

FORM 3 MATHEMATICS: REVISION SHEET

Right-Angled Triangles and Pythagoras' Theorem

Name: _____ Class: Form 3. _____ Date: _____

Remember: Polya's four steps	Pythagoras' Theorem
1. Understand: read, underline, draw and label the triangle. 2. Plan: is the missing side the hypotenuse or a shorter side? 3. Carry Out: substitute, calculate, write the answer with units. 4. Look Back: is the answer reasonable? The hypotenuse is the longest side.	Hypotenuse: $c^2 = a^2 + b^2$ Shorter side: $a^2 = c^2 - b^2$ The hypotenuse is opposite the right angle. Never add the sides, and do not forget the square root.

Use a calculator. Show all your working. Where asked, give answers correct to 1 decimal place. Diagrams are not drawn to scale.

Part A: Finding the Hypotenuse

1. The shorter sides of a right-angled triangle are 8 cm and 15 cm. Calculate the length of the hypotenuse.

Working:

2. A right-angled triangle has shorter sides of 12 m and 16 m. Calculate the length of the hypotenuse.

Working:

3. In triangle PQR the right angle is at Q, PQ = 10 cm and QR = 24 cm. Draw and label the triangle, then calculate PR.

Working:

4. The shorter sides of a right-angled triangle are 6 cm and 9 cm. Calculate the length of the hypotenuse, correct to 1 decimal place.

Working:

Part B: Finding a Shorter Side

5. The hypotenuse of a right-angled triangle is 25 cm and one of the other sides is 7 cm. Calculate the length of the third side.

Working:

6. A right-angled triangle has a hypotenuse of 15 m and a shorter side of 9 m. Calculate the length of the other shorter side.

Working:

7. In triangle ABC the right angle is at B, $AC = 41$ cm and $AB = 9$ cm. Draw and label the triangle, then calculate BC.

Working:

8. The hypotenuse of a right-angled triangle is 20 cm and one of the other sides is 14 cm. Calculate the length of the third side, correct to 1 decimal place.

Working:

Part C: Real World Problems (use all four of Polya's steps)

9. A school hall is 24 m long and 18 m wide. Tia walks along the length and then along the width to get from one corner to the opposite corner. Marcus walks straight across the hall.
(a) Calculate the distance Marcus walks. (b) How much shorter is Marcus's walk than Tia's walk?

Understand (draw and label) / Plan / Carry Out / Look Back:

10. A vertical pole is 12 m tall. A wire is stretched from the top of the pole to a point on the ground 9 m from the base of the pole. Calculate the length of the wire.

Understand (draw and label) / Plan / Carry Out / Look Back:

11. A cable 25 m long runs from the top of a tower to a point on the ground 15 m from the base of the tower. Calculate the height of the tower.

Understand (draw and label) / Plan / Carry Out / Look Back:

12. Challenge: A ladder 6.5 m long reaches a window 6 m above the ground. How far is the foot of the ladder from the wall?

Understand (draw and label) / Plan / Carry Out / Look Back:

My own question: Write one real world problem of your own that can be solved using Pythagoras' Theorem, and bring it to the next session.

My problem: