

Chapter 2 Answers

Get Set, page 19

- a) 43° b) 67° c) $r = 35^\circ, s = 75^\circ$
- a) 1.2 m b) 2.3 cm
- a) 0.8090 b) 0.9703 c) 1.8040 d) 0.7071
- a) 76° b) 23° c) 45° d) 37°
- a) 12.5 b) 1.8 c) 10.1 d) 8.6
- a) 11.7 b) 6.2 c) 10.9

2.1 Trigonometric Ratios With Acute Angles, pages 20–22

Warm-Up

- D
- a) 12 b) 4.5 c) 1
- 4
- a) 73° b) 25° c) 42° d) 81°
- a) 17.5° b) 17.6° c) 17.5° d) 6.5 m
- acute triangle
- a) 0.9903 b) 0.9986 c) 0.9657

Practise

- $\sin \theta = \frac{5}{13}, \cos \theta = \frac{12}{13}, \tan \theta = \frac{5}{12}$
- $a = 9.2, \sin A = 0.8, \cos A = 0.6, \tan A = 1.33$
- a) 3.5 b) 5.0
- a) 47° b) 19°
- $A = 55^\circ, a = 8.2 \text{ cm}, c = 5.7 \text{ cm}$
- 7.8 m
- 6.7 m
- 5.4 m

2.2 Trigonometric Ratios With Obtuse Angles, pages 23–25

Warm-Up

- a) -0.25 b) -2.73 c) -0.27 d) -2.99
- a) -7.2 b) -1.6 c) -1.3
- $x = -7$
- 1.41 cm
- $30^\circ: 8.33\%; 45^\circ: 12.5\%; 75^\circ: 20.8\%; 90^\circ: 25.0\%; 120^\circ: 33.3\%$
- 14.1 cm
- obtuse triangle
- 26°

Practise

- a) Sketches may vary. b) 4.472 c) $\sin \theta = 0.894, \cos \theta = 0.447, \tan \theta = 2$
- 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
60°	0.866	0.5	1.732
120°	0.866	-0.5	-1.732
98°	0.990	-0.139	-7.115
145°	0.574	-0.819	-0.700
162°	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) 143°

5. a) Sketches may vary. b) Answers may vary. For example, (-1, 1).

c) $\sin \theta = 0.707$, $\cos \theta = -0.707$ d) 135°

2.3 Sine Law, pages 26–28

Warm-Up

- a) B b) C c) A
- a) 18 b) 4.90 c) 7.07
- a) $x = 0$, $x = 5$ b) $x = 3$, $x = 7$ c) $x = -2$, $x = -4$
- equilateral, acute

5. $\frac{1}{2}$

6. 30.6 m

7. B

8. a) $\sin \theta = 0.999$, $\cos \theta = -0.017$, $\tan \theta = -57.290$

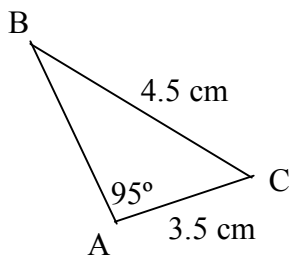
b) $\sin \theta = 0.342$, $\cos \theta = -0.940$, $\tan \theta = -0.364$

c) $\sin \theta = 0.819$, $\cos \theta = -0.574$, $\tan \theta = -1.428$

Practise

1. a) 39° b) 19°

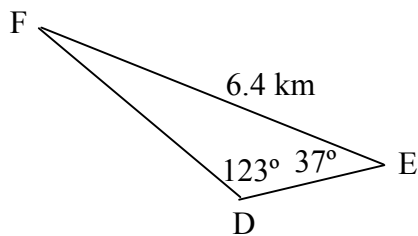
2. a)



b) 51°

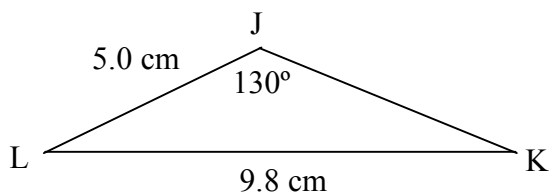
3. a) 4.1 m b) 11.4 cm

4. a)



b) 4.6 km

5. a)



b) $\angle K = 23^\circ$, $\angle L = 27^\circ$, $l = 5.8$ 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 37° , 53° , and 90° .

7. A

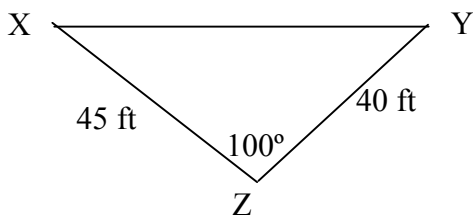
8. 34°

Practise

1. a) 3 m

b) 19 mm

2. a)

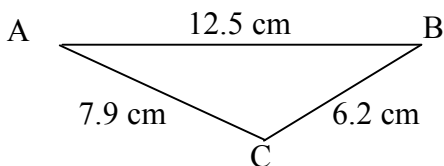


b) 65 ft

3. a) 39°

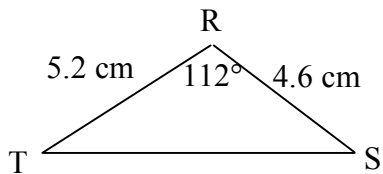
b) 98°

4. a)



b) 124°

5. a)



b) $\angle S = 36^\circ$, $\angle T = 32^\circ$, $r = 8.1$ 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. $\angle A = 30^\circ$, $\angle B = 90^\circ$, $\angle C = 60^\circ$

5. 12 numbers

6. $\cos A = \frac{25 - a^2}{24}$

7. D

8. $\angle D = 71.2^\circ$, $\angle E = 51.1^\circ$, $\angle F = 57.7^\circ$

Practise

1. a) $\angle A = 39^\circ$, $\angle B = 21^\circ$, $a = 2.1$ cm

b) $\angle D = 23^\circ$, $\angle E = 67^\circ$, $f = 3.9$ km

c) $\angle X = 43^\circ$, $\angle Y = 62^\circ$, $\angle Z = 75^\circ$

2. a) AC = 6.9 cm, AB = 7.5 cm

b) $\angle A = 67^\circ$, $\angle B = 53^\circ$

3. 15.9 cm

4. 152.4 yd

5. 8.2 m

6. 4.4 cm

Chapter 2 Review, pages 35–36

1. $\angle F = 40.0^\circ$, $d = 10.1$ m, $e = 13.2$ m

2. $\angle B = 70.0^\circ$, $a = 7.6$ cm, $c = 22.3$ cm

3. a) Sketches may vary.

b) 7.616

c) $\sin \theta = 0.919$, $\cos \theta = 0.394$, $\tan \theta = 2.333$

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