



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

Mana Maths

Te reo Māori terms



pākoki

trigonometry

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tapatoru hāngai

right-angle triangle

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tauaro

opposite

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tūtata

adjacent

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Using trig functions to calculate angles of a right-angled triangle – Foundation

1. Opposite 6 cm, hypotenuse 10 cm. Find the angle.
2. Adjacent 8 cm, hypotenuse 10 cm. Find the angle.
3. Opposite 9 m, adjacent 12 m. Find the angle.
4. Opposite 5 cm, hypotenuse 13 cm. Find the angle.
5. Adjacent 7 cm, hypotenuse 25 cm. Find the angle.
6. Opposite 11 m, adjacent 11 m. Find the angle.
7. Opposite 4 cm, adjacent 9 cm. Find the angle.
8. Opposite 15 m, hypotenuse 17 m. Find the angle.
9. Adjacent 12 cm, hypotenuse 13 cm. Find the angle.

- 10.** Opposite 14 m, adjacent 20 m. Find the angle.
- 11.** Ladder: rise 4 m, base 1.5 m. Find the ground angle.
- 12.** Ramp: rise 0.8 m, run 4 m. Find the angle.
- 13.** Kite: height 18 m, horizontal 24 m. Find the angle of elevation.
- 14.** Roof: rise 2.4 m, run 6 m. Find the angle.

Using trig functions to calculate angles of a right-angled triangle – Proficient

1. Opposite 7.2 cm, adjacent 9.5 cm. Find the angle to 1 d.p.
2. Adjacent 12 m, hypotenuse 18.4 m. Find the angle to 1 d.p.
3. Opposite 5.6 cm, hypotenuse 8.1 cm. Find the angle to 1 d.p.
4. Opposite 14.8 m, adjacent 6.9 m. Find the angle to 1 d.p.
5. Adjacent 11.3 cm, hypotenuse 13.2 cm. Find the angle to 1 d.p.
6. Opposite 8.7 m, adjacent 15.4 m. Find the angle to 1 d.p.
7. Ladder: rise 5.8 m, base 2.4 m. Find the ground angle to 1 d.p.
8. Plane: rise 1.2 km, run 6.5 km. Find the climb angle to 1 d.p.
9. Sign: height 4.3 m, distance 18 m. Find the angle to the top.

10. Wire: height 8.9 m, hypotenuse 9.7 m. Find the ground angle.

11. Cliff: height 37 m, base distance 52 m. Find the angle.

12. Ramp: rise 0.9 m, length 7.5 m. Find the angle.

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

1. Drone: height 48 m, horizontal 36 m. Find the angle of elevation.
2. Guy wire: height 14 m, base 5.5 m. Find the ground angle.
3. Rescue ladder: length 10.5 m, rise 9.2 m. Find the angle.
4. Shed roof: rise 1.8 m, run 3.6 m. Find the pitch angle.
5. Cliff: base distance 28 m, angle 63° . Is the height closer to 50 m or 60 m? Justify.
6. Tree shadow 9.4 m, sun angle 38.5° . Find the tree height.
7. Ramp: length 6.2 m, rise 0.65 m. Does it stay below 6° ?
8. Tent side: length 2.8 m, height 2.1 m. Find the ground angle.
9. Opposite 13.7 cm, adjacent 13.7 cm. Find the angle and explain.

- 10.** Cable car: rise 180 m, slope 420 m. Find the angle.
- 11.** Lighthouse: height 22 m, angle of depression 34° . Find the base distance.
- 12.** Skate ramp: rise 0.9 m, run 2.4 m. Find the angle.
- 13.** Roof beam: length 5.6 m, angle 27° . Find the rise.
- 14.** Mountain path: rise 320 m, run 1.05 km. Find the angle.
- 15.** Ladder angle 72° , base 1.8 m. Find the height reached.
- 16.** Triangles with opposite:adjacent ratio 3 : 4 share what angle? Explain.