1.   Solve algebraically the equation:

   $4x + 1 = 2x + 7$

2.   Solve:

   $5x - 2 = 2x + 4$

3.   Solve

   $3y + 2 = 17$

4.   Solve

   $3a + 2 = 7a - 22$

5.   Solve

   $3a + 2 = 7a - 22$
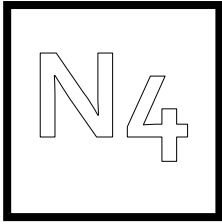
6.   Solve

   $21 - 3x = x + 5$

7.   Solve

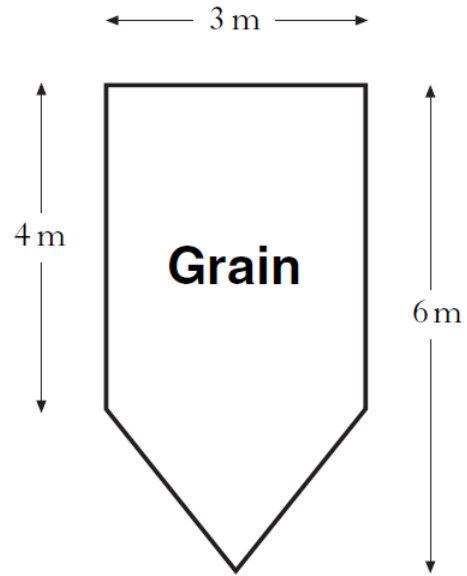 $20 - 2b = 3b$

8.   Solve

   $4(2a + 1) = 28$
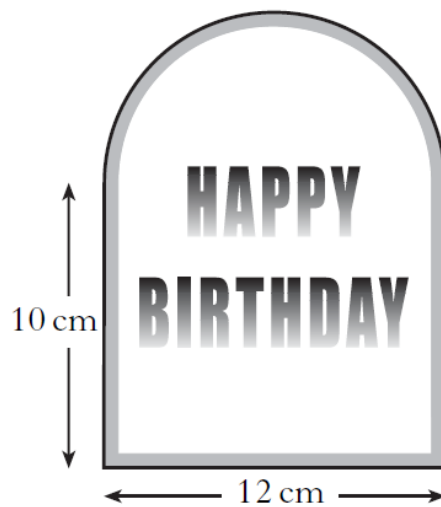
9.   Solve

   $3(2a - 1) = a + 17$

1. The end face of a grain hopper is shown in the diagram.

3 m

4 m

Grain

6 m

Calculate the area of the end face.

2. The diagram below shows a birthday card.
The card consists of a rectangle and a semi-circle.
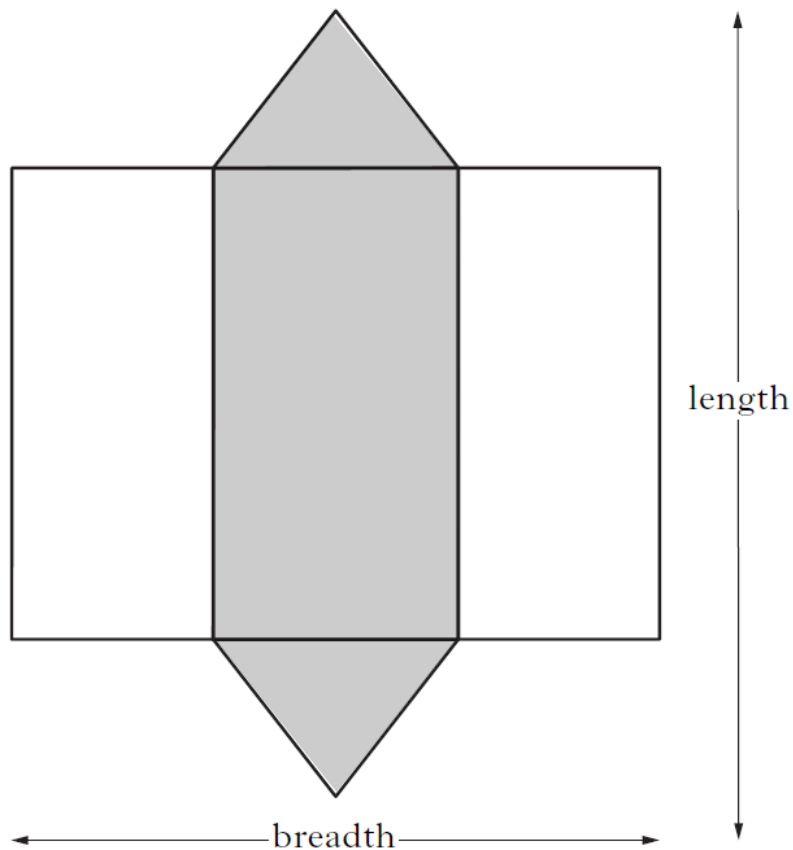
**HAPPY
BIRTHDAY**

