1. The diagram shows a rectangular garden ABCD.

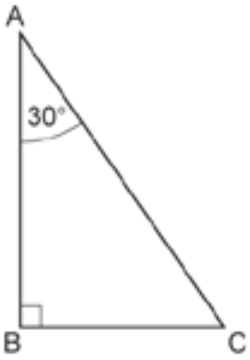
The region of the garden that is closer to DA than DC is to be made into a patio.

Construct and shade the region for the patio.
Show all your construction lines.

[3]

2(a). The diagram shows a triangle, ABC.

The angle at A is 30°.



Not to scale

i. What does the symbol at angle B mean?
Choose from this list.

An acute angle	The biggest angle	An obtuse angle	A reflex angle	A right angle

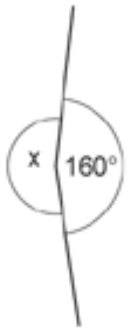
..... **[1]**

ii. Work out the angle at C.
Give a geometrical reason for your answer.

The angle at C is _____ ° because _____

_____ **[2]**

(b). A student works out the size of angle *x* in this diagram.



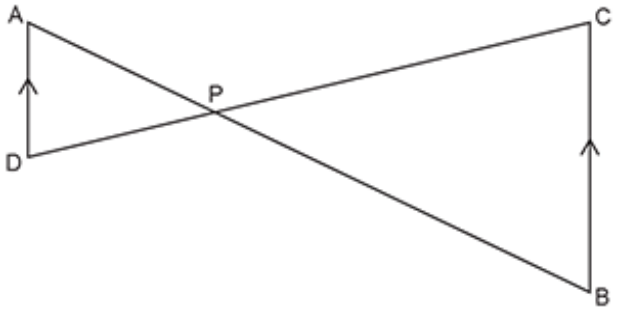
Not to scale

The student says the angle is 240°.

Explain why the student's answer cannot be correct.

_____ **[1]**

3. The diagram shows two straight lines AB and DC that intersect at P.
DA is parallel to BC.



Complete these statements to show that triangle PAD is similar to triangle PBC.

Angle ADP = angle BCP because they are alternate angles

Angle APD = angle ..... because they are ..... angles

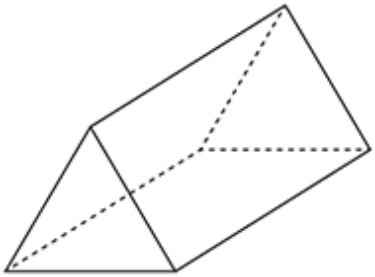
Angle ..... = angle ..... because they are ..... angles

Triangle PAD is similar to triangle PBC because _____

_____ **[4]**

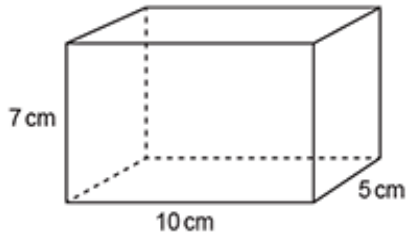
4(a). Write down the mathematical name of this solid.
Choose from the list in the box.

cone	cube	cylinder	prism	sphere



..... **[1]**

(b). The diagram shows a cuboid.



i. How many edges does the cuboid have?

..... **[1]**

ii. The cuboid has dimensions 10 cm, 7 cm and 5 cm.

Work out the volume of the cuboid.

..... cm^3 **[2]**

5. Using ruler and compasses only, construct the perpendicular bisector of the line AB.

Leave your construction lines visible.

[2]

6. The table shows the plan view and front elevation of some 3D solids.

Write the name of each 3D solid in the third column of the table.

Plan view	Front elevation	Name of 3D solid
		
		
		

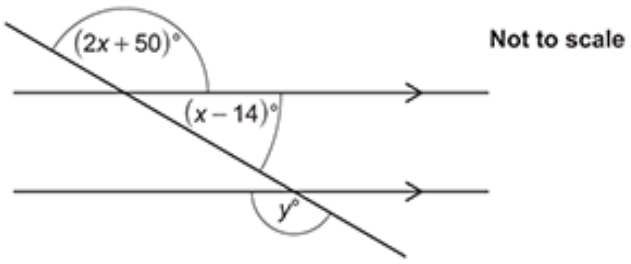
[3]

7. The radius of a circle is 3 cm.

Find the length of the diameter of the circle.

