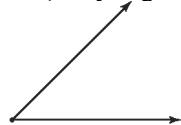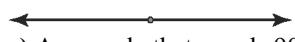# Chapter 2 BLM Answers

BLM 2–2 Chapter 2 Prerequisite Skills

1. a) Any angle less than 90°. Example:
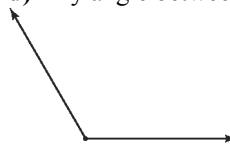
b) Any angle that equals 180°. Example:

c) Any angle that equals 90°. Example:

d) Any angle between 90° and 180°. Example:

2. a) $\angle\alpha = 44°$ **b)** $\angle\beta = 21°$ **c)** $\angle\theta = 56°$
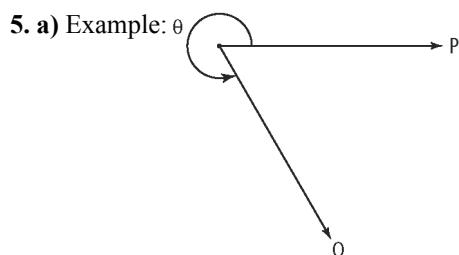**d)** $\angle\alpha = 130°$ **e)** $\angle\beta = 71°$
3. a) $\angle$A or $\angle$BAC or $\angle$CAB **b)** b or AC or CA
c) $b^2 = a^2 + c^2$ or $(AC)^2 = (BC)^2 + (AB)^2$

d) $\sin A = \dfrac{BC}{AC}$ or $\sin A = \dfrac{a}{b}$

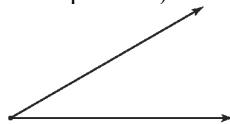**e)** $\tan C = \dfrac{AB}{BC}$ or $\tan C = \dfrac{c}{a}$ **f)** $a = b \cos C$

4. a) 3.3 cm **b)** 3.3 cm **c)** 6.7 cm **d)** 8.3 cm

5. a) Example: θ

b) A reflex angle is between 180° and 360°.
c) >180° and < 360° or 180° < θ < 360°, where θ is the reflex angle
6. a)–d) Answers will vary depending on the angles that students sketch and their accuracy in estimating. Example for a):

Measure of estimated angle is 35°. The difference = $35° − 30° = 5°$. The ratio is $\dfrac{5}{30} \times 100 \approx 16.7$. My estimate differed by approximately 17%.

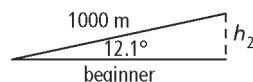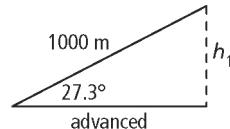**7. a)** 1.3 cm **b)** 1.5 m **c)** 2.0 cm **d)** 4.0 m
8. a) 7.79 **b)** 2.25 **c)** 0.21 **d)** 14.91
e) 7.67 **f)** 0.59
9. a) 37° **b)** 68° **c)** 47° **d)** 68° **e)** 30° **f)** 61°
10. 4 cm
11. a)

b) 249 m
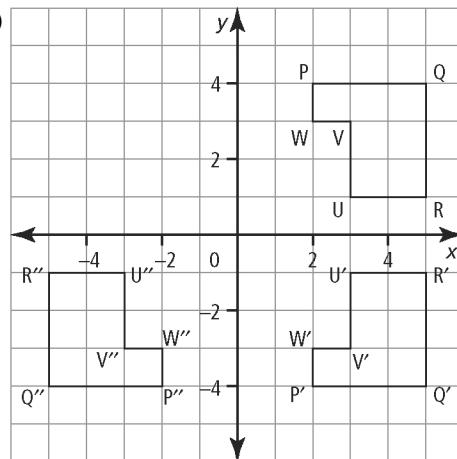
BLM 2–3 Chapter 2 Warm-Up

Section 2.1
1. a) Example: Angles with a sum of 180° are supplementary. $\angle 1$ and $\angle 2$ are supplementary.
b) Example: Angles with a sum of 90° are complementary. $\angle 3$ and $\angle 4$ are complementary.
c) $\angle 1 + \angle 2 = 180°$; $\angle 2 + \angle 3 + \angle 6 = 180°$; $\angle 1 + \angle 2 = \angle 2 + \angle 3 + \angle 6$. Therefore, $\angle 1 = \angle 3 + \angle 6$.

d) $\angle$ECB or $\angle$BCE **e)** $\cos \angle 4 = \dfrac{CD}{EC}$

2. a), c)

b) R′ = (5, −1); V′ = (3, −3) **d)** Q″ = (−5, −4); U″ = (−3, −1)
e) The fourth reflection falls on the original figure.
3. a) adjacent: AB; opposite: BC
b) adjacent: QR; opposite: PR
c) adjacent: FG; opposite: EF

4. a) $\tan A = 3$; $\cos C = \dfrac{3}{\sqrt{10}}$

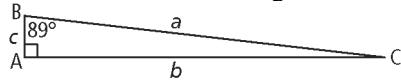**b)** $\cos R = \dfrac{2}{5}$ or 0.4; $\sin R = \dfrac{\sqrt{21}}{5}$

c) $\sin \angle\theta = \dfrac{2}{\sqrt{13}}$; $\tan \angle MLN = \dfrac{5}{4}$ or 1.25

5. a) 0.0175 **b)** 0.9004 **c)** 0.7071
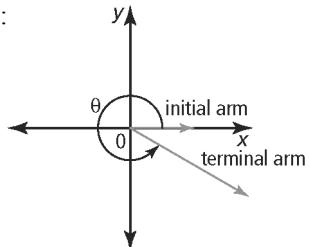**d)** 0.4695 **e)** 1.7321 **f)** 0.9085

6. Example: $\cos B = \dfrac{c}{a}$. The answer represents the ratio of c to a in the triangle shown.

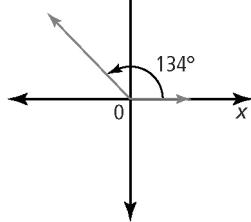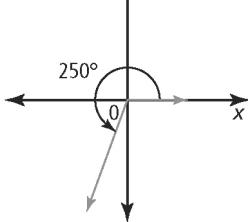

Section 2.2
1. a) Example:

b) The angle is between 270° and 360°.
c) counterclockwise
2. a) quadrant III   **b)** quadrant I   **c)** quadrant II
d) quadrant IV   **e)** quadrant II   **f)** quadrant III
3.

4. a) 70°   **b)** 50°   **c)** 46°   **d)** 15°   **e)** 85°   **f)** 19°
5. a) 5.5 cm   **b)** 7.5 m
6. a) $\angle B$= 60°; $\angle ADB$ = 90°; $\angle BAD$ = 30°   **b)** 2 cm
c) $\sqrt{12}$ or $2\sqrt{3}$

d) $\tan B = \sqrt{3}$; $\cos B = \dfrac{1}{2}$; $\sin B = \dfrac{\sqrt{3}}{2}$

7. a) DE = FD

b)
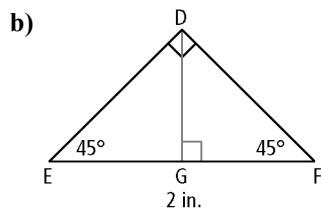
$\angle DEG$ = 45°; $\angle EGD$ = 90°; $\angle EDG$ = 45°
c) DG and EG are equal sides of isosceles triangle $\triangle EGD$.   **d)** 1 in.   **e)** $\sqrt{2}$

f) $\tan 45° = 1$; $\sin 45° = \dfrac{1}{\sqrt{2}}$; $\cos 45° = \dfrac{1}{\sqrt{2}}$

Section 2.3
1. a) $x = \dfrac{18}{5}$ **b)** $y = \dfrac{-3}{2}$ **c)** $z = \dfrac{10}{3}$

2. a) $\boxed{} = b^2$ **b)** $\boxed{} = b$ **c)** $\boxed{} = c$
  d) $\boxed{} = C$ **e)** $\boxed{} = C$ **f)** $\boxed{} = A$

