

LEVEL 1 — TRIGONOMETRY

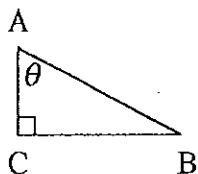
Note: Only turn back to page number if you have difficulty

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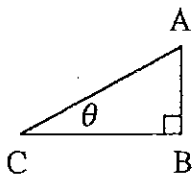
Q1. In each triangle name the hypotenuse, opposite side and adjacent side in relation to θ :

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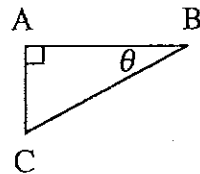
(a)



(b)



(c)



Q2. Find, to 3 sig. figs.:

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(a) $\sin 50^\circ$

(b) $\cos 75^\circ$

(c) $\tan 32^\circ$

(d) $\cos 48^\circ 05'$

(e) $\tan 12^\circ 42'$

(f) $\sin 67^\circ 16'$

Q3. Find θ , correct to the nearest minute, if:

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(a) $\cos \theta = 0.324$

(b) $\sin \theta = 0.901$

(c) $\tan \theta = 0.783$

(d) $\sin \theta = 0.123$

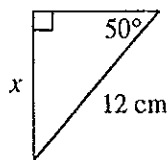
(e) $\tan \theta = 1.445$

(f) $\cos \theta = 0.572$

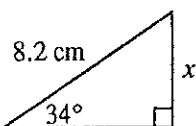
Q4. Using the sine ratio find the value of x to 1 d.p. or θ to the nearest minute:

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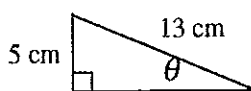
(a)



(b)



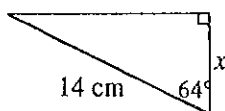
(c)



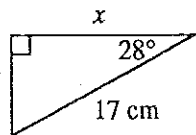
Q5. Using the cosine ratio find the value of x to 2 d.p. or θ to the nearest minute:

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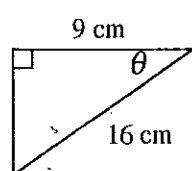
(a)



(b)



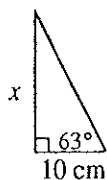
(c)



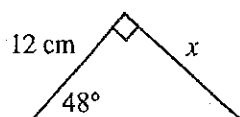
Q6. Using the tangent ratio find the value of x to 1 d.p. or θ to the nearest minute:

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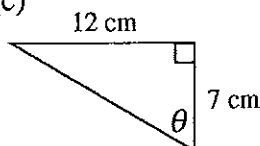
(a)



(b)



(c)



LEVEL 1 — TRIGONOMETRY CONT.

Note: Only turn back to page number if you have difficulty

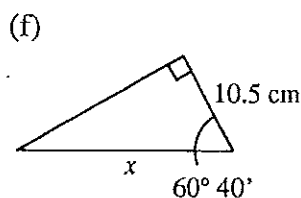
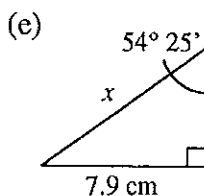
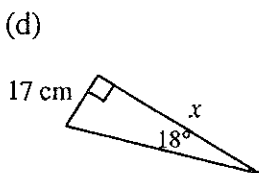
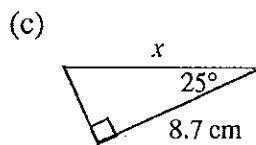
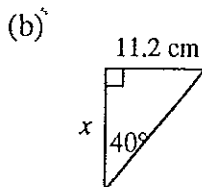
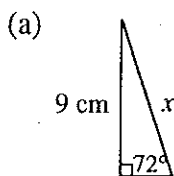
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Q7. A ladder 3.2 m long is leaned against a wall, making an angle of 38° with the wall. Find how far the base of the ladder is from the wall (correct to 3 sig. figs.)

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Q8. Find the value of x correct to 2 d.p.:

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Q9. (a) The angle of elevation of the top of a building is 54° from a point 26 m from the base of the building. Find the height of the building correct to 2 d.p.

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(b) An observer standing on top of a cliff 52 m high observes a whale swimming offshore at an angle of depression of 4° . How far from the base of the cliff is the whale (correct to the nearest m)?

Q10. (a) Two cities, M and N, are 250 km apart and the bearing of N from M is 175° . Find how far N is east of M, correct to 4 sig. figs.

