MATHEMATICS AND STATISTICS 1.8

**Internally assessed
3 credits**

Achievement Standard 91033
Apply knowledge of geometric representations in solving problems

Question 1

Jack is making a scale drawing of a treasure trail on the school front field.

He starts at the flagpole, F, and the first instruction is to travel to the point A, which is a distance of 40 metres away on a compass bearing of 225°.

The second instruction is to travel from to the point B, which is a distance of 60 metres from A on a bearing of 090°.

a. Use a ruler and protractor to make a scale drawing of the first two stages of the treasure trail F → A → B. (Use a scale of 1 cm to 10 metres.)
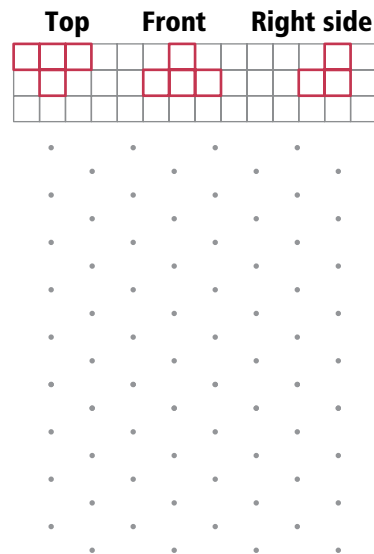
North

• F

b. Write down the reverse instructions (distances and directions), for travelling from point B to point A, and then from point A back to point F.

_____

_____

_____

_____

_____

Question 2

On the isometric grid draw the 3 dimensional view of the shape using its front, top, and right side views.

Indicate the front face on your diagram.

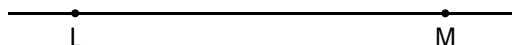**Top   Front   Right side**

Question 3

An apple is on a branch of a tree at the point A, and falls vertically to the ground. Using ruler and compasses construct the straight line of the shortest path of the apple as it falls to the ground.

A
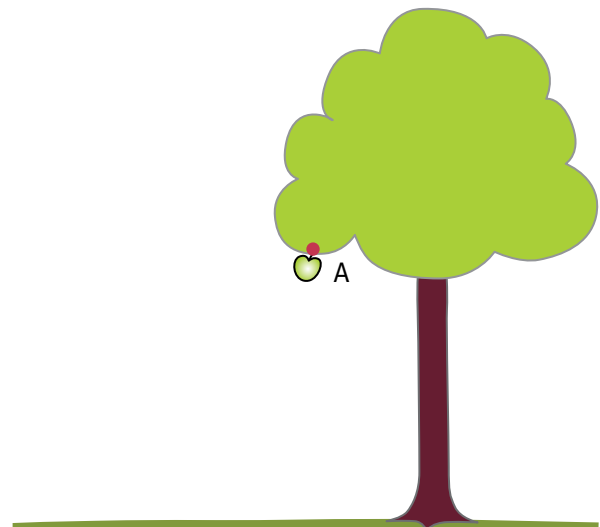
Question 4.

Two points L and M are 5 cm apart. Using ruler and compasses construct the set of points that are 4 cm from the point L and 3 cm from the point M.

L ———————————————— M

Question 5

The figure ABCD shows a scale drawing of the floor of a room, divided into squares.

The squares of the grid are 1 metre by 1 metre.

A   D

B   C

a. Using compasses, construct the locus of points inside the room that are at a distance of 3 metres from the point B.

b. Shade the region of points inside the room that are less than or equal to 3 metres from the point B.

c. Using compasses and a ruler, construct the locus of points inside the room that are closer to the line CD than to the line AD.

d. On your drawing mark the point P inside the room that is 3 metres from the corner B and equidistant from CD and AD.
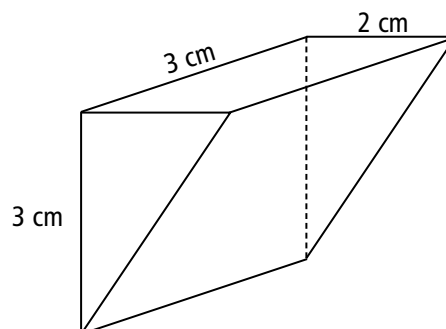
Question 6

