## 1.4 Seam of gold

1.4.1 Pythagoras' Theorem

1. A right angled triangle has two perpendicular sides equal to 4 and 3 cm. What is the length of the hypotenuse?
2. A right angled triangle has a hypotenuse of length 10 cm and one other side of length 2 cm. What is the length of the 3rd side?
3. A right angled triangle has a height of length 15 cm. If its area is 50 cm^2 what is the length of the two other sides? (note the area of a triangle $= \frac{1}{2} base \times height$).

1.4.2 Similar triangles

1. A right angled trangle has two perpendicular sides of length 10 and 15 cm. If a similar triangle has a hypotenuse of length 1 cm, how long are its two other sides?
2. A triangle has lengths 10, 20 and 5 cm. If a similar triangle has shortest side equal to 1 cm, what are the lengths of the two other sides?

1.4.3 Trigonometric ratios

The questions below are about triangles labelled as in the Figure below:
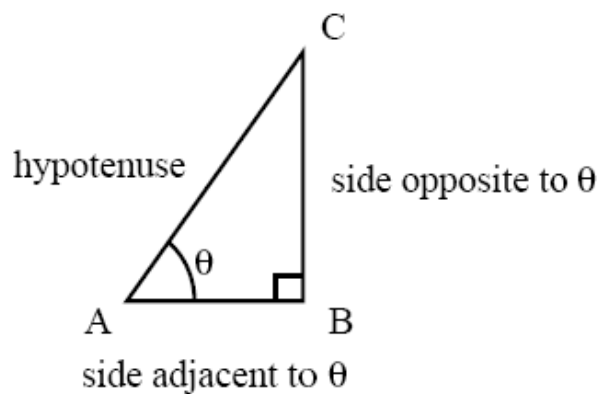
1. A right angled triangle, ABC, has AB= 10 and BC= 25, what is the angle θ?
2. A right angled triangle, ABC, has $\theta = 40°$ and AB= 5, what is the length of the hypotenuse?
3. A right angled triangle, ABC, has $\theta = \frac{\pi}{8}$ radians and BC= 10, what is the length of the hypotenuse?
4. A right angled triangle, ABC, has a hypotenuse of length 50 and BC= 10, what is the angle θ in radians?

Answers to Pythagoras' Theorem:

1. 5 cm.
2. 9.8 cm.
3. 6.6 and 16.41 cm.

Answers to Similar triangles:

1. 0.56 cm and 0.83 cm.
2. 4 and 2 cm.

Answers to Trigonometric ratios:

1. 68.2°
2. 6.53
3. 26.13
4. 0.20 radians