3. a) 1   **b)** $\dfrac{\sqrt{3}}{2}$ **c)** $\dfrac{1}{2}$ **d)** $-\dfrac{1}{2}$ **e)** $-\dfrac{\sqrt{3}}{3}$ **f)** $\dfrac{-\sqrt{3}}{2}$
4. a) 0.64   **b)** -0.34 **c)** 0.36   **d)** -0.99
5. a) 60° or 300°   **b)** 30° or 150°   **c)** 240°   **d)** 330°

Section 2.4
1. a) -3.8 **b)** 6.0   **c)** 24.1   **d)** 2.0
2. a)
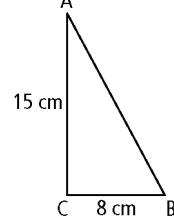
b) 17 cm   **c)** 60 cm^2 **d)** $\angle C = 28.07°$
3. a) $x = 0$ **b)** $y = 13.1$ **c)** $\theta = 12.0°$
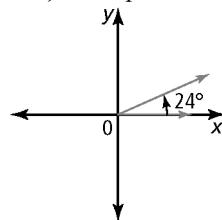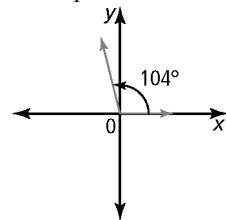**4.** $\angle R = 84°$; PR = 9.7 cm; PQ = 15.0 cm
5. a) Example:
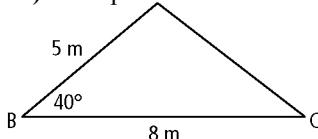
b) The sine law cannot be used to solve $\triangle ABC$ since each time you set up the ratios, there are two unknowns. For example, $\dfrac{8}{\sin A} = \dfrac{b}{\sin 40°}$ has unknowns $\angle A$ and side b.

BLM 2–4 Section 2.1 Extra Practice
1. a) Example:

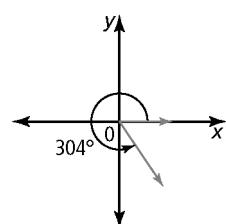**b)** Example:

c) Example:
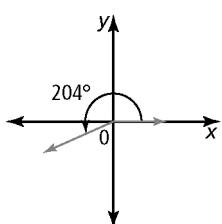
d) Example:

2. a) 55°   **b)** 25°   **c)** 75°   **d)** 5°
3. a) 140°, 220°, 320°   **b)** 108°, 252°, 288°
c) 92°, 268°, 272°   **d)** 177°, 183°, 357°
4. a) 150°   **b)** 225°   **c)** 300°

5. a) No **b)** No **c)** Yes **d)** No
6. a) $a = 10$, $b = 20\sqrt{3}$ **b)** DE $= 2\sqrt{3}$ m $- 2\sqrt{2}$ m
7. $12\sqrt{3}$ cm

BLM 2–5 Section 2.2 Extra Practice

1. a)

b)

c)

d)
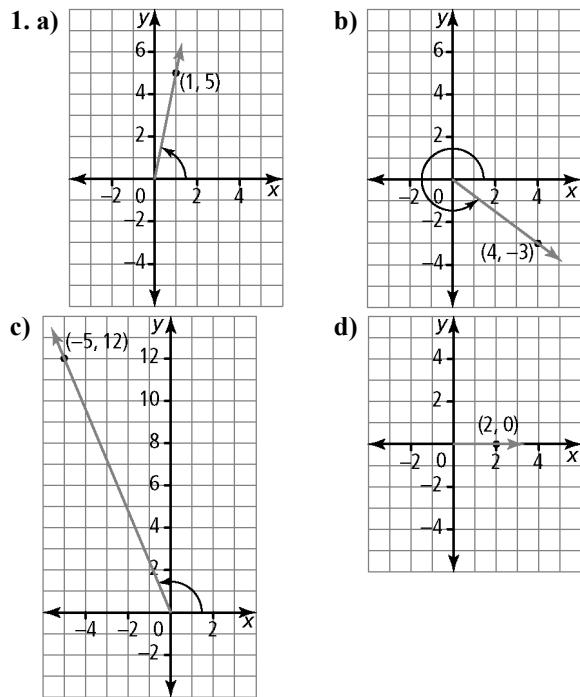
2. a) $\sin\theta = \dfrac{5}{\sqrt{26}}$; $\cos\theta = \dfrac{1}{\sqrt{26}}$; $\tan\theta = 5$