..... cm **[1]**

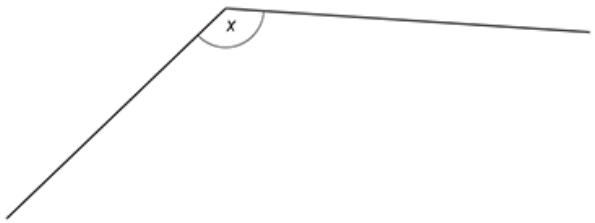
8. The diagram shows a straight line crossing two parallel lines.



Find the value of *y*.
You must show your working.

y = ... **[5]**

9(a). Measure angle *x*.



x = ... ° **[1]**

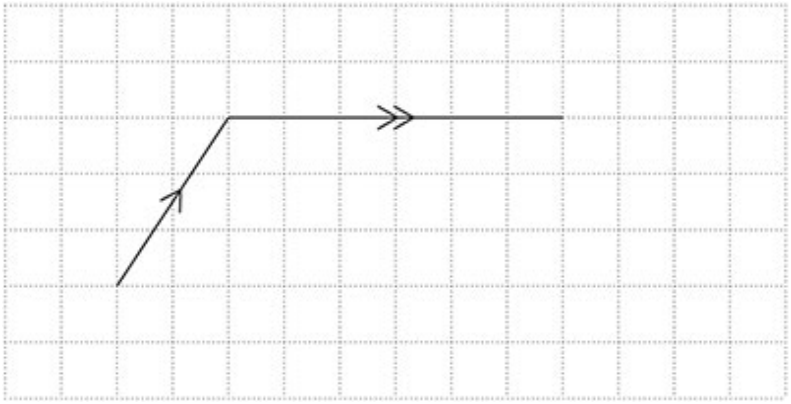
(b). The angles of a triangle are 27°, 126° and 27°.

Explain how you know the triangle is isosceles.

.....

.....**[1]**

(c). The diagram shows two sides of a parallelogram drawn on a one-centimetre grid.



i. Complete the drawing of the parallelogram.
Include notation to show that the drawing is a parallelogram.

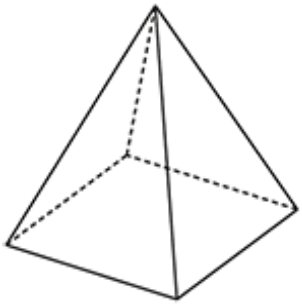
[2]

ii. Work out the area of the parallelogram.

..... cm^2 **[2]**

10(a). Write down the mathematical name of this solid.

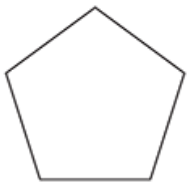
Choose from the list of names in the box.



cone	cube	cuboid	cylinder
prism	pyramid	sphere	

(a) ..... **[1]**

(b). Write down the mathematical name of this polygon.



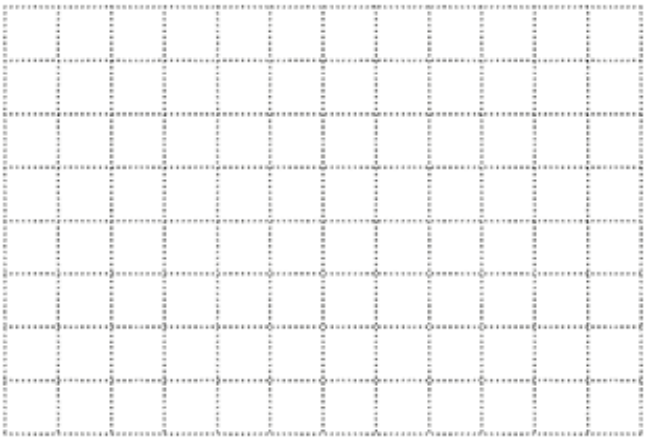
(b) ..... **[1]**

(c). On the grid below, sketch a quadrilateral with these properties.

