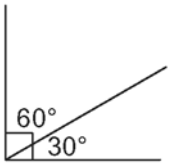
# Chapter 2 BLM Answers

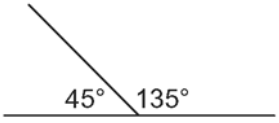
## BLM 2-2 Prerequisite Skills

**1. a)** $a = 29°$ **b)** $b = 110°$
**c)** $c = 63°$ **d)** $d = 123°$, $e = 57°$

**2. a)** Two angles with measures that add to 90º are complementary.



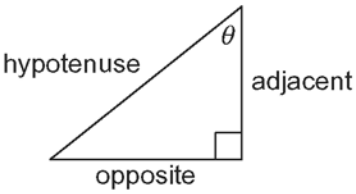

**b)** Two angles with measures that add to 180º are supplementary.



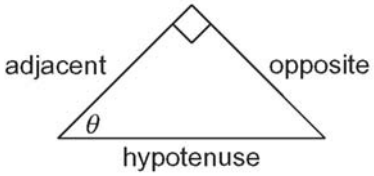

**3. a)** $x = 51$ cm **b)** $y = 10.7$ km

**4.** 13.5 m

**5. a)**




**b)**




**6. a)** 0.9659 **b)** 0.4540 **c)** 0.4040

**7. a)** 60.0° **b)** 45.0° **c)** 55.3°

**8. a)** 2.3 **b)** 8.4 **c)** 10.4 **d)** 32.4

**9. a)** $a = 11.4$ **b)** $b = 5.9$ **c)** $m = 7.7$ **d)** $n = 12.2$

## BLM 2-4 Section 2.1 Trigonometric Ratios With Acute Angles

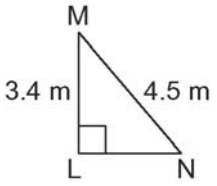
**1. a)** $\sin\theta = \frac{12}{13}$, $\cos\theta = \frac{5}{13}$, $\tan\theta = \frac{12}{5}$

**b)** $\sin\theta = \frac{8}{17}$, $\cos\theta = \frac{15}{17}$, $\tan\theta = \frac{8}{15}$

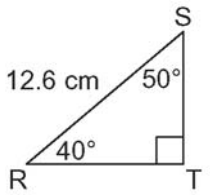
**2. a)** $x = 7.5$ m **b)** $x = 3.3$ cm

**3. a)** $\angle\theta = 43°$ **b)** $\angle\theta = 63°$

**4. a) i)**




**ii)**




**b) i)** $\angle M = 41°$, $\angle N = 49°$, $m = 2.9$ m
**ii)** $\angle T = 90°$, $r = 8.1$ cm, $s = 9.7$ cm

**5. a)** 198.2 m **b)** 63.3º

**6. a)** 6.7 km/h **b)** 2.3 km/h

**7. a)** approximately 1560 m **b)** approximately 18º

**8.** 16.9 m

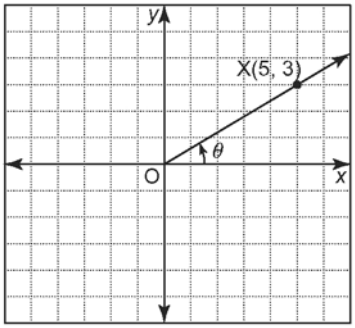
**9. a)** 5.4 m **b)** 13.5 m **c)** 34º

