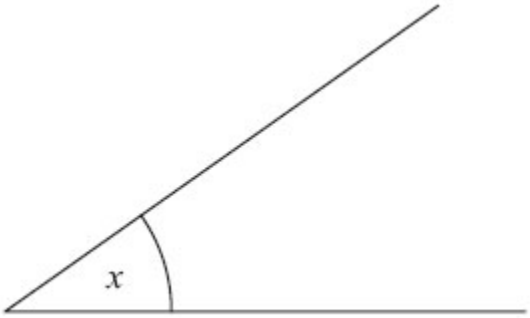
Foundation tier unit 15a check in test

Non-calculator

Q1. John is facing North.
He turns a quarter-turn clockwise, then a three-quarter turn anticlockwise.
In what direction does he end up facing?

Q2. Measure the length of the line *AB*.
Give your answer in centimetres.

Q3. Measure the size of angle *x*.

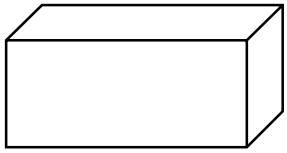


Q4. In the space below, draw accurately a circle of radius 5 cm.
Use the point *C* as the centre of your circle.

Q5. Amanda describes a 3D shape.
It has two triangular ends and three rectangular faces.

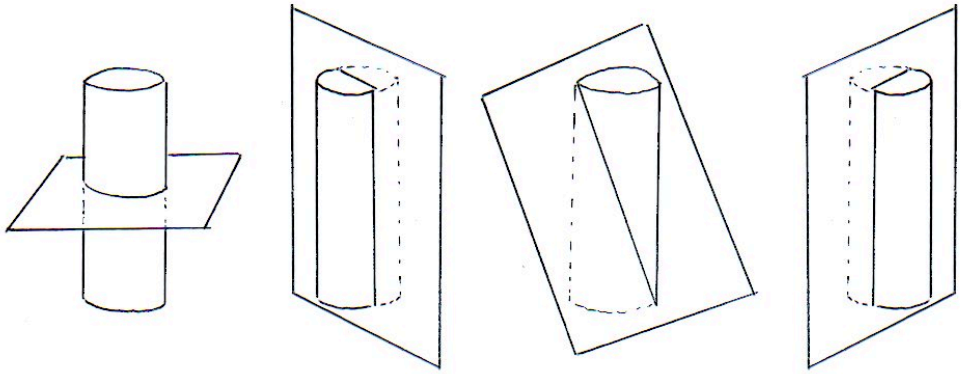
What is the shape?

Q6. Here is a 3D shape.



How many faces, vertices and edges does it have?

Q7. Which of these diagrams does **not** show a plane of symmetry of this cylinder?



A B C D

Q8. Here is a sketch of a triangle.