The figure below is the net of an open box (no lid).
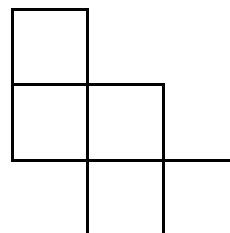
a. On the figure, shade the square that is the base of the open box.

b. Add another square to the figure so that the six squares form the net of a closed box (with a lid).

Question 7

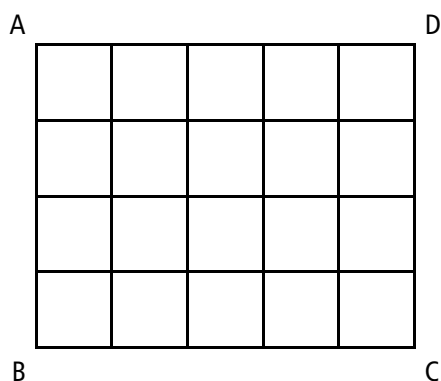The figure shows a solid (a three-dimensional shape).

2 cm

3 cm

3 cm

a. What is the name of this shape?

_____

b. In the space below, draw the net of this solid shape.

Note: The word 'net' is another name for a two-dimensional drawing of a solid.

Do an accurate drawing so it is clear which lines are of equal length.

Question 8

The sketch shows part of the net of a three-dimensional pyramid.

All the measurements are in cm.

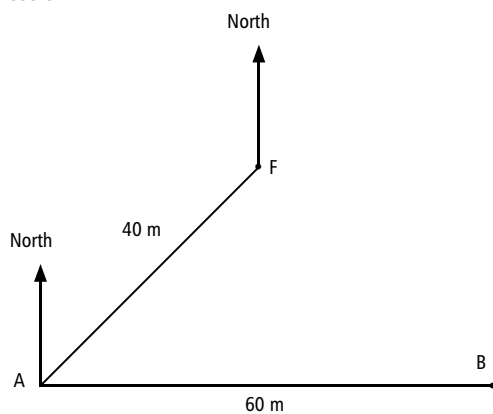a. Neatly add to the figure an accurate drawing of the missing triangle which completes the net.
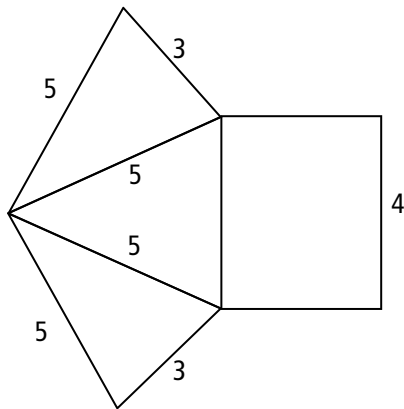
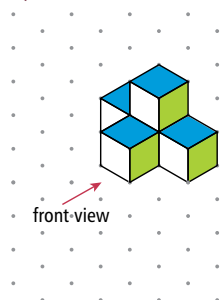b. Make a neat sketch of the three-dimensional pyramid.

Solutions

Question 3
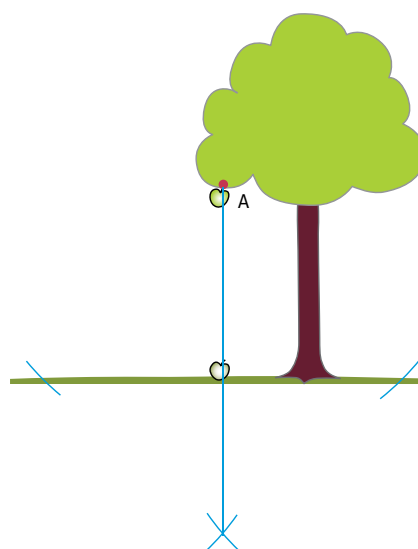
Question 1

a.

