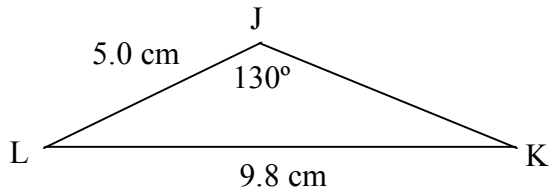


b) 51º
3. a) 4.1 m **b)** 11.4 cm
4. a)



b) 4.6 km

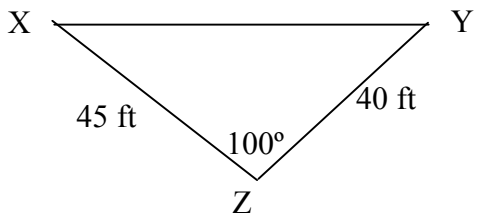
5. a)



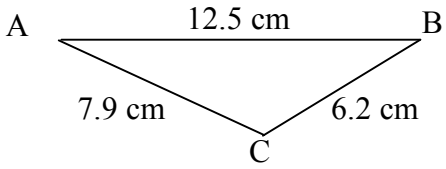
b) ∠K = 23°, ∠L = 27º, l = 5.8 cm
6. 9.9 m
7. 922 m
8. 61.8 cm

2.4 Cosine Law, pages 29–31
Warm-Up
1. a) 16.5 **b)** 33.4 **c)** 22.9
2. 8
3. a) $3a^2 + a$ **b)** $2b^2 + 19b + 35$ **c)** $15c^2 - 7c - 2$ **d)** $d^2 - 100$
4. x = 22.5 cm, y = 9 cm
5. a) $\frac{1}{8}$ **b)** $\frac{7}{8}$ **c)** $\frac{3}{8}$
6. Sketches may vary. The triangle has sides 6 cm, 8 cm, and 10 cm, and angles 37º, 53º, and 90º.
7. A
8. 34º

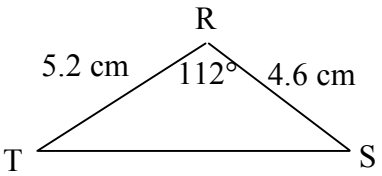
Practise
1. a) 3 m **b)** 19 mm
2. a)



b) 65 ft
3. a) 39° **b)** 98°
4. a)



b) 124°
5. a)



b) ∠S = 36°, ∠T = 32º, r = 8.1 cm
6. 7.7 m
7. 231.3 m
8. 1969.9 km

2.5 Applications of Trigonometry, pages 32–34
Warm-Up
1. a) 27 **b)** 3 **c)** 99 **d)** 100
2. 0.8254
3. a) $(x - 6)^2$ **b)** $(a + 4)(a - 2)$ **c)** $(3b + 1)(b + 5)$ **d)** $2(2c - 5)(2c + 5)$
4. ∠A = 30°, ∠B = 90º, ∠C = 60º
5. 12 numbers
6. cos A = $\frac{25 - a^2}{24}$
7. D
8. ∠D = 71.2°, ∠E = 51.1º, ∠F = 57.7º

Practise
1. a) ∠A = 39°, ∠B = 21º, a = 2.1 cm
b) ∠D = 23°, ∠E = 67º, f = 3.9 km
c) ∠X = 43°, ∠Y = 62º, ∠Z = 75º
2. a) AC = 6.9 cm, AB = 7.5 cm **b)** ∠A = 67º, ∠B = 53º
3. 15.9 cm
4. 152.4 yd
5. 8.2 m
6. 4.4 cm

Chapter 2 Review, pages 35–36
1. ∠F = 40.0°, d = 10.1 m, e = 13.2 m
2. ∠B = 70.0°, a = 7.6 cm, c = 22.3 cm
3. a) Sketches may vary. **b)** 7.616 **c)** sin θ = 0.919, cos θ = 0.394, tan θ = 2.333
4. a) 53 cm **b)** 38°
5. 142.0 mm
6. 14.9 km, 12.1 km
7. 4.5 cm
8. 16.2 cm