- All angles are equal

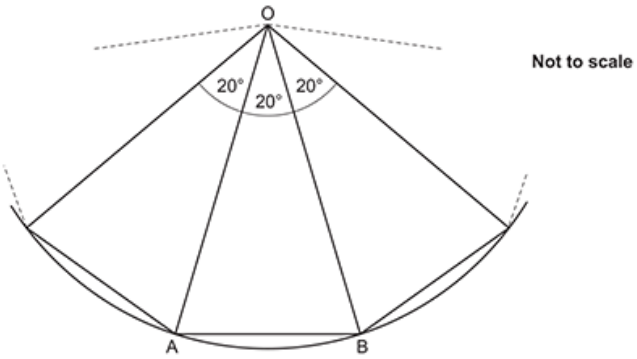
and

- the diagonals are **not** at right angles to each other.



[1]

11(a). A regular polygon is being constructed inside a circle, centre O.
Part of the construction is shown in this diagram.



i. Give a reason why OA = OB.

---------- **[1]**

ii. Write down the mathematical name of triangle OAB.

..... **[1]**

(b). The regular polygon is completed.

Work out the sum of the interior angles of the regular polygon.

..... ° **[3]**

12. Finley draws a rectangle and says

The perimeter is 20 cm and the length is 10 cm.

Can Finley be correct?
Show how you decide.

_____ because _____

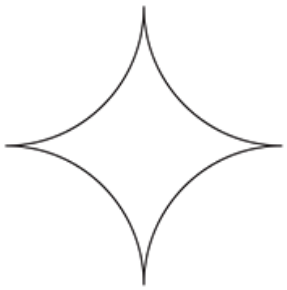
_____ **[2]**

13(a). For each letter below, draw all the lines of symmetry.

[3]

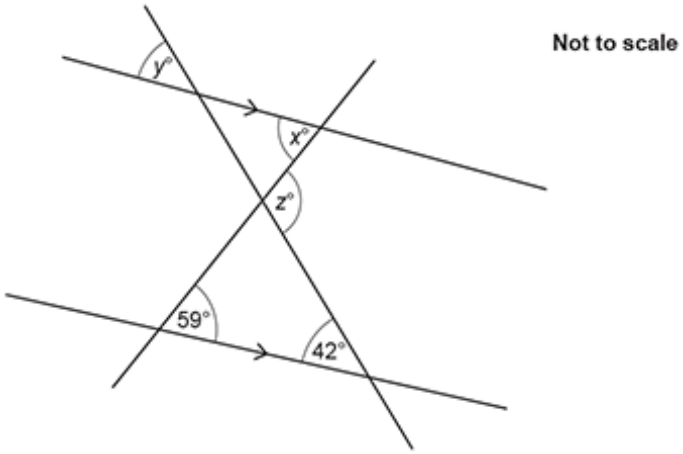
(b). This shape is drawn using four quarter circles.

Write down the order of rotation symmetry for the shape.



..... **[1]**

14(a). The diagram shows two straight lines crossing a pair of parallel lines.



i. Find the value of *x*.
Give a geometrical reason for your answer.

x = _____ because _____

_____ **[2]**

ii. Find the value of *y*.
Give a geometrical reason for your answer.

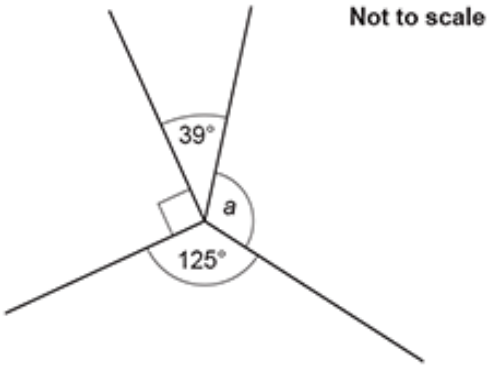
y = _____ because _____

_____ **[2]**

(b). Find the value of *z*.

z = ... **[2]**

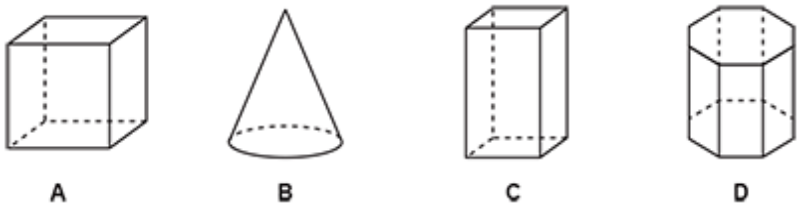
15. Four lines meet at a point.