10 cm

12 cm

Find the area of the card.

3.   The diagram shows a triangular prism.
      The dimensions are given on the diagram.
      A **net** of this triangular prism is shown below.
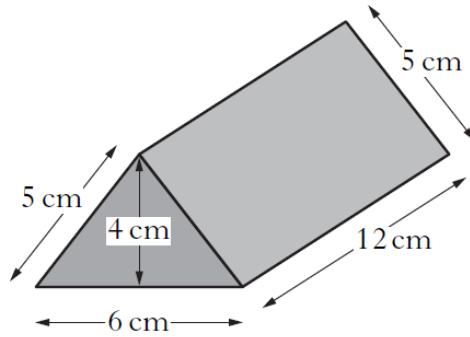
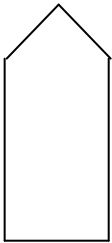Calculate the area of the shaded portion of the net.
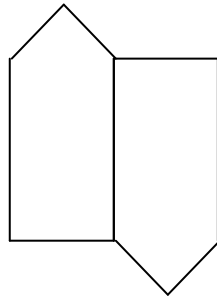
1. Laura is working on the design for a bracelet. She is using matches to make each shape.

Shape 1   Shape 2   Shape 3   Shape 4
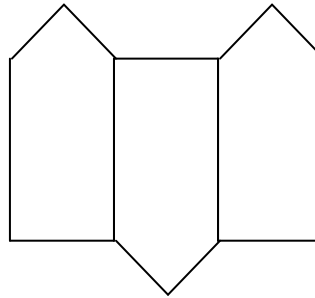
a) Draw shape 4.

b) Complete the following table:

Shape Number (s)	1	2	3	4	5	6		13
Number of Matches (m)								

c) Find a formula for calculating the number of matches (m) in terms when you know the shape number (s).

d) Which shape number uses 61 matches?

2.   3, 5, 7, 9, 11

   a)   Find the next two numbers in the sequence of numbers above.

   b)   Write down a formula that can be used to find any number in the sequence.

   c)   What is the 28th number in this sequence?

3.   Mike is building a fence for his garden. He uses 3 short lengths of wood between 2 long lengths of wood.
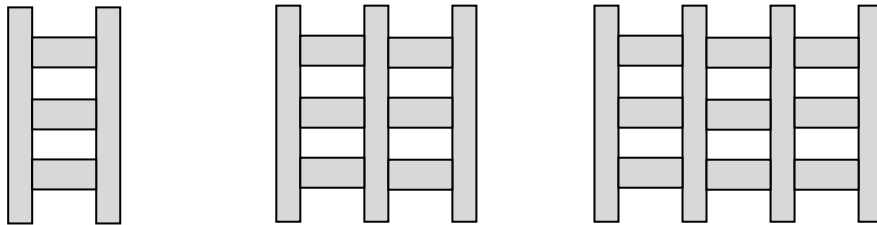
   a) Complete the following table:

Number of long lengths (l)	2	3	4	5	6	7
Number of short lengths (s)						

   b) Create a formula for calculating the number of short lengths of wood (s) if you know the number of long lengths of wood (l).

   c) Use this formula to calculate how many short lengths of wood Mike would need between 42 long lengths of wood.
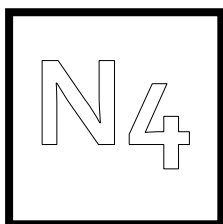
1.   Kenny travelled by car to play golf in St. Andrews.
      The journey of 70 kilometres took 1 hour 45 minutes.

      What was the average speed of this journey?
      Give your answer in kilometres per hour.

