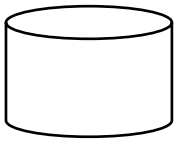
OCR 08 Basic Geometry (Foundation)

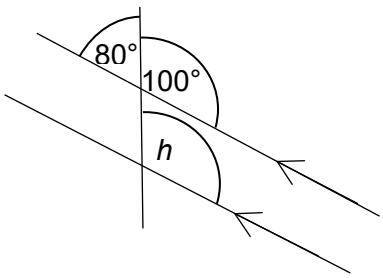
1. A quadrilateral has exactly one pair of parallel opposite sides.
   Write the name of this shape.

2. Write the name of this 3D shape.



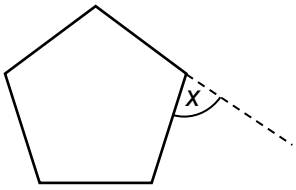
3. Use a ruler and protractor to draw an angle of 35°.

4. What is the size of angle *h* in degrees?



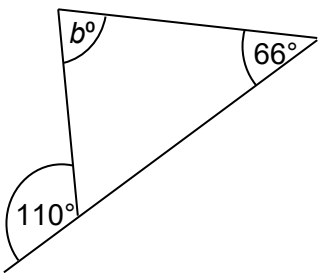
Not to scale

5. This is a regular pentagon.
   Calculate the size of angle *x*.



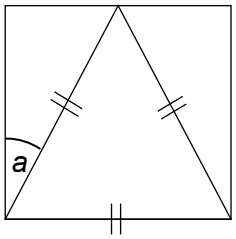
Not to scale

6. Calculate the size of angle *b*.



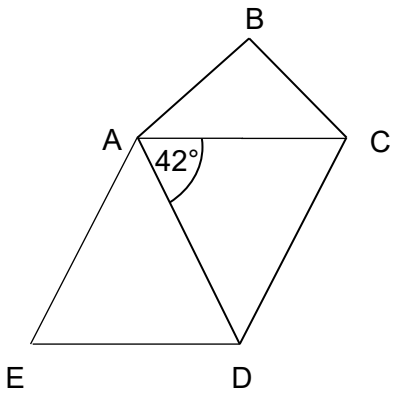
Not to scale

7. This diagram shows a triangle inside a rectangle.
Find the size of angle *a*.



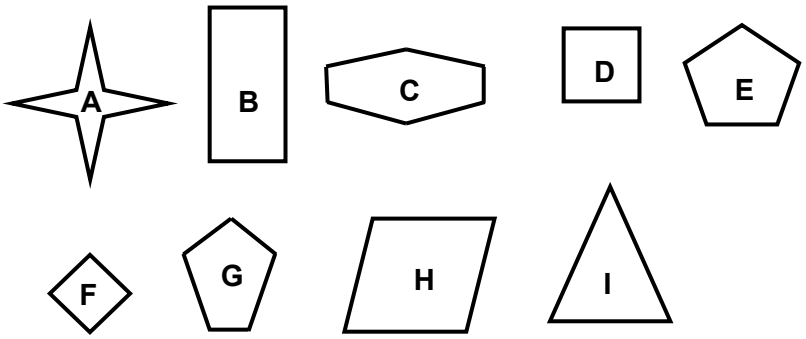
Not to scale

8. ABCD is a kite. ACDE is a parallelogram.
Find the size of angle DAE.

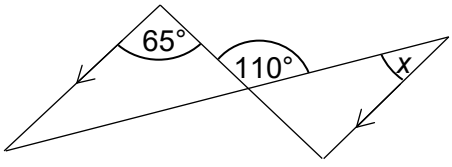


Not to scale

9. Which of these shapes have exactly four lines of symmetry?



10. Find the size of angle *x*.

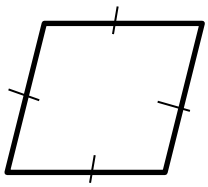


Not to scale

11. Draw a labelled diagram to represent the following geometric description.
    - PQRS is parallelogram.
    - T is the midpoint of PS.
    - There is a line through T parallel to RS.

12. Draw and label diagrams to show the difference between
    - a **segment** of a circle
    - a **sector** of a circle.

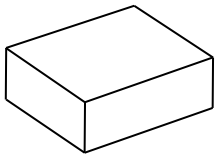
13. Here is a quadrilateral.