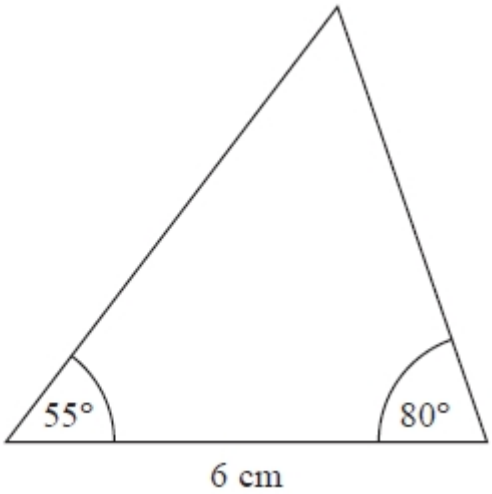
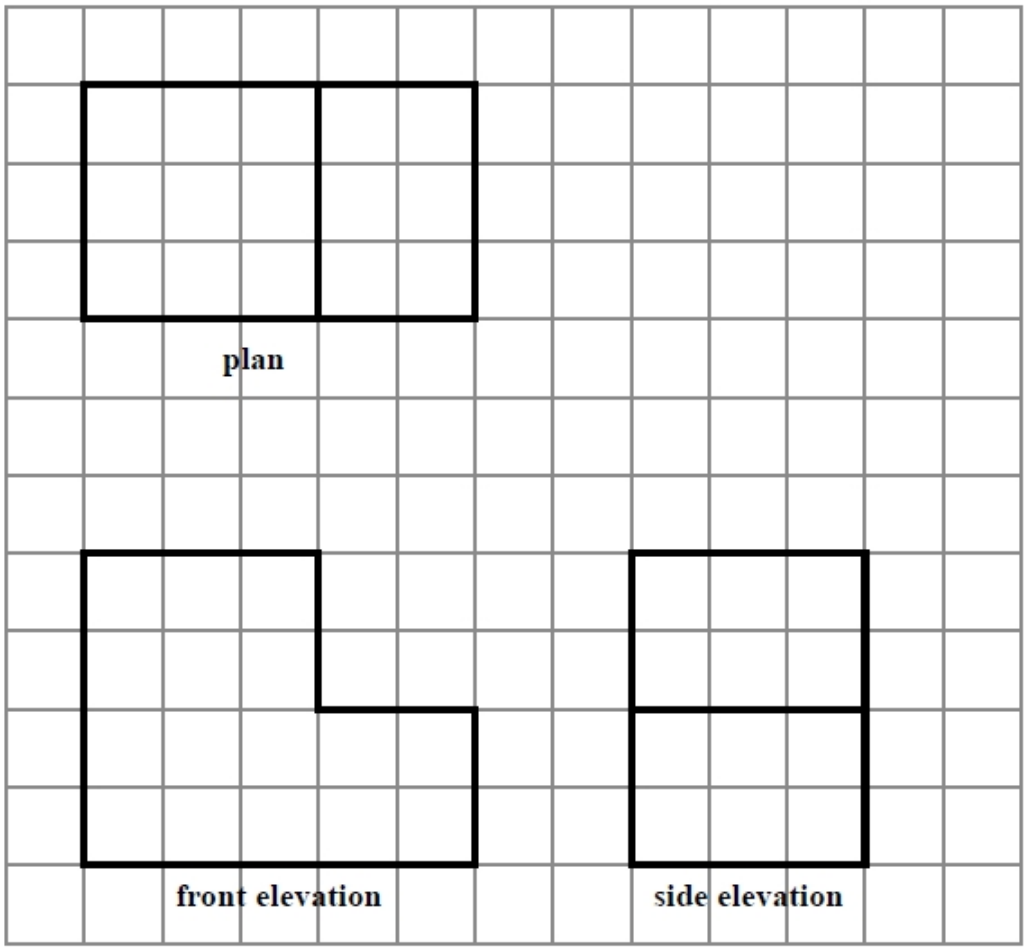


Diagram **NOT** accurately drawn

In the space below, make an accurate drawing of the triangle.

Q9. The plan, front elevation and side elevation of a solid prism are drawn on a centimetre grid.



In the space below, draw a sketch of the solid prism.
Write the dimensions of the prism on your sketch.

Q10. Here is a pyramid with a square base.
The sloping faces are identical isosceles triangles.

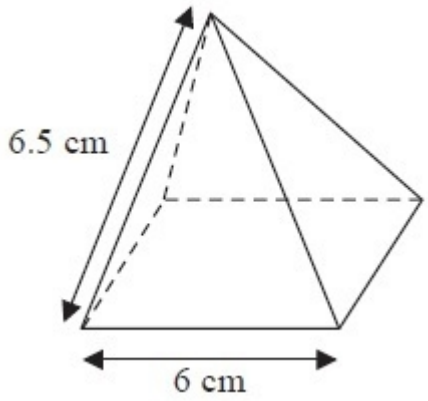


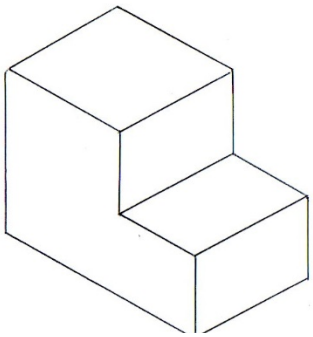
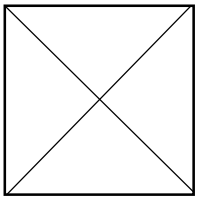
Diagram **NOT** accurately drawn

