NETS

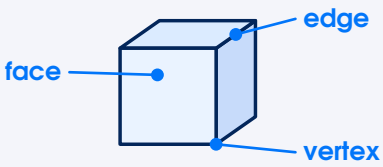
BUILDING BLOCKS

NAME _____ CLASS _____ DATE _____

KEY IDEA

A face is a flat surface.
An edge is where two faces meet.
A vertex is a corner (more than one: vertices).

A net is a flat shape that folds up to make a 3-D shape.

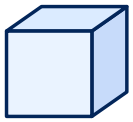


1 Name each 3-D shape. Use the words in the box.

cube | cuboid | cylinder | triangular prism | square-based pyramid



2 Count the faces, edges and vertices of this cube.



faces ☐ edges ☐ vertices ☐

Tip: put a small dot on each one as you count it.

3 Tick the nets that fold up to make a cube.

A cube has 6 square faces. Picture folding the squares up around one square.

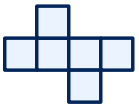
A ☐



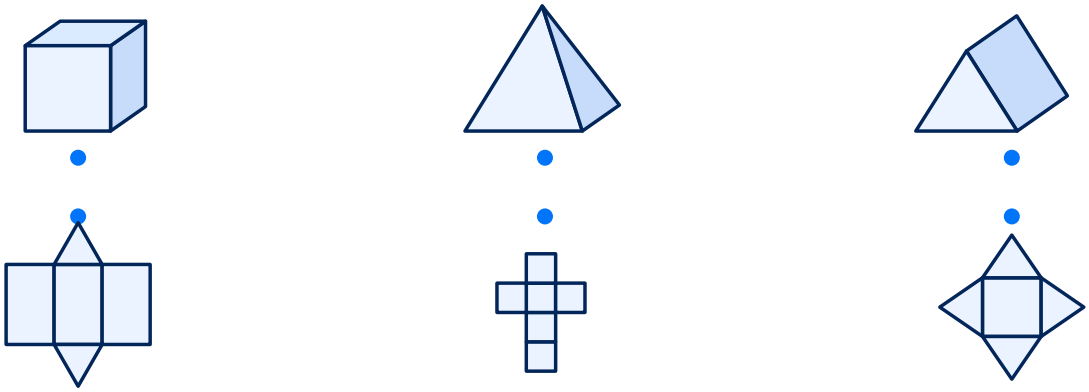
B ☐



C ☐



4 Draw a line from each 3-D shape to its net.



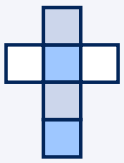
NETS

SUPPORT

NAME _____ CLASS _____ DATE _____

KEY IDEA

A net is a 2-D shape that folds to make a 3-D shape. It has one piece for every face. Faces that are opposite each other on the solid never touch in the net.



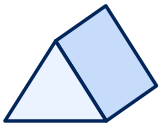
same colour = opposite faces
(net of a cube)

1 Write the number of faces, edges and vertices of each shape.



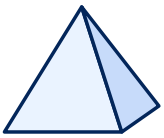
faces ☐
edges ☐
vertices ☐

cuboid



faces ☐
edges ☐
vertices ☐

triangular prism

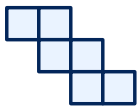


faces ☐
edges ☐
vertices ☐

square-based pyramid

2 Tick the two nets that fold to make a cube.

A



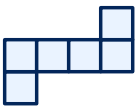
☐

B



☐

C



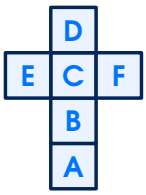
☐

D



☐

3 This net is folded to make a cube.

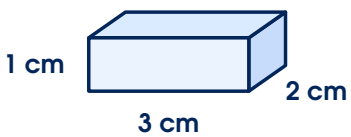


a) Which face is opposite face A? ☐

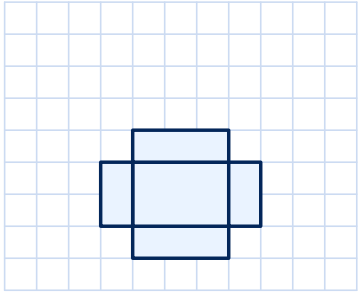
b) Which face is opposite face E? ☐

c) Which face is opposite face B? ☐

4 Here is part of the net of this cuboid. Draw the missing face on the grid.



One 3 cm by 2 cm face is missing.



