YEAR 11

Trigonometry

Pythagoras first: it needs no angles. For SOHCAHTOA, label the sides against the angle you are given before you choose a ratio. Give answers to 1 decimal place unless the numbers are exact.

Name: Date: Score:

Section A · Pythagoras

$a^2 + b^2 = c^2$, where c is the hypotenuse. These all give whole numbers.

1. A right-angled triangle has shorter sides of 6 cm and 8 cm. Find the hypotenuse.

2. A right-angled triangle has shorter sides of 5 cm and 12 cm. Find the hypotenuse.

3. A right-angled triangle has shorter sides of 9 cm and 12 cm. Find the hypotenuse.

4. A right-angled triangle has a hypotenuse of 13 cm and one shorter side of 5 cm. Find the other shorter side.

5. A right-angled triangle has a hypotenuse of 25 cm and one shorter side of 7 cm. Find the other shorter side.

6. A right-angled triangle has a hypotenuse of 17 cm and one shorter side of 8 cm. Find the other shorter side.

Section B · Finding a side

Label the sides O, A and H first, then pick sin, cos or tan.

1. A right-angled triangle has a hypotenuse of 10 cm and an angle of 30°. Find the side opposite that angle.

2. The side opposite an angle of 40° is 7 cm. Find the hypotenuse.

3. The side adjacent to an angle of 55° is 9 cm. Find the opposite side.

4. A right-angled triangle has a hypotenuse of 14 cm and an angle of 62°. Find the side adjacent to that angle.

Section C · Finding an angle

You know two sides, so use the inverse: $\sin^{-1}$, $\cos^{-1}$ or $\tan^{-1}$.

1. In a right-angled triangle the opposite side is 4 cm and the adjacent side is 6 cm. Find the angle.

2. The opposite side is 5 cm and the hypotenuse is 9 cm. Find the angle.

3. The adjacent side is 8 cm and the hypotenuse is 11 cm. Find the angle.

4. A ladder 5 m long leans against a wall, reaching 4.2 m up it. Find the angle between the ladder and the ground.

5. A ramp rises 1.5 m over a horizontal distance of 8 m. Find the angle of the ramp to the horizontal.