2.   David made a journey of 368 Km on his motorbike.
      He drove at an average speed of 80 Km/hr.
      How long did the journey take him?

3.   Travelling at an average speed of 50mph, Lesley's journey takes her 2 hours
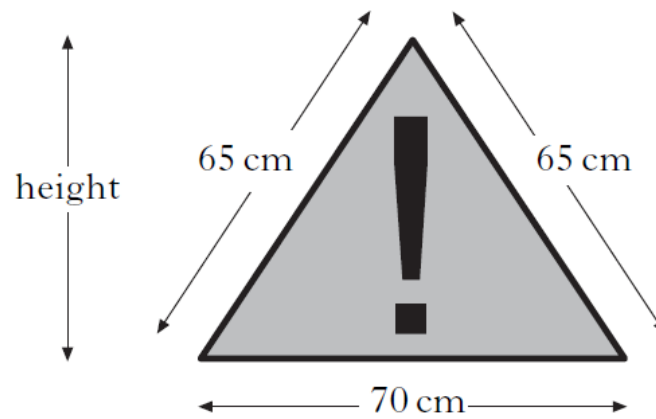   54 minutes.
      How many miles did Lesley travel?

1. A warning sign is in the shape of an isosceles triangle.

    height | 65 cm ! 65 cm

    70 cm

    Calculate the height of the sign.
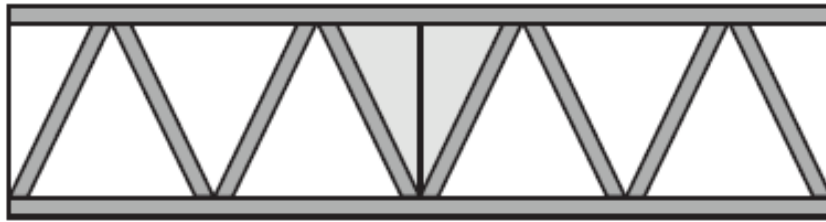
2.

Maggie has bought a garden shed.

The dimensions for one side of the shed are shown in the diagram below.
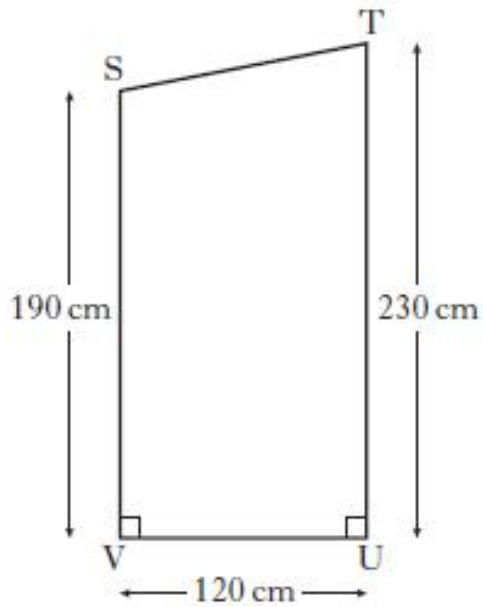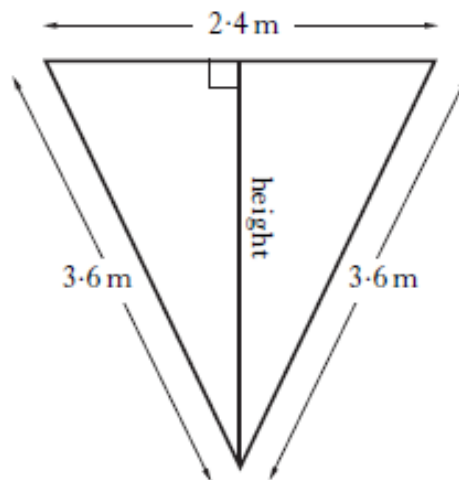

Calculate the length of ST.

Do not use a scale drawing.

