Using trig functions to calculate lengths of a right-angled triangle

Mana Maths

Te reo Māori terms

pākoki
trigonometry
Open in Te Aka

tapatoru hāngai
right-angle triangle
Open in Te Aka

tāroa
hypotenuse
Open in Te Aka

tūtata
adjacent
Open in Te Aka

Using trig functions to calculate lengths of a right-angled triangle — Foundation

1. Angle $30°$, hypotenuse 10 cm. Find the opposite side.

2. Angle $40°$, hypotenuse 12 m. Find the opposite side.

3. Angle $65°$, hypotenuse 18 cm. Find the adjacent side.

4. Angle $25°$, hypotenuse 20 cm. Find the adjacent side.

5. Angle $35°$, adjacent 8 cm. Find the opposite side.

6. Angle $50°$, adjacent 14 m. Find the opposite side.

7. Angle $55°$, opposite 9 cm. Find the hypotenuse.

8. Angle $20°$, opposite 5 m. Find the hypotenuse.

9. Angle $70°$, adjacent 6 cm. Find the hypotenuse.

10. Angle $42°$, adjacent 11 m. Find the hypotenuse.

11. Angle $48°$, opposite 13 cm. Find the adjacent side.

12. Angle $62°$, opposite 15 m. Find the adjacent side.

13. A 7 m ladder makes an angle of $68°$ with the ground. Find the height reached.

14. A 15 m ramp makes an angle of $12°$ with the ground. Find the ground distance.

Using trig functions to calculate lengths of a right-angled triangle — Proficient

1. Angle $37°$, hypotenuse 16 cm. Find the adjacent side to 1 d.p.

2. Angle $58°$, hypotenuse 24 m. Find the opposite side to 1 d.p.

3. Angle $41°$, adjacent 9 cm. Find the hypotenuse to 1 d.p.

4. Angle $73°$, opposite 12 m. Find the hypotenuse to 1 d.p.

5. Angle $28°$, opposite 7 cm. Find the adjacent side to 1 d.p.

6. Angle $64°$, adjacent 5 m. Find the opposite side to 1 d.p.

7. A kite string is 18 m long and makes an angle of $52°$ with the ground. Find the height to 1 d.p.

8. A tree shadow is 6.5 m long and the angle of elevation is $49°$. Find the tree height to 1 d.p.

9. An 8 m ramp rises at $9°$. Find the vertical rise to 2 d.p.

10. A 4.8 m roof beam makes an angle of $35°$ with the horizontal. Find the vertical drop to 1 d.p.

11. Angle of elevation to a building top is $31°$. The point is 22 m from the base. Find the height to 1 d.p.

12. A guy wire is anchored 9 m from a pole and makes an angle of $63°$ with the ground. Find the wire length to 1 d.p.

Using trig functions to calculate lengths of a right-angled triangle — Excellence

1. A ladder makes an angle of $72°$ with the ground. The foot is 2.8 m from the wall. Find the ladder length and the height reached, both to 1 d.p.

2. A tower is 35 m away. The angle of elevation to the top is $27°$. Find the tower height to 1 d.p.

3. A road rises at $14°$ for 120 m along the slope. Find the vertical rise and the horizontal distance, each to 1 d.p.

4. A boat is 50 m from a cliff. The angle of elevation to the top is $38°$. Find the cliff height to 1 d.p.

5. A 9 m slide makes an angle of $41°$ with the ground. Find the platform height and the ground distance, both to 1 d.p.

6. A support wire is 18 m long and makes an angle of $67°$ with the ground. Find the mast height to 1 d.p.

7. From the top of a 12 m building, the angle of depression to a point on the ground is $53°$. Find the distance from the base to the point, to 1 d.p.

8. A ramp rises 1.2 m and makes an angle of $8°$ with the ground. Find the ramp length to 2 d.p.

9. A kite string is 30 m long. The kite is 19 m high. Find the angle with the ground, then the horizontal distance to 1 d.p.

10. A tree is viewed from 14 m away at an angle of elevation of $61°$. Move 6 m further back. Find the new angle to the nearest degree.

11. Angle $36°$, adjacent 11 cm. Find the opposite side and the hypotenuse, both to 1 d.p.

12. Angle $57°$, opposite 8.4 m. Find the adjacent side and the hypotenuse, both to 1 d.p.

13. A pole is viewed at $48°$. Walk 7 m closer and the angle becomes $62°$. Find the pole height to 1 d.p.

14. A cable is 26 m long and makes an angle of $59°$ with the ground. Move the anchor 4 m further away. Find the new cable length to 1 d.p.