

Student Text *UNIT 34 Pythagoras' Theorem and Trigonometric Ratios* Answers

34.1 Pythagoras' Theorem

1. (a) 5 m (b) 13 cm (c) 9 cm (d) 24 m
(e) 10 m (f) 8 cm (g) 15 m (h) 39 cm
2. (a) 13.04 cm (b) 20.52 cm (c) 8.94 cm (d) 8.60 m (e) 7.14 cm
(f) 8.94 cm (g) 7.81 m (h) 11.83 m (i) 14.97 cm (j) 6.40 m
(k) 10.47 m (l) 7.07 m (m) 7.22 cm (n) 4.89 m
3. (a) 320 m (b) 233.2 m (c) 86.8 m
4. 2.5 m
5. 2.44 m
6. 9.54 m
7. 10.77 m
8. 4.24 m
9. 2.06 m
10. (a) 10.44 km (b) 14.32 km
11. (a) 2.95 m (b) Statement X

34.2 Further Work with Pythagoras' Theorem

1. (a) 7.14 (b) 7.07 (c) 5.39 (d) 7.75 (e) 10.95 (f) 14.28
2. (a) 14.14 (b) 1.94 (c) 1.29 (d) 3.12
3. (a) Yes (b) No (c) Yes (d) No
4. (a) 3.46 m (b) 1.73 m (c) 5.69 m
5. 122.47 cm
6. 332.75 cm
7. (a) 26.93 km (b) 26.93 km
8. 28.21 cm
9. 11.18 m, 11.18 m, 19.02 m
10. 41.22 m, 48.21 m
11. 7.75 cm ; 15.49 cm²
12. (a) 27.71 cm² (b) 173.21 cm² (c) 1.73 cm²

34.3 Sine, Cosine and Tangent

1. (a) hyp : BC ; adj : AC ; opp : AB
(b) hyp : DF ; adj : DE ; opp : EF
(c) hyp : GI ; adj : GH ; opp : HI
(d) hyp : LK ; adj : LJ ; opp : JK
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34.3

- (e) hyp : MO ; adj : MN ; opp : NO
 (f) hyp : PQ ; adj : RQ ; opp : PR
2. (a) $\sin \theta = \frac{3}{5}$ $\cos \theta = \frac{4}{5}$ $\tan \theta = \frac{3}{4}$
 (b) $\sin \theta = \frac{5}{13}$ $\cos \theta = \frac{12}{13}$ $\tan \theta = \frac{5}{12}$
 (c) $\sin \theta = \frac{15}{17}$ $\cos \theta = \frac{8}{17}$ $\tan \theta = \frac{15}{8}$
 (d) $\sin \theta = \frac{2}{2.5} = \frac{4}{5}$ $\cos \theta = \frac{1.5}{2.5} = \frac{3}{5}$ $\tan \theta = \frac{2}{1.5} = \frac{4}{3}$
 (e) $\sin \theta = \frac{48}{50}$ $\cos \theta = \frac{14}{50}$ $\tan \theta = \frac{48}{14}$
 (f) $\sin \theta = \frac{3.5}{12.5} = \frac{7}{25}$ $\cos \theta = \frac{12}{12.5} = \frac{24}{25}$ $\tan \theta = \frac{3.5}{12} = \frac{7}{24}$
3. (a) 0.500 (b) 3.732 (c) 1.308 (d) 0.407 (e) 0.649
 (f) 1.000 (g) 0.754 (h) 1.000 (i) 0.707 (j) 0.669
 (k) 0.686 (l) 0.707
4. (a) 60° (b) 90° (c) 24.2° (d) 55.2° (e) 48.6° (f) 23.1°
 (g) 45° (h) 30° (i) 63.4° (j) 82.0° (h) 15.1° (i) 79.2°
6. (a) $\cos \theta = \frac{z}{x}$ (b) $\sin \alpha = \frac{z}{x}$ (c) $\tan \theta = \frac{y}{z}$ (d) $\cos \alpha = \frac{y}{x}$
 (e) $\sin \theta = \frac{y}{x}$ (f) $\tan \alpha = \frac{z}{y}$

34.4 Finding Lengths in Right Angled Triangles

1. (a) 5.14 cm (b) 11.82 cm (c) 5.13 cm (d) 6.06 cm (e) 9 cm
 (f) 8.21 cm (g) 10.63 cm (h) 18.38 cm (i) 15.59 m (j) 6.68m
 (k) 10.28 m (l) 20 m (m) 11.30 m (n) 4.16 m (o) 7.43 m
2. (a) 3.71 m (b) 1.50 m
3. (a) 1.73 m (b) 1.21 m (c) 1 m
4. 0.60 m
5. 143.4 m
6. (a) 386.4 km (b) 103.5 km
7. (a) 103.9 km (b) 60 km
8. 20.5 m to 35.3 m

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- 34.4
9. (a) 12.11 cm (b) 13.46 cm (c) 6.55 cm (d) 7 cm (e) 26.86 m
(f) 38.83 m (g) 13.68 cm (h) 30.66 cm (i) 1.51m
10. (a) 1.88 m (b) 2.92 m
11. 124.5 cm
12. (a) 3.83 cm, 22.98 cm² (b) $a \tan \theta$; $\frac{1}{2}a^2 \tan \theta$
13. 10.32 m
14. (a) 4.44 cm (b) 7.56 cm

34.5 Finding Angles in Right Angled Triangles

1. (a) 53.1° (b) 71.6° (c) 75.5° (d) 47.0° (e) 33.1°
(f) 18.6° (g) 29.1° (h) 14.5° (i) 45.6° (j) 14.5°
(k) 45.5° (l) 23.8°
2. 60°
3. 11.5°
4. (a) 21.8° (b) 68.2°
5. (a) 48.2° (b) 11.18 m
6. 040°
7. 054°
8. (a) $\alpha = 33.7^\circ$, $\beta = 19.4^\circ$ (b) 7.21 m, 10 m
9. (a) 11.2 cm (b) 4.3 cm (c) 68.8°
10. (a) 12.37 cm (b) 72.08°
11. (a) 7.62 m (b) 30.96°