3. A steel plate in the shape of an isosceles triangle is used to strengthen a bridge.

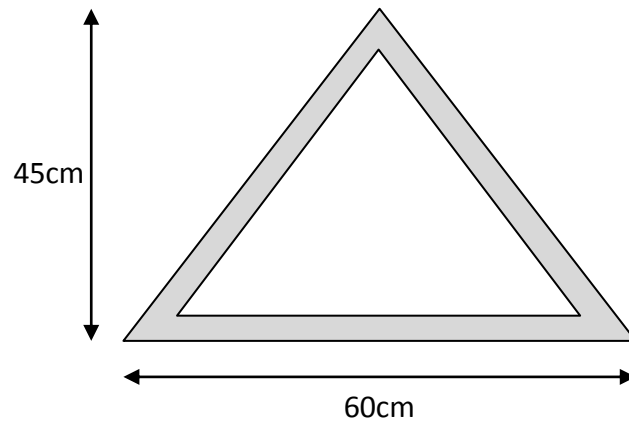The dimensions of the isosceles triangle are shown below.

2·4 m

height

3·6 m   3·6 m

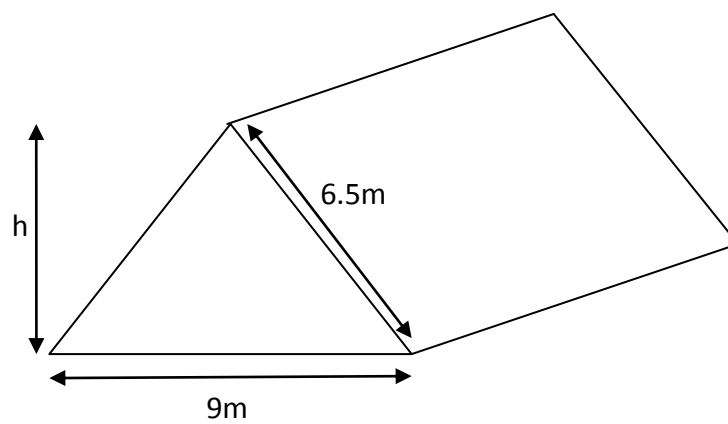Calculate the height of the steel plate.

Do not use a scale drawing.

4. A road sign is in the shape of an isosceles triangle.

The base of the triangle is 60 centimetres and the height is 45 centimetres as shown.
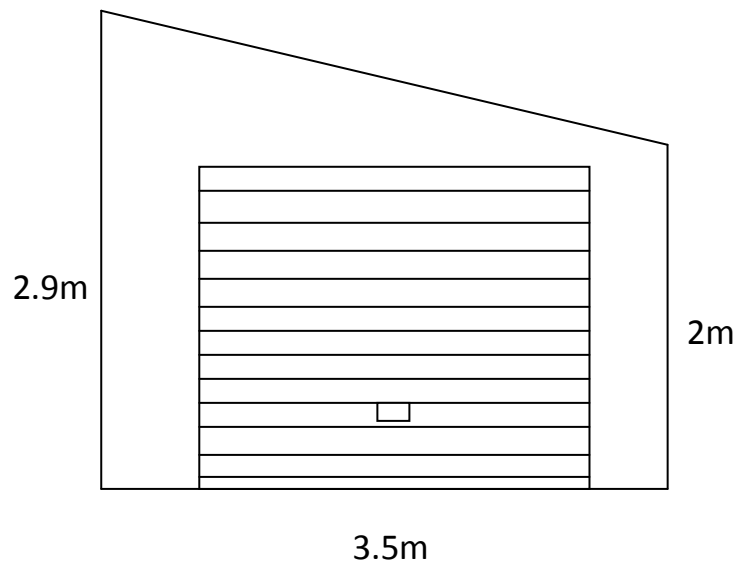

45cm

60cm

Calculate the perimeter of the sign.

5. The front of the tent shown below is an isosceles triangle.

6.5m

h

9m

Calculate the height of the tent (h).
Do not use a scale drawing.

6.   The diagram shows the front view of a garage.

2.9m

2m

3.5m

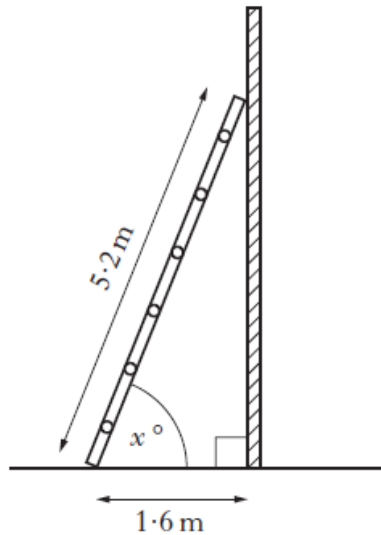Calculate the length of the sloping edge of the roof.