## BLM 2-6 Section 2.2 Trigonometric Ratios With Obtuse Angles

**1. a)** OA $\doteq$ 4.123

**b)** $\sin\theta \doteq 0.970$, $\cos\theta \doteq 0.243$, $\tan\theta = 4$

**2. a)**




**b)** OX $\doteq$ 5.831

**c)** $\sin\theta \doteq 0.514$, $\cos\theta \doteq 0.857$, $\tan\theta = 0.6$

**3. a)** $\angle\theta = 31°$

**b)** $\sin\theta \doteq 0.515$, $\cos\theta \doteq 0.857$, $\tan\theta \doteq 0.601$. Answers are very similar.

**4. a)** OC $\doteq$ 7.211

**b)** $\sin\theta \doteq 0.832$, $\cos\theta \doteq -0.555$, $\tan\theta = -1.5$

**5. a)** $\angle\theta = 124°$

**b)** $\sin\theta \doteq 0.829$, $\cos\theta \doteq -0.559$, $\tan\theta \doteq -1.483$. Answers are very similar.



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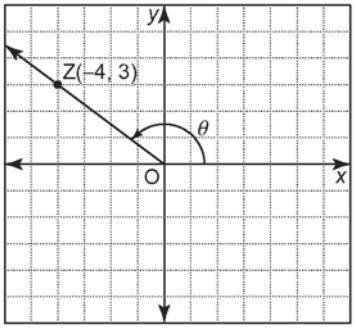
**6. a), b)**




**c)** $\sin\theta = 0.6$, $\cos\theta = -0.8$, $\tan\theta = -0.75$

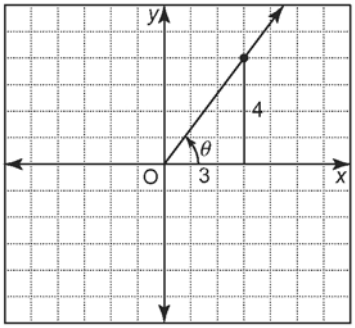
**7.** Answers may vary. For example, point (4, 3). For the sine values to be equal, the two angles must be supplementary. Reflect point Z(–4, 3) in the *y*-axis to obtain the image point (4, 3), which is on the supplementary acute angle's terminal arm.

**8. a)** Sketches may vary.

**b)**

| Angle | Sine | Cosine | Tangent |
|---|---|---|---|
| 28° | **0.469** | **0.883** | **0.532** |
| 145° | **0.574** | **–0.819** | **–0.700** |
| 58° | **0.848** | **0.530** | **1.600** |
| 104° | **0.970** | **–0.242** | **–4.011** |
| 162° | **0.309** | **–0.951** | **–0.325** |

**9. a)**

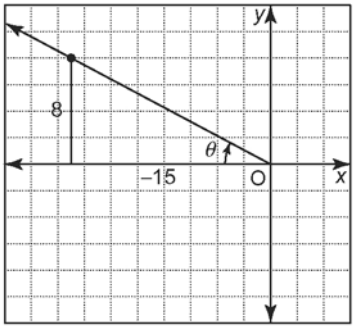



**b)** Answers may vary. For example, (3, 4).

**c)** $\sin\theta = \frac{4}{5}$, $\cos\theta = \frac{3}{5}$

**d)** $\angle\theta \doteq 53.130°$

**10. a)**




**b)** Answers may vary. For example, (–15, 8).

**c)** $\sin\theta = \frac{8}{17}$, $\tan\theta = -\frac{8}{15}$

**d)** $\angle\theta \doteq 151.928°$

**11. a)** (3, 4) **b)** 1, 0.02 **c)** 53°

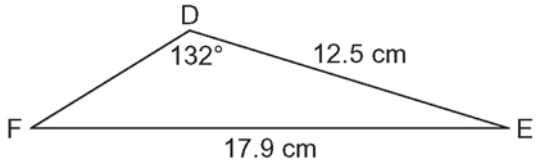
**12. a)** (–5,12) **b)** 0.02, 1 **c)** 113°