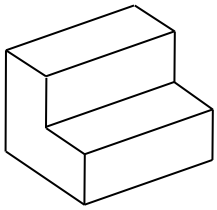
Kate says “The quadrilateral is a rhombus”.
Farah says “The quadrilateral is a kite”.

State whether each person is correct and give a reason for each decision.

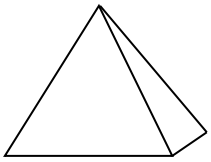
14. Which of these 3D shapes are prisms? Explain your answers.



A



B



C

15. Draw a quadrilateral that has no rotational symmetry and exactly one line of reflective symmetry.

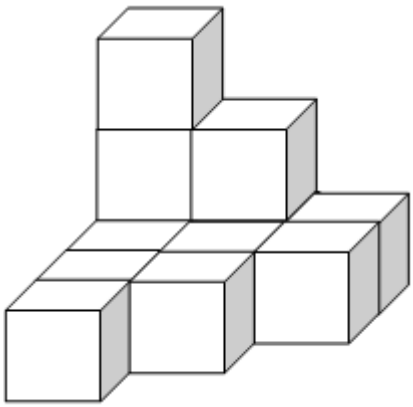
16. Dave has drawn a square with side length 3 units on a coordinate grid.
    Write down four pairs of (x, y) coordinates that could be the vertices of Dave’s square.

17. This table shows the distances between 3 towns.

	Distance (km)
Athelton to Biddington	6
Biddington to Compton	8
Compton to Athelton	10

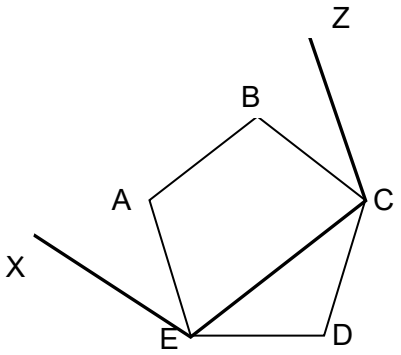
Construct a scale drawing to show the relative positions of the three towns.
Use a scale of 1 cm to 1 km.

18. This model is made from 1 cm cubes.
How many more cubes are needed to make a 4 cm × 3 cm × 3 cm cuboid?



19. The diagonals of a kite bisect at right angles.
Use this information to construct a kite using ruler and compasses.

20. The diagram shows a regular pentagon ABCDE together with three sides XE, EC, CZ of a larger regular pentagon. What is the size of angle BCZ?



Answers

1. Trapezium

2. Cylinder

3. Angle drawn measures 35° ($\pm 2°$)

4. 100°

5. 72°

6. 3rd angle of triangle is 70° so *b* is $180 - 66 - 70 = 44°$.

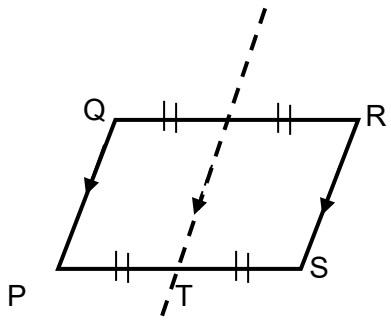
7. Angles in triangle are all 60° so *a* is $90 - 60 = 30°$.

8. Angle ACD = angle ADE = angle AED = 42°
   So angle DAE $= 180 - 42 - 42 = 96°$

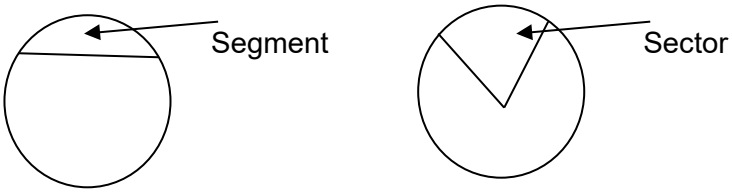
9. A, D, F

10. 45° (using alternate angles, angles on a straight line and angles in a triangle)

11. Correct shape drawn with sufficient labelling to identify vertices, T as the midpoint of PS and the line through T being parallel to RS.



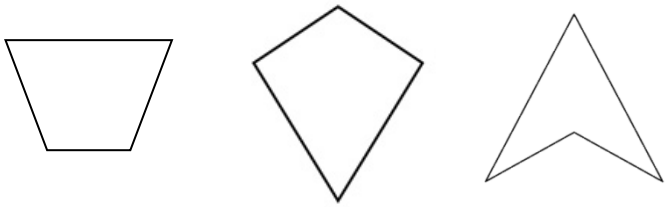
12.



