Worksheet 23: Right-angled triangles
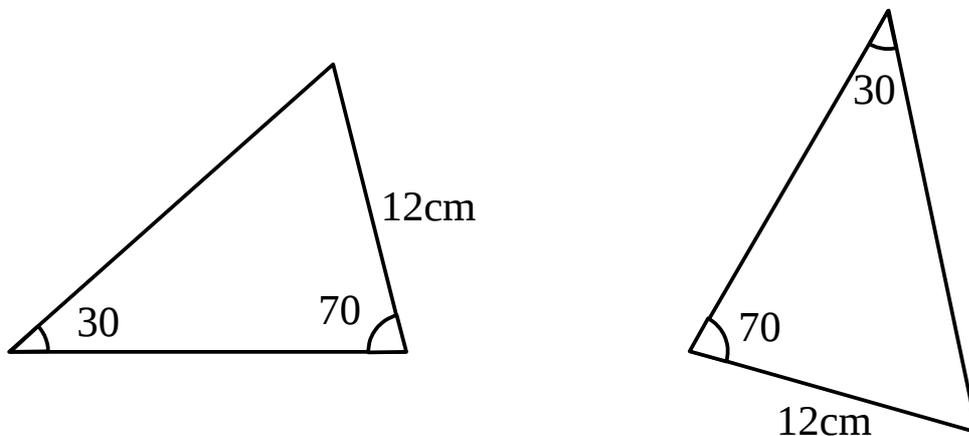
Similarity, congruence, Pythagoras' result and a few trigonometry questions.

Similarity and congruence

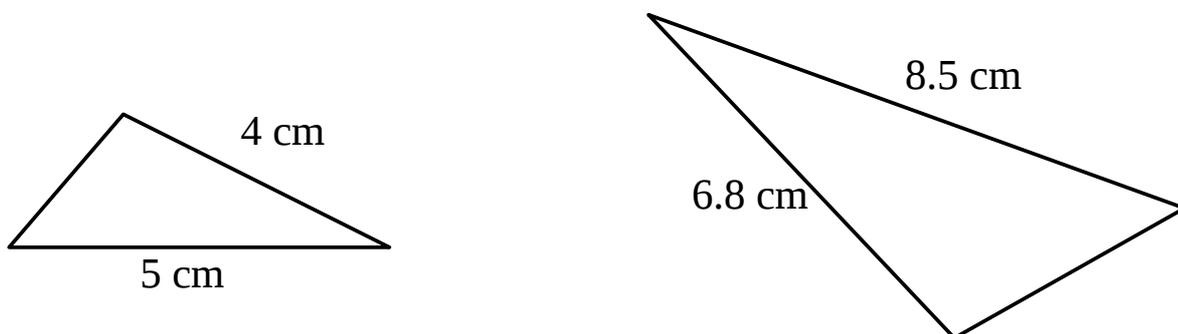(Actually any shape not just triangles)

Question 1

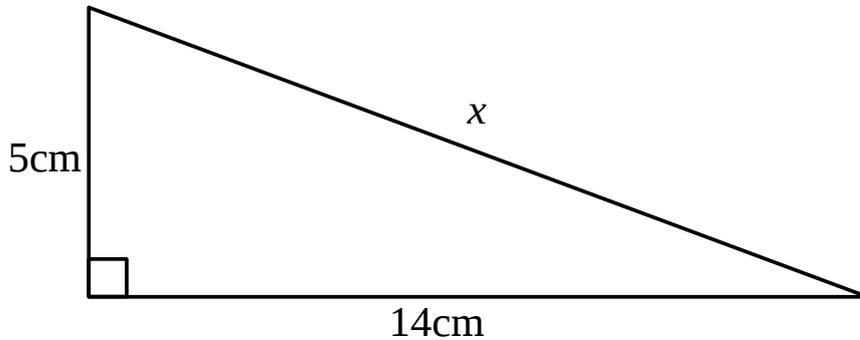Is this pair of triangles congruent? If so, explain the criteria they meet