Work out the size of angle *a*.

a = ...° **[2]**

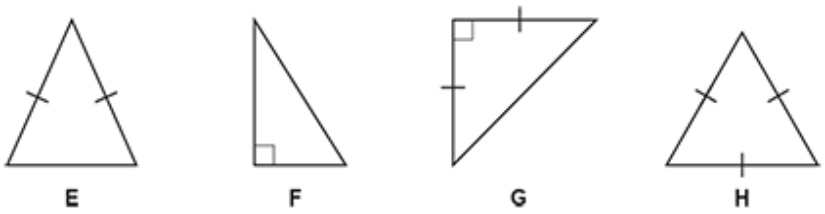
16(a). These four solids are labelled **A**, **B**, **C** and **D**.



Write down the letter of the solid that is **not** a prism.

..... **[1]**

(b). These four triangles are labelled **E**, **F**, **G** and **H**.



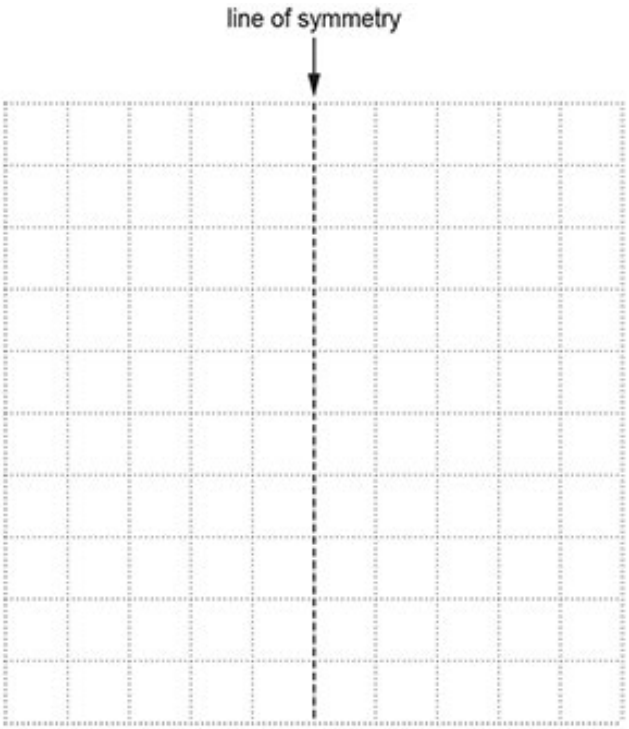
Write down the letter of the right-angled isosceles triangle.

..... **[1]**

(c). A quadrilateral has

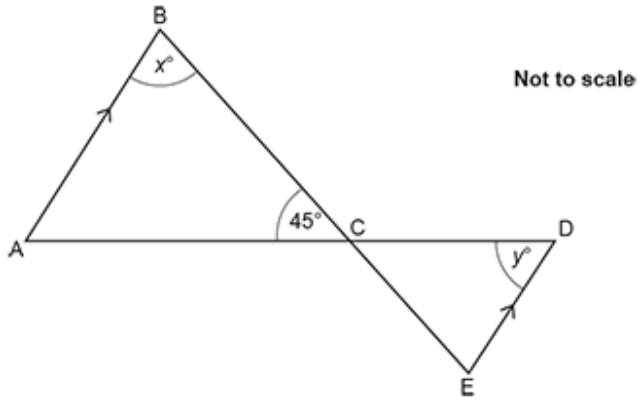
- exactly one line of symmetry
  and
- each angle is either acute or obtuse.

Draw a possible quadrilateral on this grid.
The dashed line must be the line of symmetry.



[2]

17. In the diagram, line AB is parallel to line ED.
The points A, C and D lie on a straight line.
The points B, C and E lie on a straight line.



Angle BCA = 45°, angle ABC = x° and angle CDE = y°.
The ratio x : y is 3 : 2.