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

c) $\sin\theta = \dfrac{12}{13}$; $\cos\theta = \dfrac{-5}{13}$; $\tan\theta = \dfrac{12}{-5}$

d) $\sin\theta = 0$; $\cos\theta = 1$; $\tan\theta = 0$

3. a) $\sin\theta = \dfrac{1}{\sqrt{2}}$; $\cos\theta = \dfrac{-1}{\sqrt{2}}$; $\tan\theta = -1$

b) $\sin\theta = \dfrac{-\sqrt{3}}{2}$; $\cos\theta = \dfrac{-1}{2}$; $\tan\theta = \sqrt{3}$

c) $\sin\theta = \dfrac{-1}{2}$; $\cos\theta = \dfrac{\sqrt{3}}{2}$; $\tan\theta = \dfrac{-1}{\sqrt{3}}$

4. a) positive **b)** negative **c)** negative **d)** negative

5. a) $\cos\theta = \dfrac{-4}{5}$; $\tan\theta = \dfrac{3}{4}$

b) $\sin\theta = \dfrac{-\sqrt{5}}{3}$; $\tan\theta = \dfrac{-\sqrt{5}}{2}$

c) $\sin\theta = \dfrac{5}{13}$; $\cos\theta = \dfrac{-12}{13}$

6. a) 225°, 315° **b)** 30°, 210° **c)** 30°, 330° **d)** 270°
7. a) 51°, 129° **b)** 144°, 216° **c)** 138°, 318°
d) 260°, 280°

8. a) False. Sin 120° is in quadrant II so it is positive, and cos 210° is in quadrant III so it is negative.
**b)** False. Cos 170° is in quadrant II so it is negative, and cos 350° is in quadrant IV so it is positive.
c) True. The reference angle for both sin 200° and sin 340° is 20°. Both are negative.
d) True. The reference angles are not equal, but both ratios, cos 300° and sin 150° are equal to 0.5. Both are positive since the cosine ratio is positive in quadrant IV and the sine ratio is positive in quadrant II.

BLM 2–6 Section 2.3 #27 Concept Map

Example:
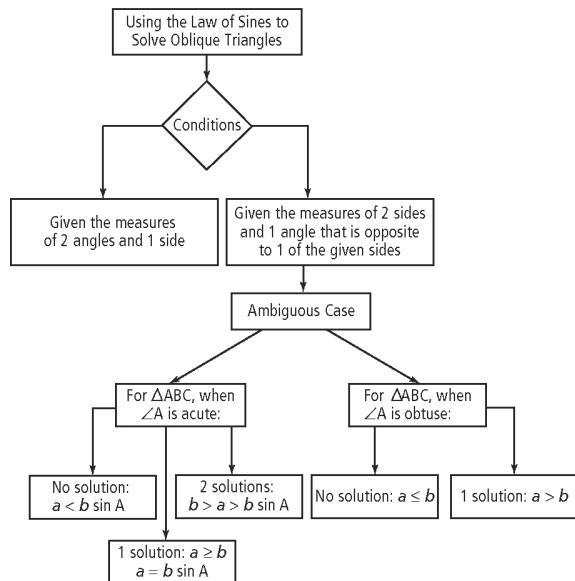
BLM 2–7 Section 2.3 Extra Practice