Question 2

Is this pair of triangles similar? If so, find the scale factor

Pythagoras' result
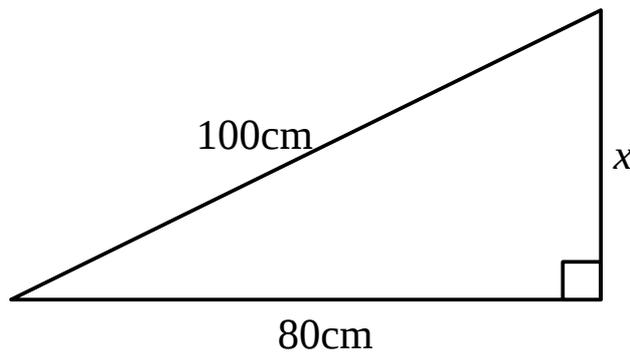
Question 1

Find the length of the side marked x in the triangle below correct to 1 d.p.

5cm

x

14cm

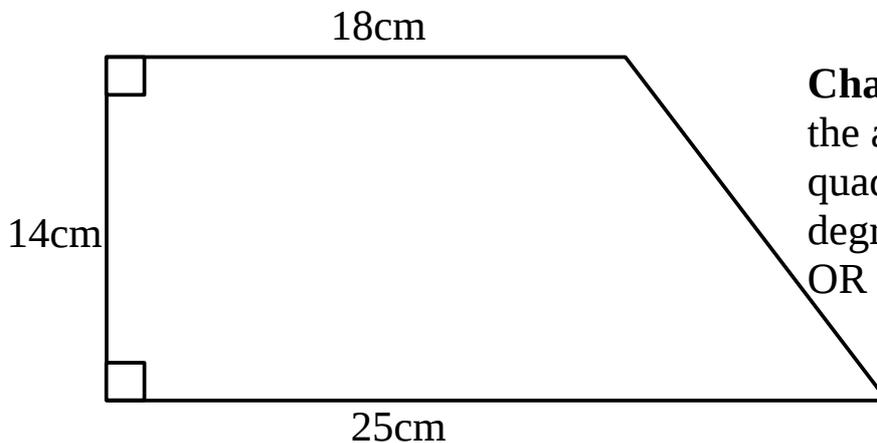**Challenge**: Calculate the size of the smaller acute angle in the triangle.

Question 2

Find the length of the side labelled x without using a calculator.

100cm

x

80cm

Challenge: calculate the size of the two acute angles using trigonometry. You *will* need a calculator.
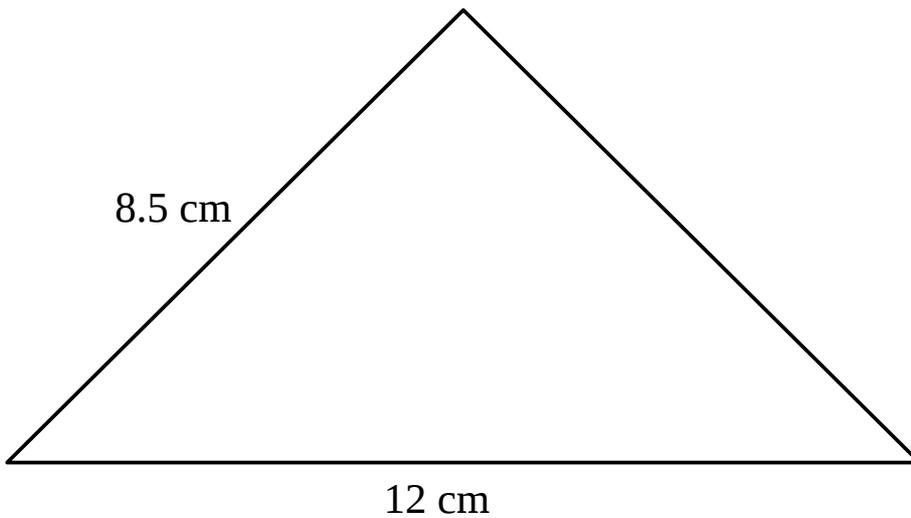
Question 3

Find the <u>perimeter</u> of the shape below. Round your answer to 1 d.p.

