

Chapter 4 BLM Answers

Prerequisite Skills

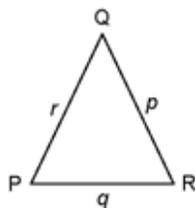
1. a) $\sin V = \frac{3}{5}$, $\cos V = \frac{4}{5}$, $\tan V = \frac{3}{4}$; $\sin W = \frac{4}{5}$,

$\cos W = \frac{3}{5}$, $\tan W = \frac{4}{3}$

b) $\sin V = \frac{15}{17}$, $\cos V = \frac{8}{17}$, $\tan V = \frac{15}{8}$; $\sin W = \frac{8}{17}$,

$\cos W = \frac{15}{17}$, $\tan W = \frac{8}{15}$

2. a) 0.391 b) 0.143 c) 0.5 d) 0.052 e) 3.172 f) 1
 3. a) 49° b) 30° c) 53° d) 67° e) 60° f) 84°
 4. a) 3.2 cm b) 97.0 mm
 5. a) $x = 49^\circ$, $y = 51^\circ$ b) $x = 22^\circ$, $y = 68^\circ$, $z = 73^\circ$
 6. a) $x = 30^\circ$, $y = 60^\circ$ b) $x = 35^\circ$, $y = 55^\circ$
 7. $\angle a \doteq 25.7^\circ$, $\angle 2a \doteq 51.4^\circ$, $\angle 3a \doteq 77.1^\circ$
 8. a)



- b) 45°
 9. a) $a = \frac{b}{c^2}$ b) $a = \frac{2A}{h} - b$ c) $a = \sqrt{\frac{2}{b} + \frac{b}{2}}$
 d) $a = \sqrt{b^2 + c^2 - 2bc(\cos A)}$ e) $a = \frac{bc}{b+c}$

Section 4.1 Use Trigonometry to Find Lengths

1. a) 5.6 cm b) 16.4 m c) 86.4 mm d) 3.6 km
 2. a) $a = 58.7$ cm, $c = 57.5$ cm b) $g = 21.6$ m, $i = 14.3$ m
 c) $u = 0.9$ km, $v = 1.9$ km
 3. length = 6.4 m, width = 4.0 m
 4. a) 10° b) 4.61 km c) 4.54 km
 5. 1.74 km
 6. a) 3 km b) 7.2 km
 7. a) 4.92 m b) yes
 8. 135 m

Section 4.2 Use Trigonometry to Find Angles

1. a) 36° b) 48° c) 54° d) 44°
 2. a) $f = 2.7$ cm, $\angle E = 56.4^\circ$, $\angle F = 33.6^\circ$
 b) $m = 4.0$ m, $\angle P = 42.0^\circ$, $\angle N = 48.0^\circ$
 3. a) $a = 1.8$ cm, $\angle A = 12.8^\circ$, $\angle C = 77.2^\circ$
 b) $h = 7.2$ km, $\angle H = 52.0^\circ$, $\angle I = 38.0^\circ$
 c) $r = 8.4$ m, $\angle Q = 23.8^\circ$, $\angle P = 66.2^\circ$
 d) $j = 3.2$ mm, $l = 5.8$ mm, $\angle J = 34^\circ$
 4. 5.7°
 5. 78.6°
 6. 40°

7. 12°
 8. 42.5°
 9. a) 10.0° b) 13.2°
 10. 66°

Section 4.3 Solve Problems Involving Two Right Triangles

1. 3.3 cm
 2. 300 m
 3. 17 km
 4. a) 18.1 m b) 11.9 m c) 21.6 m
 5. a) 0.6 m b) 4.2 m c) 139°
 6. a) 45 m b) 46.6 m c) 13.9 m

Section 4.4 Investigate the Sine Law

1. $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$; $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$
 2. a) $\angle C = 75.5^\circ$ b) $\angle M = 38.6$
 3. a) $h = 20.1$ cm b) $t = 10.3$ m
 4. a) $p = 89.4$ cm, $\angle P = 74.7^\circ$, $\angle Q = 40.3^\circ$
 b) $x = 159.4$ mm, $z = 145.0$ mm, $\angle Z = 65^\circ$
 5. point A: 40 km; point B: 38 km
 6. DE = 1.1 km, $\angle E = 75.3^\circ$, $\angle F = 48.7^\circ$
 7. 420 m
 8. It is possible. Since the triangle is isosceles, all three angle measures can be determined and the sine law can then be used.
 9. 100 m

Section 4.5 Investigate the Cosine Law

1. a) $c^2 = a^2 + b^2 - 2ab(\cos C)$ b) $\cos C = \frac{a^2 + b^2 - c^2}{2ab}$
 2. a) $x = 8.5$ cm b) $l = 57.0$ km
 3. a) $\angle N = 50.0^\circ$ b) $\angle F = 43.3^\circ$
 4. a) JK = 9.9 mm, $\angle J = 49.3^\circ$, $\angle K = 58.7^\circ$
 b) $\angle P = 89.1^\circ$, $\angle Q = 44.4^\circ$, $\angle R = 46.5^\circ$
 5. 5.0°
 6. 275 m
 7. 14 km
 8. 50° , 60° , 70°
 9. 156 cm

Section 4.6 Make Connections With the Sine Law and the Cosine Law

1. a) cosine law; $c = 54$ m b) sine law; $x = 21$ cm
 2. a) sine law; $\angle N = 48^\circ$ b) cosine law; $\angle D = 69^\circ$
 3. a) KL = 9.0 m, $\angle K = 33.6^\circ$, $\angle L = 73.4^\circ$
 b) RS = 43.4 cm, RT = 52.3 cm, $\angle S = 89.0^\circ$

4. a) Sketches may vary.
b) from friend B: 12.8 km; from friend C: 11.4 km
5. 87 m
6. a) Sketches may vary. b) 3.6 m
7. 24 cm
8. carrier A: 1102 m; carrier B: 1324 m

Chapter 4 Review

1. a) $a = 36.9$ cm, $c = 34.9$ cm
b) $u = 10.4$ cm, $v = 12.5$ cm
2. 12.3 cm, 8.6 cm
3. a) $\angle R = 58^\circ$, $\angle P = 32^\circ$
b) $\angle U = 64^\circ$, $\angle T = 26^\circ$
4. 15°
5. 38 cm
6. 95.5°
7. 34 cm
8. 42.7°
9. 93 cm
10. 57.3°
11. 6 cm

Chapter 4 Practice Test

1. C 2. A 3. C 4. D
5. a) 9.1 cm b) 38.4 m
6. a) 53.8° b) 58.0°
7. a) 70° b) 48 m
8. 21°

Chapter 4 Test

1. A 2. C 3. B 4. B
5. a) 19.2 cm b) 8.4 cm c) 27.6 cm
6. a) 43.8° b) 56.3° c) 54.4°
7. a) 11.5° b) 58.8 m
8. 9.0 m
9. home plate to first base: 26.2 m; home plate to second base: 37.7 m
10. 70°