HOME EXERCISE 3
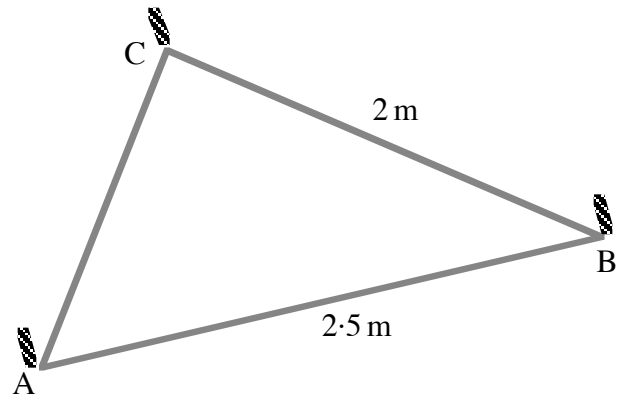
Set out carefully all appropriate working.

1. Evaluate: $4\frac{1}{5} + \frac{2}{3}$ of $1\frac{3}{4}$ (3)

2. Multiply out the brackets and simplify the terms fully: $(x+3)(x^2-2x+5)$ (3)

3. Factorise: (a) $t^2 + 3t - 10$ (b) $2m^2 - 3m - 5$ (3)

4. Light travels at a speed of $1\cdot86 \times 10^5$ miles per **second**.

   A certain star is a distance of $2\cdot4 \times 10^{14}$ miles from Earth.

   How long, **to the nearest year**, does it take light from the star to reach Earth? (4)

5. A loop of rope 6 metres long is used to mark out a trianglular plot ABC as shown.

   Pegs are positioned at A, B and C such that AB is 2·5 metres and BC is 2 metres long.
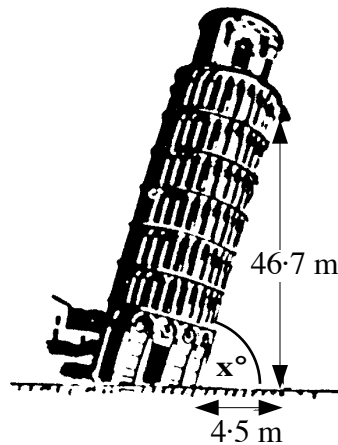

   Show that angle ACB is a right-angle. (3)

6. The famous Leaning Tower of Pisa is shown in the picture.

   Measured from the 7th floor 46·7 metres high, the tower leans out 4·5 metres from the vertical.

   If the angle between the tower and the ground is **less than 85°** then the tower is **not** safe.

   Is the tower safe? (4)

   Justify your answer with appropriate working.

   Total 20 marks