Draw a full size accurate plan of the pyramid on the centimetre square grid.

Topics listed in objectives

- Understand clockwise and anticlockwise;
- Draw circles and arcs to a given radius or given the diameter;
- Measure and draw lines, to the nearest mm;
- Measure and draw angles, to the nearest degree;
- Know and use compass directions;
- Draw sketches of 3D solids;
- Know the terms face, edge and vertex;
- Identify and sketch planes of symmetry of 3D solids;
- Make accurate drawings of triangles and other 2D shapes using a ruler and a protractor;
- Construct diagrams of everyday 2D situations involving rectangles, triangles, perpendicular and parallel lines;
- Understand and draw front and side elevations and plans of shapes made from simple solids;
- Given the front and side elevations and the plan of a solid, draw a sketch of the 3D solid.

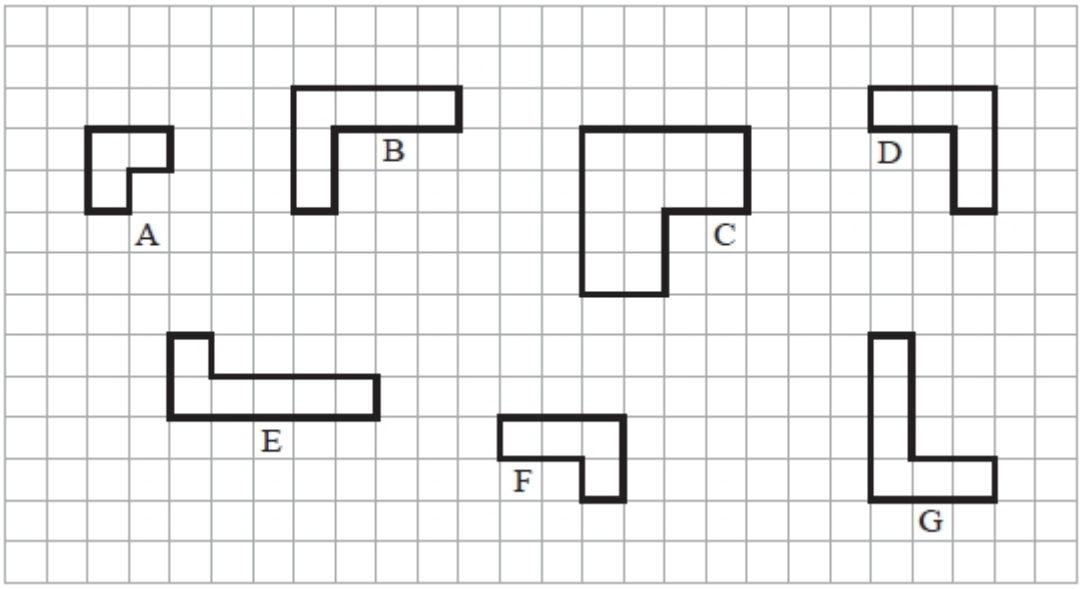
Answers

1. South
2. 8 cm
3. 35°
4. accurately drawn circle of radius 5 cm
5. triangular prism
6. 6 faces, 8 vertices, 12 edges
7. C
8. accurately drawn triangle
9. 
10. 