13. Kate is correct because all 4 sides are the same length, so it is a rhombus.
    Farah is correct because the shape has two pairs of adjacent sides equal (or diagonals bisect at right angles because it is a rhombus).

14. A and B are prisms because they each have a constant cross-section. C is not a prism.

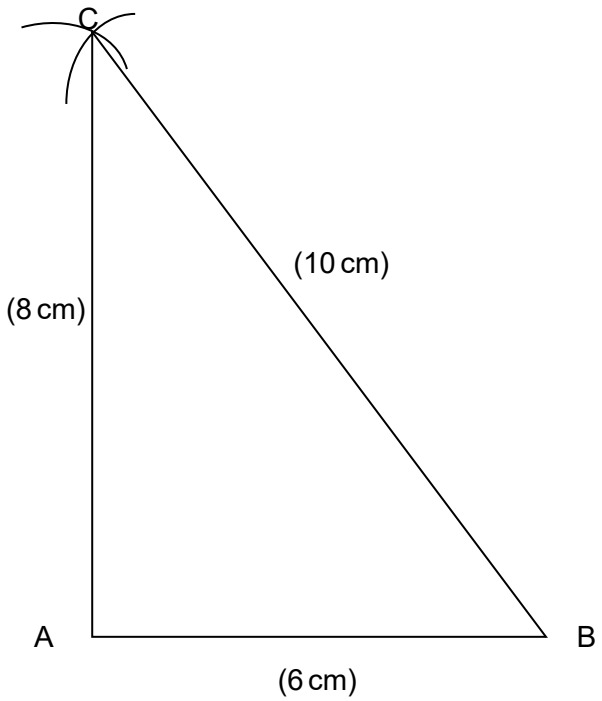
15. One of:



isosceles trapezium kite inverted kite (labels not required)

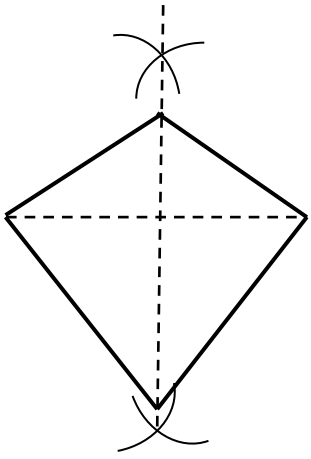
16. Four coordinates of the form (a, b), $(a, b+3)$, $(a+3, b+3)$ and $(a+3, b)$ e.g. $(0, 0)$, $(0, 3)$, $(3, 3)$ and $(3, 0)$.

17. Right-angled triangle constructed with arcs showing. Lines of correct length with towns identified. Drawing can be in any orientation.



18. The cuboid will need 36 cubes in total. The model currently has 12 cubes, so 24 more cubes are required.

19. Line drawn, perpendicular bisector constructed, sides drawn to form kite.



20. Interior angle of pentagon is 108°, so angle DCE is 36° (isosceles triangle).
Angle BCD is also 108°, so angle BCE is $108 - 36 = 72°$.
Angle ZCE is also 108°, so angle BCZ is $108 - 72 = 36°$.

GCSE (9–1)

MATHEMATICS

Section Check In

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Know the basic properties of quadrilaterals			
AO1	2	Recognise terms for polyhedral and other solids			
AO1	3	Use a protractor to construct angles			
AO1	4	Apply angle facts to find angles			
AO1	5	Use the sum of the exterior angles of a polygon			
AO1	6	Apply angle facts to find angles			
AO1	7	Use properties of a triangle to find angles			
AO1	8	Use properties of quadrilaterals to find angles			
AO1	9	Identify reflection symmetries of polygons			
AO1	10	Apply angle facts to find angles			
AO2	11	Draw diagrams from written descriptions			
AO2	12	Understand circle nomenclature			
AO2	13	Know basic properties of quadrilaterals			
AO2	14	Know the properties of 3D solids			
AO2	15	Identify reflection and rotation symmetries of quadrilaterals			
AO3	16	Use *x* and *y* coordinates in plane geometry problems			
AO3	17	Apply ruler and compass constructions to construct figures			
AO3	18	Construct elevations of simple 3D solids from plans			
AO3	19	Construct the perpendicular bisector of a line segment			
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