Work out the value of x.

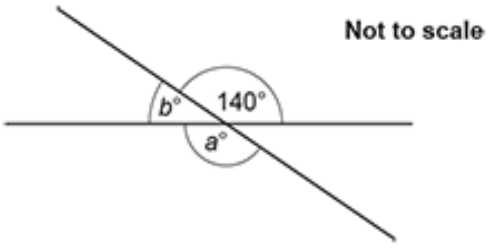
x = ... **[4]**

18. The diagram shows part of a regular 12-sided polygon.

For this polygon, find the ratio of the size of one exterior angle to the size of one interior angle.
Give your answer in its simplest form.
You must show your working.

..... : ..... **[5]**

19(a). The diagram shows two intersecting straight lines.



Find the value of b.
Give a reason for your answer.

b = _____ because _____

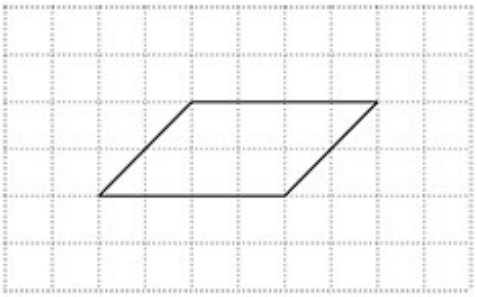
_____ **[2]**

(b). Find the value of *a*.
Give a reason for your answer.

a = _____ because _____

_____ **[2]**

20(a). The diagram shows a parallelogram



The parallelogram has rotation symmetry of order 2.

Mark the centre of rotation with a cross (X).

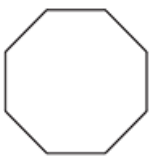
[1]

(b). On the grid below, draw a four-sided shape that has rotation symmetry of order 4.

[1]

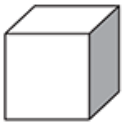
21(a).

Write down the mathematical name of this polygon.



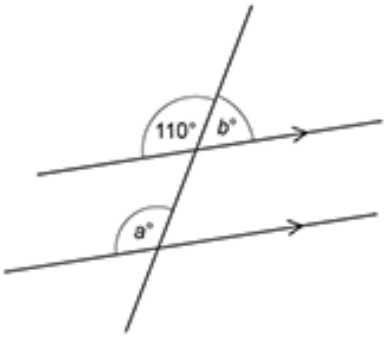
..... **[1]**

(b). How many edges does a cube have?



..... **[1]**

22(a). The diagram shows a pair of parallel lines.



Not to scale

Write down the value of *a*.

a = ... **[1]**

(b). Write down the value of *b*.

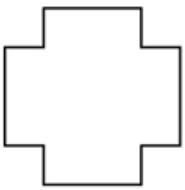
b = ... **[1]**

23(a).

Here is a shape.

On the diagram, draw the shape's two lines of symmetry. **[1]**

(b). Here is a shape.



Write down the order of rotation symmetry of the shape.

..... **[1]**

(c).

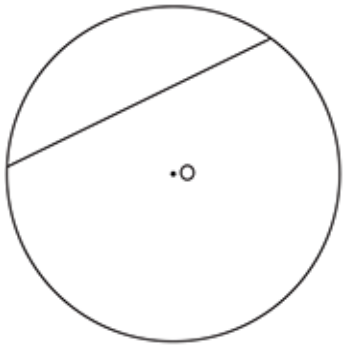
i. Sketch a quadrilateral that has exactly one line of symmetry.

[1]

ii. Write down the mathematical name of your quadrilateral.

(ii)..... **[1]**

24(a). The diagram shows a circle, centre O, and a line that meets the circle twice.

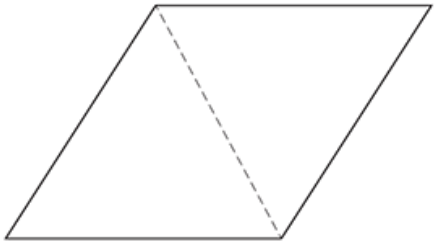


On the diagram, draw a diameter. **[1]**

(b). Write down the mathematical name of the line shown on the diagram.

..... **[1]**

25(a). The diagram shows how a rhombus is made by joining two **equilateral** triangles.