1. a) 4.0 cm **b)** 5.3 m **2. a)** 43° **b)** 125°
3. a) 31° **b)** 6.4 cm
4. a) ∠F = 105°; DF = 8.3 cm; EF = 11.7 cm
b) ∠N = 77°; ∠M = 43°; NO = 6.3 m
5. a) no solution
b) ∠Q = 7°; ∠R = 70°; PR = 1.6 cm
c) First triangle: ∠F = 59°; ∠E = 81°; DF = 9.2 cm
Second triangle: ∠F = 121°; ∠E = 19°; DF = 3.0 cm
d) First triangle: ∠T = 77°; ∠S = 38°; RT = 2.7 mm
Second triangle: ∠T = 103°; ∠S = 12°; RT = 0.9 mm
6. 435 cm^2

BLM 2–8 Section 2.4 Extra Practice

1. a) 7.9 mm **b)** 7.3 m **2. a)** 73° **b)** 20°
3. a) 7 cm **b)** 40°
4. a) 5.9 m; ∠E = 85°; ∠F = 52°
b) ∠G = 119°; ∠H = 35°; ∠I = 26°
5. a) $\sqrt{21}$ cm b) $\sqrt{45 - 18\sqrt{2}}$ cm **6.** 17°

BLM 2–9 Chapter 2 Test

1. B   **2.** B   **3.** C   **4.** D   **5.** A   **6.** 9.5 yd   **7.** 21.9 cm

8. 14 cm   **9. a)** $-\sqrt{3}$ **b)** $\dfrac{-\sqrt{3}}{2}$ **c)** $\dfrac{\sqrt{2}}{2}$

10. a) 20°   **b)** 20°, 200°, 340°

11. a)

3 cm, 6 cm, 5 cm
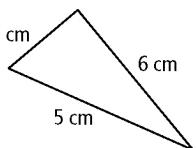
b) 29.9°, 56.3°, 93.8°

12. 12.5 ft and 6.4 ft

BLM U1–4 Unit 1 Test

1. A **2.** B **3.** D **4.** D **5.** B **6.** 168 **7.** 315
8. 4.3 **9.** IV **10.** 1 **11.** 0
12. a) $t_n = 4 + (n-1)(2)$ or $t_n = 2n + 2$
b)
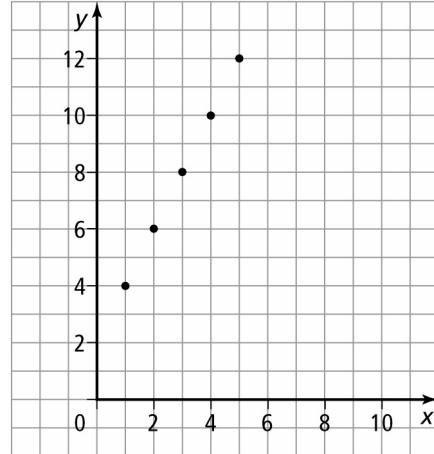
c) $f(n) = 2n + 2$. The slope of the graph of the function is 2. The common difference of the arithmetic sequence is 2.
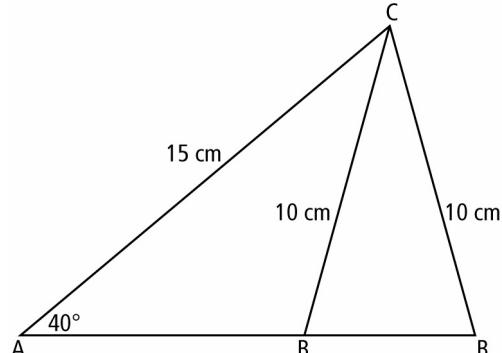**d)** The domain of the arithmetic sequence is $n \in N$. Therefore, the graph is discrete. The domain of the function is $n \in R$. Therefore, the graph would be continuous.

13. a) 17   **b)** $\sin\theta = -\dfrac{8}{17}$, $\cos\theta = -\dfrac{15}{17}$, $\tan\theta = \dfrac{8}{15}$

c) $\theta = 208.1°$

14. a) $a < b$ is true. Compare the values of a and $b \sin A$. $a > b \sin A$ because $10 > 9.6418….$ Therefore, two triangles exist.
b)

15 cm, 10 cm, 10 cm, 40°, A, B, B, C

c) $\angle B = 74.6°$ or $105.4°$