**13. a)** 37° **b)** 23° **c)** 127° **d)** 164°

## BLM 2-7 Section 2.3 Sine Law

**1. a)** $\angle\theta \doteq 62°$ **b)** $\angle\theta \doteq 39°$

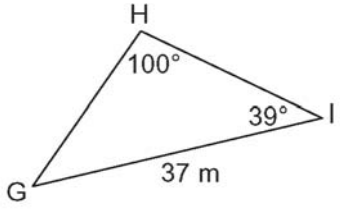
**2. a)**




**b)** $\angle F \doteq 31°$

**3. a)** $x \doteq 4.3$ mm **b)** $y \doteq 0.6$ cm

**4. a)**

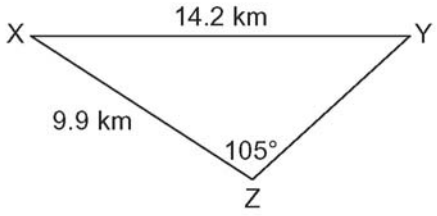



**b)** $g \doteq 25$ m

**5. a)** $\angle M = 35°$, $\angle N = 47°$, $n = 35.3$ m

**b)** $\angle T = 23°$, $t = 3.7$ ft, $u = 6.9$ ft

**6. a)**




**b)** $\angle X = 33°$, $\angle Y = 42°$, $x = 7.9$ km

**7. a)** station A: 36.4 km; station B: 82.0 km

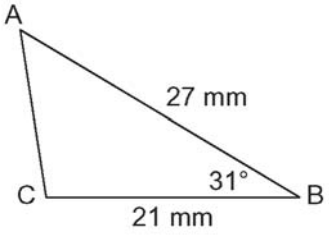
**b)** 35.9 km

**8.** 10.6 m

## BLM 2-8 Section 2.4 Cosine Law

**1. a)** $c = 30$ m **b)** $d = 11.2$ cm

**2. a)**




**b)** $b = 14$ mm

**3. a)** $\angle\theta = 50°$ **b)** $\angle\theta = 92°$

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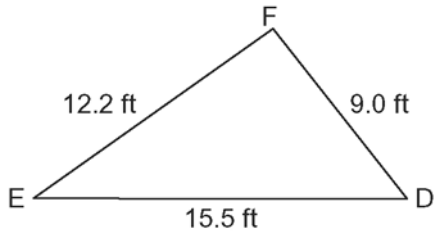
**4. a)**

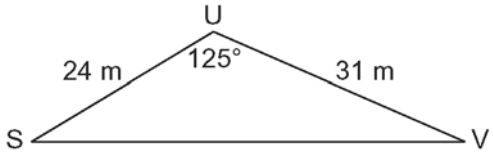



**b)** ∠F = 93º

**5. a)** ∠L = 37º, ∠M = 46º, $w$ = 9.1 cm

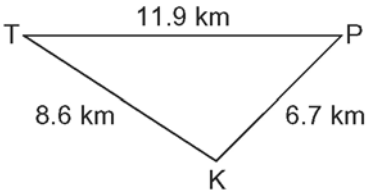
**b)** ∠R = 30º, ∠Q = 41º, ∠T = 109º

**6. a)**




**b)** ∠S = 31º, ∠V = 24º, $u$ = 49 m

**7. a)**




**b)** ∠T = 33º, ∠P = 45º, ∠K = 101º

**8.** 32º, 21º, 127º

## BLM 2-10 Section 2.5 Applications of Trigonometry

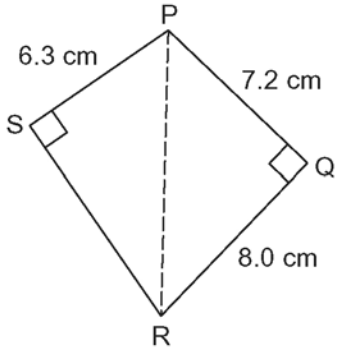
**1. a)** E **b)** F **c)** B **d)** C **e)** D **f)** A

**2. a)** $f$ = 6.7 ft **b)** ∠F = 48º

**c)** ∠D = 42º **d)** ∠S = 40º

**e)** $p$ = 30.9 cm **f)** $t$ = 16.0 m

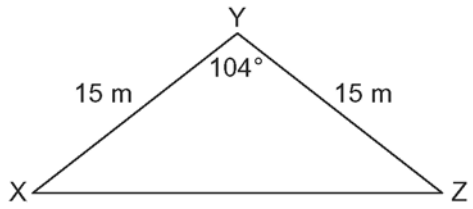
**3. a)**




**b)** RS = 8.7 cm

**c)** ∠P = 102º, ∠R = 78º

**4. a)**



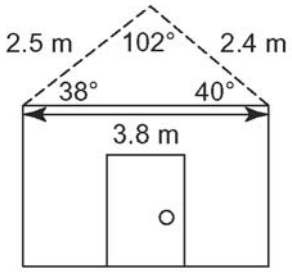

**b)** $y$ = 23.6 m

**c)** Methods may vary. For example, △XYZ is isosceles so ∠X and ∠Y both equal 38º. Sine law can be used to obtain $y$ = 23.6 m.