18cm

14cm

25cm

Challenge: Check that the angles in this quadrilateral add to 360 degrees by calculation OR by construction.
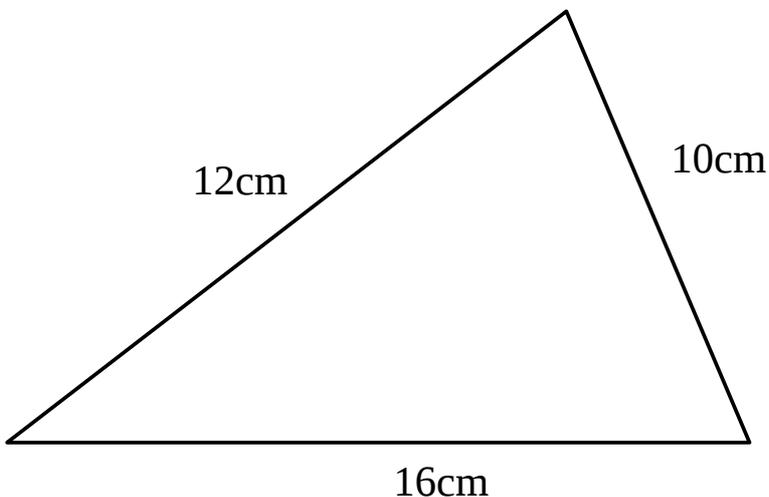
Question 4

Find the <u>area</u> of this isosceles triangle.

8.5 cm

12 cm

Question 5

Algernon says that the triangle below has a right angle.

Is he right? Explain your answer and show detailed calculations.

12cm

10cm

16cm

Challenge: use your compass and ruler to construct this triangle on a blank sheet of paper and check your result by measuring the angles

Higher challenge: calculate the angles in the triangle using the cosine and sine rules.
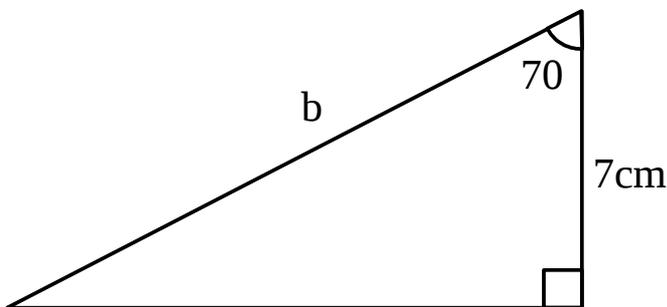
Trigonometry

Question 1

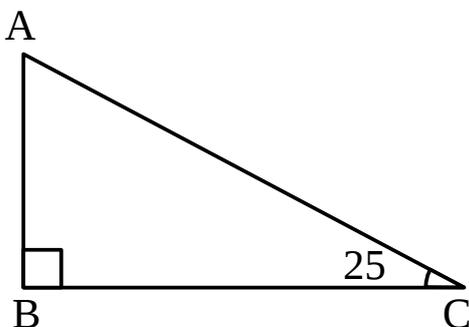Calculate the value of angle *a* in the triangle below. Give your answer to 1 decimal place of degrees.

10cm

22cm

a
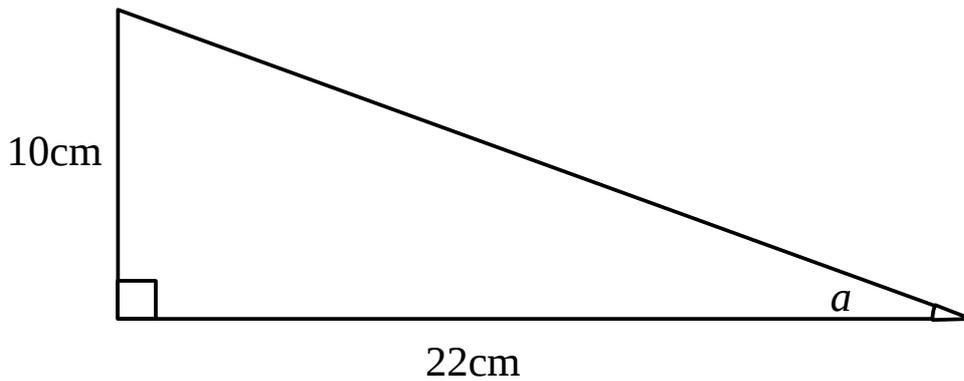
Question 2

Calculate the length of side b of the triangle below. Round to 1d.p.

70

b

7cm

Question 3

A

B

25

C

AC = 15cm. Angle ACB = 25°. Calculate the length of AB to 1 d.p.