b. B to A is 60 metres on a bearing of 270°; A to F is 40 metres on a bearing of 045°.
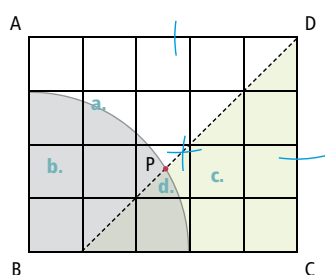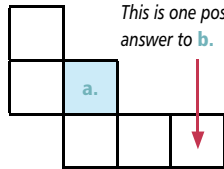
Question 2

front view
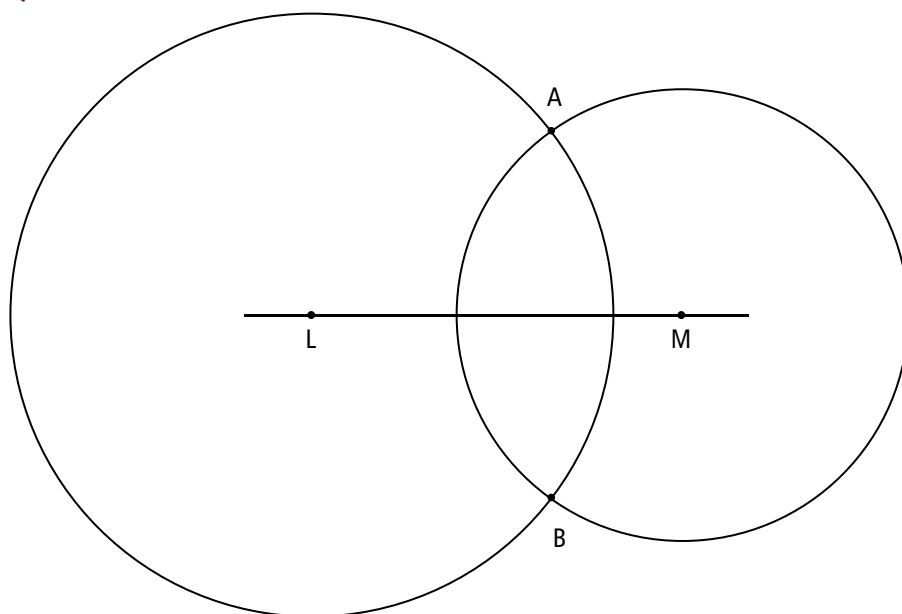
Question 4

There are two points labelled A and B.
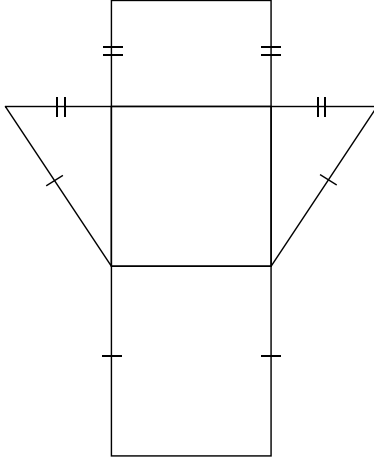
Question 5

Question 6

a. b.

This is one possible answer to **b.**
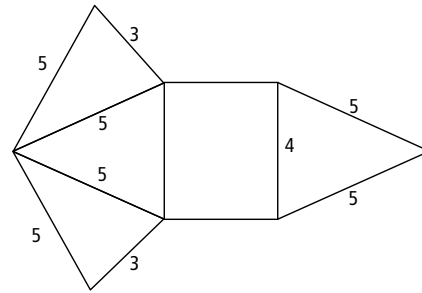
Question 7

a. A triangular prism (or triangle-based prism)

b.

Question 8

a. *A possible solution is shown.*

b. Base is a 3 by 4 rectangle, sloping sides are of length 5.