**d)** Answers may vary. For example, cosine law.

**5. a)** 13.5 km, 27.5 km **b)** 840 km/h

**6.**




**7. a)** 150 km **b)** Route A

**8.** 87.6 m

**9.** 51.5 km

**10.** mast: 16.0 m; gaff: 6.5 m

**11.** 48 490 km

## BLM 2-13 Chapter 2 Review

**1. a) i)** sin $\theta$ = 0.75, cos $\theta$ = 0.66, tan $\theta$ = 1.15

**ii)** sin $\theta$ = 0.67, cos $\theta$ = 0.74, tan $\theta$ = 0.90

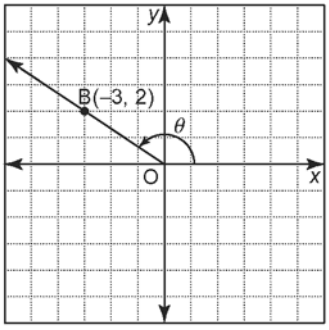
**b) i)** $\angle\theta$ = 49º, **ii)** $\angle\theta$ = 42º

**2. a)** 43 cm **b)** $\angle\theta$ = 34º

**3.** ∠T = 58º, $s$ = 14.2 m, $t$ = 12.0 m

**4.** sin $\theta = \frac{3}{5}$, cos $\theta = \frac{4}{5}$, tan $\theta = \frac{3}{4}$

**5. a)**




**b)** sin $\theta$ = 0.555, cos $\theta$ = –0.832, tan $\theta$ = –0.667

**6.** 39 cm

**7.** ∠E = 43º, ∠V = 29º, $v$ = 18 ft

**8.** $d$ = 60 km

**9.** ∠D = 34º, ∠T = 17º, ∠P = 129º

**10. a)** 48.6 m **b)** 64.5º

**11.** 654 m

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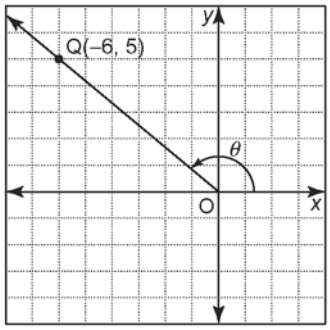
## BLM 2-14 Chapter 2 Practice Test

**1.** B
**2.** D
**3.** B
**4.** 2.6 m
**5.** sin $\theta = 0.868$, cos $\theta = -0.496$, tan $\theta = -1.75$
**6.** sin $\theta = 0.471$, cos $\theta = 0.882$, tan $\theta = 0.533$
**7.** $\angle J = 22.1^\circ$, $\angle K = 10.9^\circ$, $k = 10.1$ ft
**8.** 109º, 39º, 32º
**9.** 223 m

## BLM 2-15 Chapter 2 Test

**1.** C
**2.** D
**3.** A
**4.** B
**5.** sin $\theta = 0.750$, cos $\theta = 0.661$, tan $\theta = 1.134$
**6.** 48.6º
**7. a)**




**b)** sin $\theta = 0.640$, cos $\theta = -0.768$, tan $\theta = -0.833$
**8.** $\angle Y = 61^\circ$
**9.** Surveyor A: 7.1 km; Surveyor B: 6.1 km
**10.** 145.6 cm
**11.** 27.1 km
**12. a)** 9.7 km **b)** 20.2 km
**13. a)** 37 km; assume the triangle formed by the path of the ball, the goal posts, and the ground is not right-angled
**b)** 14 m



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