

*Sine Rule and Cosine Rule*

## Answers

**1 Sine Rule and Cosine Rule**

1. (a)  $51.6^\circ$  (b)  $52.3^\circ$  (c)  $48.8^\circ$  (d)  $69.4^\circ$  (e)  $34.2^\circ$  (f)  $56.0^\circ$
2. (a) 5.43 (b) 9.05 (c) 6.01 (d) 30.13 (e) 9.84 (f) 4.77
3. (a)  $A = 52.8^\circ$   $B = 42.2^\circ$   $a = 3.68$   
 (b)  $A = 19.9^\circ$   $B = 50.1^\circ$   $b = 12.16$   
 (c)  $B = 73^\circ$   $b = 4.45$   $c = 3.56$   
 (d)  $A = 44.2^\circ$   $B = 56.8^\circ$   $a = 4.33 \text{ cm}$
4. (a) Yes (b) No, only one (c) No, impossible even for one (d) Yes
5.  $B = 65.6$ ,  $C = 47.4^\circ$ ,  $b = 123.6$
6.  $A = 34.1^\circ$ ,  $C = 64.9^\circ$ ,  $a = 6.82$
7. (a)  $B = 52.4$ ,  $C = 67.6^\circ$ ,  $a = 3.28$  (b)  $B = 25.1^\circ$ ,  $C = 4.9^\circ$ ,  $a = 17.66$   
 (c)  $A = 45.5$ ,  $B = 106.6^\circ$ ,  $C = 27.9^\circ$  (d)  $A = 120.5$ ,  $B = 36.9^\circ$ ,  $C = 22.6^\circ$   
 (e)  $b = 8.41$ ,  $A = 64.92$ ,  $C = 60.08^\circ$  (f)  $c = 9.81$ ,  $A = 28.45$ ,  $B = 21.55^\circ$
8. (a) 263.7 m (b) 192.9 m
9. 2.65 miles
10. (a)  $117.3^\circ$  (b) 10.2 m
11.  $60.02^\circ$
12. (a) 23.35 cm (b)  $62.68^\circ$
13.  $286.6^\circ$
14.  $45.58^\circ$
15. 26.8 m

**2 Application: Area of Any Triangle**

1. (a)  $4.38 \text{ cm}^2$  (b)  $5.27 \text{ cm}^2$
2. (a)  $24.13 \text{ cm}^2$  (b)  $4.47 \text{ cm}^2$
3. (a)  $12.5 \text{ cm}^2$  (b)  $94.5 \text{ cm}^2$
4. (a) 7.11 cm (b)  $17.73 \text{ cm}^2$
5. (a)  $53^\circ$  (b)  $54 \text{ cm}^2$
6. (a) 9.17 m (b)  $32.4^\circ$  (c)  $34.64 \text{ m}^2$

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**3 Heron's Formula**

1. (a)  $12 \text{ cm}^2$       (b)  $11.40 \text{ cm}^2$       (c)  $9.92 \text{ cm}^2$       (d)  $13.31 \text{ cm}^2$
2. (i) (a)  $27.81 \text{ mm}^2$       (b)  $44.05^\circ$   
(ii) (a)  $55.99 \text{ mm}^2$       (b)  $61.03^\circ$   
(iii) (a)  $18.73 \text{ mm}^2$       (b)  $78.06^\circ$   
(iv) (a)  $14.84 \text{ mm}^2$       (b)  $44.27^\circ$