Do not use a scale drawing.

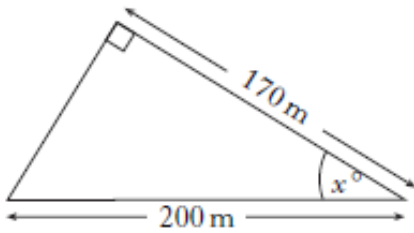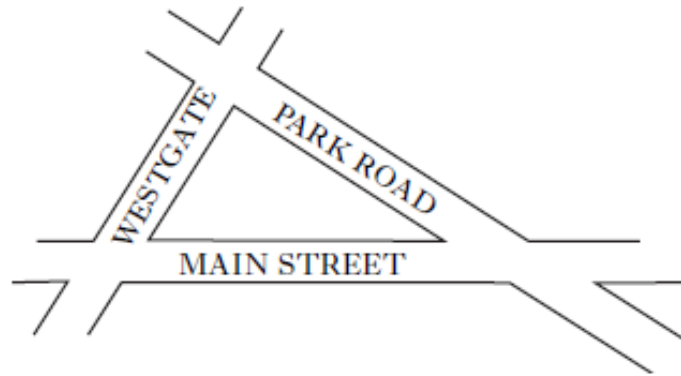1. A ladder which is 5·2 metres long is placed against a wall.

    The foot of the ladder is 1·6 metres from the wall.

    The size of the angle between the ladder and the ground is $x°$.

    Calculate x.

    Do not use a scale drawing.

2. Calculate the height, h metres, of the trapezium shown below.

    Do not use a scale drawing.
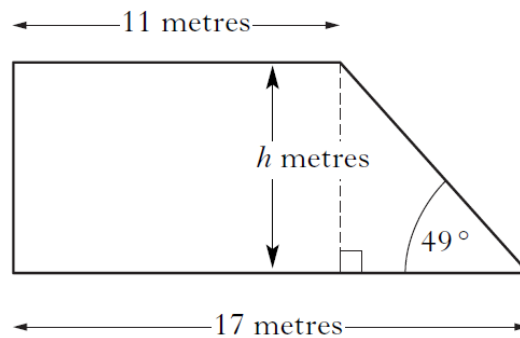
3. Three roads form a right angled triangle as shown in the diagram.

MAIN STREET

- Main Street is 200 metres long.
- Park Road is 170 metres long.
- The angle between Westgate and Park Road is 90°.

170 m

200 m

The size of the angle between Main Street and Park Road is $x°$.

Calculate x.

Give your answer to **one decimal place**.

4. Kate is flying a kite.

She lets out 32 metres of string, pulled tight, at 65° to the ground.

Height

32 m

65°
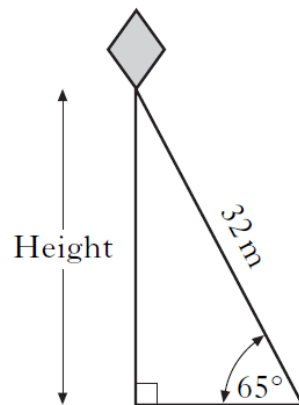
Calculate the height of the kite as shown in the diagram.

Do not use a scale drawing.

1. (a) Draw coordinate axes on squared paper and plot the points A(–1, 1), B(2, 3) and C(5, 1).

    (b) Plot a fourth point D to form a rhombus ABCD.
         Join up the points to show the rhombus ABCD.

    (c) Write down the coordinates of the point D.

2. a) Draw a coordinate grid **on squared paper** and plot the points P(2, 3), Q(-1,2),R(2,-2)

    b) Plot a fourth point S to form a kite PQRS.
        Join up the points to show the kite PQRS.

    c) Write down the coordinates of the point S.

3. a) Draw a coordinate grid **on squared paper** and plot the points A(-1,3), B(3,3), and C(2,1).

    b) Plot a fourth point D to form a parallelogram ABCD.
        Join up the points to show the parallelogram ABCD.

    c) Write down the coordinates of the point D.