Not to scale

Find the size of each interior angle of the rhombus.

.....°, ...°, ...°, ...° **[1]**

(b). The same rhombus can be made by joining two copies of an **isosceles** triangle.

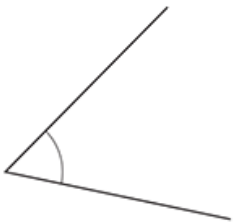
Find the size of each angle of the isosceles triangle.

.....°, ...°, ...° **[2]**

26(a). Measure the length of this line.

.....cm **[1]**

(b). The diagram shows an angle.



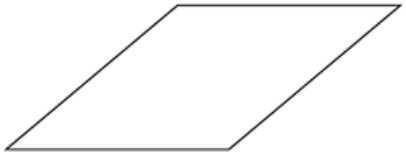
i. Measure the angle.

(i) .....° **[1]**

ii. Write down the mathematical name of this type of angle.

(ii) ..... **[1]**

27(a). Here is a rhombus.



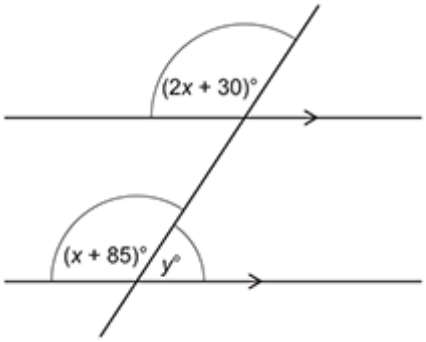
On the diagram, draw **all** of the lines of symmetry.

[2]

(b). Write down the order of rotation symmetry of the rhombus.

..... **[1]**

28. The diagram shows a straight line crossing two parallel lines.

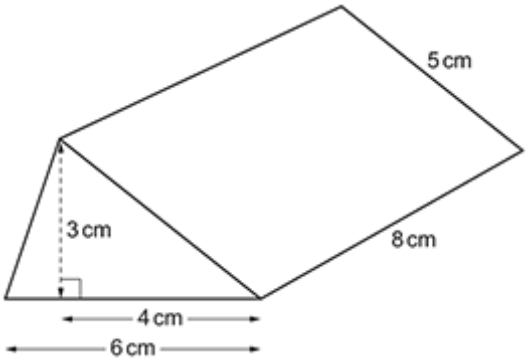


Not to scale

Find the value of *y*.
You must show your working.

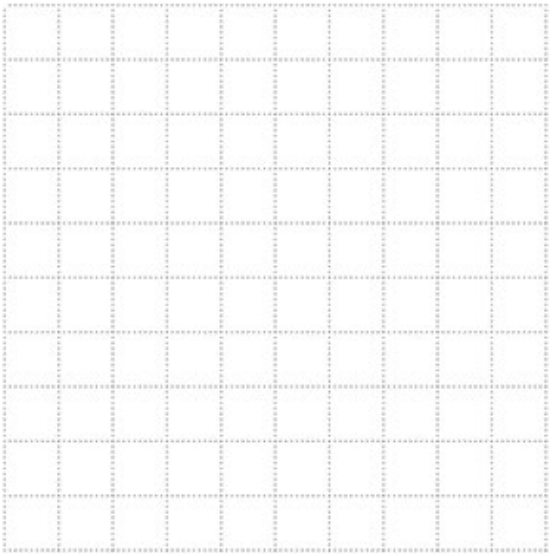
y = ... **[6]**

29. The diagram shows a prism.



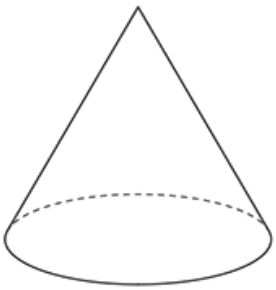
Not to scale

Draw an accurate plan view of the prism on the one-centimetre square grid below.



[3]

30(a). Write down the mathematical name of this solid.



..... **[1]**

(b). The angles in a triangle are 40°, 50° and 90°.

Write down the mathematical name for this type of triangle.

..... **[1]**

(c). How many sides does a pentagon have?

..... **[1]**

END OF QUESTION PAPER