Foundation tier unit 15b check in test

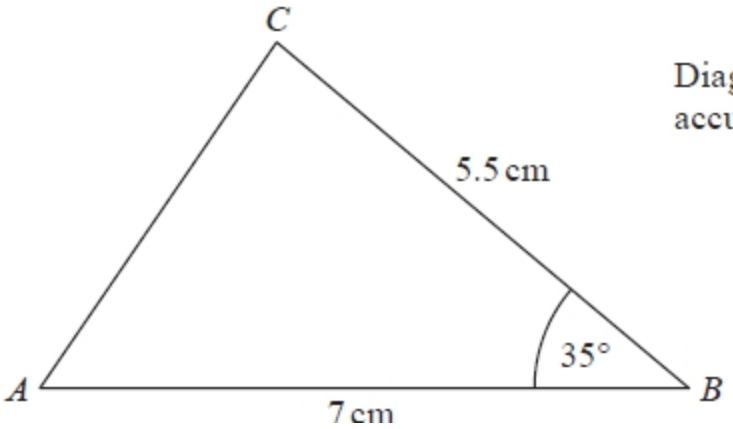
Non-calculator

Q1. Here are seven shapes shown on a grid.



Two of the shapes are congruent.
Write down the letters of these two shapes.

Q2.

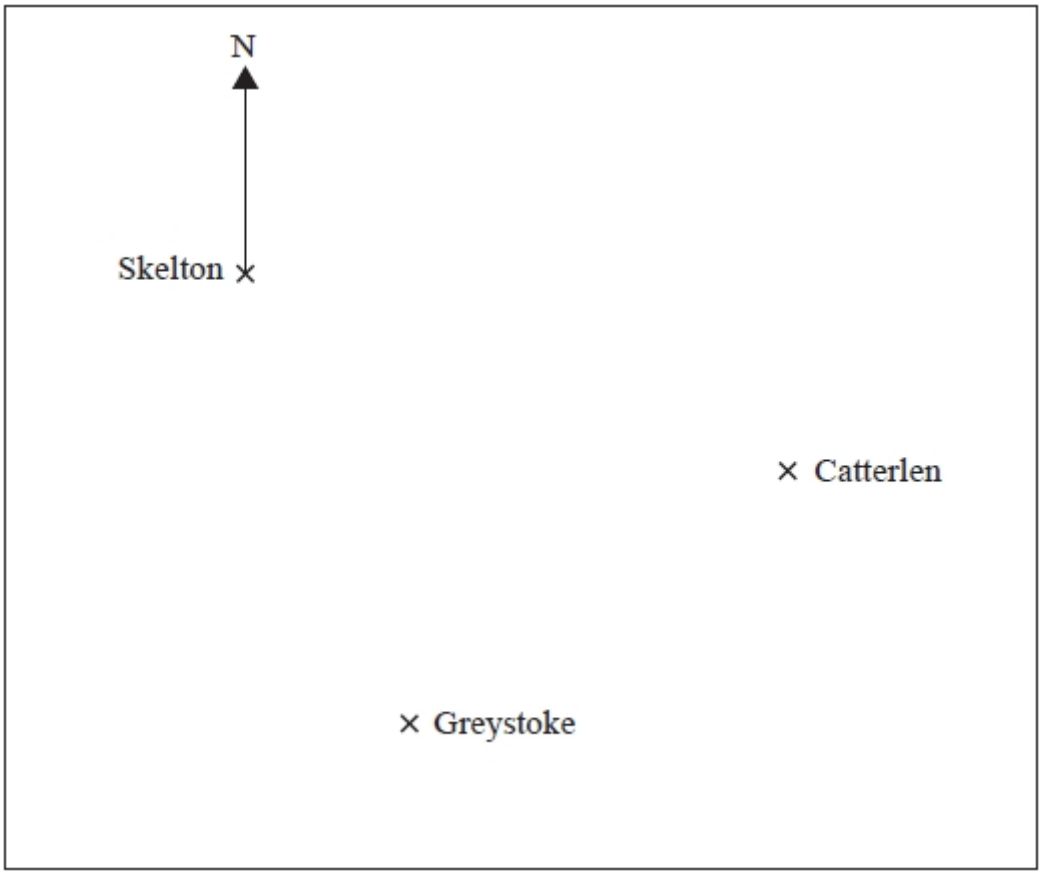


Make an accurate drawing of this triangle.
The line *AB* has been drawn for you.