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(b) A car leaves town A and drives 28 km on a bearing of 285° to town B. From B the car drives due east until it reaches town C, directly north of A. What is the distance from C to A, correct to 2 d.p.?

(c) X lies 7.8 km northeast of Y, and Z lies 5.6 km southeast of Y.

(i) What is the bearing of Y from X?

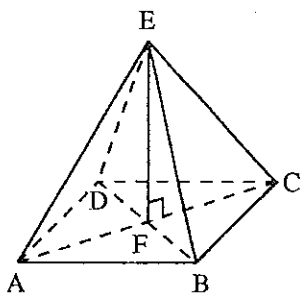
(ii) What is the bearing of Y from Z?

(iii) Find how far Z is south of X (to 2 d.p.).

LEVEL 2 — TRIGONOMETRY

- Q1. A kite is flying at a height of 23 m and the string makes an angle of 53° with the ground.
- How long is the string (correct to 2 d.p.)?
 - If the kite is flying directly above a point X on the ground, how far is X from the person flying the kite (correct to the nearest m)?
- Q2. The diagonal of a rectangle of width 3.8 cm, makes an angle of $32^\circ 15'$ with each of the longer sides. Find the length of the diagonal, and the length of the rectangle. (Answers to 1 d.p.)
- Q3. Standing on top of a building 42 m high, an observer sights two objects at P and Q on opposite sides of the building. The angles of depression from the observer to P and Q are $23^\circ 18'$ and $35^\circ 33'$ respectively. What is the distance between P and Q to the nearest m?
- Q4. A boat is observed from a lighthouse 55 m high at an angle of depression of $11^\circ 42'$, and two minutes later sighted again at an angle of depression of $25^\circ 07'$. What distance has the boat travelled in two minutes? (Answer to the nearest m.) What is the speed of the boat to the nearest nautical mile per hour? (Note: 1 nautical mile = 1.852 km.)

Q5.



The figure shown to the left is a square pyramid with a base of side 6 cm and a vertical height of 9 cm. Find:

- Length AC (correct to 2 d.p.)
 - Length EC (correct to 2 d.p.)
 - $\angle ECF$ (correct to nearest minute)
 - $\angle ECB$ (correct to nearest minute)
- Q6. A, B and C are three towns, the bearing of B and C from A being 295° and 205° , and their distances from A are 280 km and 800 km respectively. Find the bearing of C from B to the nearest minute.
- Q7. A bushwalking party leave P and walk on a bearing of 335° for 11.4 km until they reach Q. From Q they walk on a bearing of 65° for 18.7 km at which point they arrive at R.
- What is the distance between R and P to 3 sig. figs.?
 - What is the bearing of R from P, correct to nearest minute?

Level 1 — Trigonometry

- Q1. (a) h : AB; op : CB; adj : AC (b) h : AC; op : AB; adj : CB (c) h : CB; op : AC; adj : AB
Q2. (a) 0.766 (b) 0.259 (c) 0.625 (d) 0.668 (e) 0.225 (f) 0.922
Q3. (a) $71^\circ 6'$ (b) $64^\circ 17'$ (c) $38^\circ 04'$ (d) $7^\circ 04'$ (e) $55^\circ 19'$ (f) $55^\circ 07'$
Q4. (a) $x = 9.2$ cm (b) $x = 4.6$ cm (c) $\theta = 22^\circ 37'$
Q5. (a) $x = 6.14$ cm (b) $x = 15.01$ cm (c) $\theta = 55^\circ 46'$
Q6. (a) $x = 19.63$ cm (b) $x = 13.33$ cm (c) $\theta = 59^\circ 45'$
Q7. 1.97 m
Q8. (a) 9.46 cm (b) 13.35 cm (c) 9.60 cm (d) 52.32 cm (e) 9.71 cm (f) 21.43 cm
Q9. (a) 35.79 m (b) 744 m
Q10. (a) 21.79 km (b) 7.25 km (c) (i) 225° (ii) 315° (iii) 9.48 km

Level 2 — Trigonometry

- Q1. (a) 28.80 m (b) 17 m
Q2. $d = 7.1$ cm, $\ell = 6.0$ cm
Q3. 156 m
Q4. 148 m; 2 nautical miles per hour
Q5. (a) 8.49 cm (b) 9.95 cm (c) $64^\circ 46'$ (d) $72^\circ 27'$
Q6. $185^\circ 43'$
Q7. (a) 21.9 km (b) $33^\circ 38'$