Q3. In the space below, use a ruler and compasses to construct an equilateral triangle with sides of length 5 cm.
You must show all your construction lines.

[Q4–6 linked]

Q4. Here is a map showing three villages.



Scale: 1cm represents 1km.

Work out the real distance from Catterlen to Skelton.

Q5. In the map in question 4, measure the bearing of Catterlen from Skelton.

Q6. In the map in question 4, a fourth village is the same distance from Greystoke as it is from Skelton.
Mark with a cross one possible position for this village.

Q7. Here is a scale drawing of a rectangular garden *ABCD*.

Scale: 1 cm represents 1 metre.

Jane wants to plant a tree in the garden

at least 5m from point *C*,
nearer to *AB* than to *AD*
and less than 3m from *DC*.

On the diagram, shade the region where Jane can plant the tree.

Q8. A model plane has a length of 17cm.

The scale of the model is 1 : 200
Work out the length of the real plane.

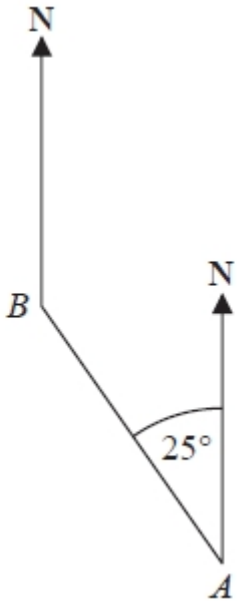
Give your answer in metres.

Q9. The length of a car is 3.6 metres.
Karl makes a scale model of the car.

He uses a scale of 1 cm to 30 cm.
Work out the length of the scale model of the car.

Give your answer in centimetres.

Q10. The diagram shows the positions of two churches, *A* and *B*.



Amber says,

"The bearing of church *B* from church *A* is 025º"

Amber is wrong.
Explain why.

Topics listed in objectives

- Understand congruence, as two shapes that are the same size and shape;
- Visually identify shapes which are congruent;
- Use straight edge and a pair of compasses to do standard constructions:
  - understand, from the experience of constructing them, that triangles satisfying SSS, SAS, ASA and RHS are unique, but SSA triangles are not;
  - construct the perpendicular bisector of a given line;
  - construct the perpendicular from a point to a line;
  - construct the bisector of a given angle;
  - construct angles of 90°, 45°;
- Draw and construct diagrams from given instructions, including the following:
  - a region bounded by a circle and an intersecting line;
  - a given distance from a point and a given distance from a line;
  - equal distances from two points or two line segments;
  - regions may be defined by 'nearer to' or 'greater than';
- Find and describe regions satisfying a combination of loci;
- Use constructions to solve loci problems (2D only);
- Use and interpret maps and scale drawings;
- Estimate lengths using a scale diagram;
- Make an accurate scale drawing from a diagram;
- Use three-figure bearings to specify direction;
- Mark on a diagram the position of point *B* given its bearing from point *A*;
- Give a bearing between the points on a map or scaled plan;
- Given the bearing of a point *A* from point *B*, work out the bearing of *B* from *A*;
- Use accurate drawing to solve bearings problems;
- Solve locus problems including bearings.

Answers

1. B and G
2. Triangle drawn accurately
3. Equilateral triangle drawn accurately with construction lines
4. 7 km
5. 110°
6. Cross in correct position
7. arc radius 5 cm centre *C*, bisector angle *BAD*, line 3 cm from *DC*, correct region shaded
8. 34 m
9. 12 cm
10. The bearing is 335°, she should have measured clockwise from North