NETS

CORE

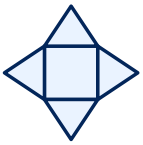
NAME _____ CLASS _____ DATE _____

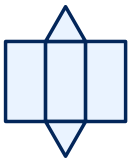
KEY IDEA

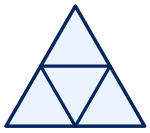
Count the faces and their shapes first. Edges that meet when folded must be the same length.

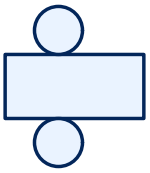
FLUENCY

1 Name the 3-D shape that each net makes.

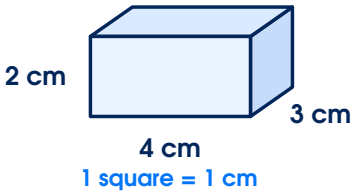
a) 

b) 

c) 

d) 

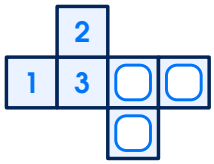
2 Draw an accurate net of this cuboid on the grid.



1 square = 1 cm

REASONING

3 This is the net of a dice.



On a dice, opposite faces add up to 7. The net folds to make a dice. Write the missing numbers in the boxes.

4 Ali says, "Any six squares joined edge to edge will fold into a cube." Draw an example to show that Ali is wrong. Explain why it does not work.

NETS

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

1 Is each statement always, sometimes or never true? Circle your answer.

Give an example or a reason for each answer.

a) Six squares joined up make a net of a cube. ALWAYS SOMETIMES NEVER

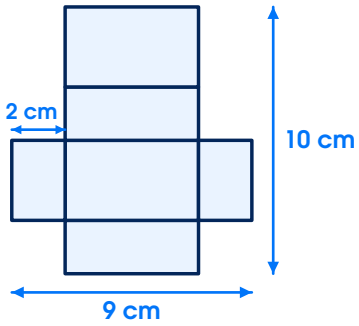
b) The net of a pyramid has exactly 4 triangles. ALWAYS SOMETIMES NEVER

c) The net of a cylinder includes a rectangle. ALWAYS SOMETIMES NEVER

d) Faces touching in a net are opposite faces. ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 This is the net of a cuboid. Work out the length, width and height of the cuboid.



Length ☐

Width ☐

Height ☐

Show your reasoning.

3 A square-based pyramid has a base of side 6 cm. Each triangular face has a perpendicular height of 5 cm. Work out the total area of its net.

Total area of the net ☐ cm^2

★ CHALLENGE FOR ALL

4 A cube has 11 different nets. Draw four different nets of a cube on the grid. (A net turned over or rotated counts as the same net.)

NETS – ANSWERS

ANSWERS

BUILDING BLOCKS

1 cube · triangular prism · cylinder · square-based pyramid · cuboid
2 faces 6 · edges 12 · vertices 8
3 A and C (B: a 2 × 3 block of squares overlaps when folded, so it is not a net of a cube).
4 cube → middle net (squares) · square-based pyramid → right net (square + 4 triangles) · triangular prism → left net (3 rectangles + 2 triangles)

SUPPORT

1 cuboid: 6 faces, 12 edges, 8 vertices · triangular prism: 5, 9, 6 · square-based pyramid: 5, 8, 5
2 A and C
3 a) C b) F c) D
4 A 3 cm by 2 cm rectangle drawn on the top of the column, above the 3 cm by 1 cm face.

CORE

1 a) square-based pyramid b) triangular prism c) (triangular-based pyramid) tetrahedron d) cylinder
2 Any correct net: two 4 × 3, two 4 × 2 and two 3 × 2 rectangles, arranged so they fold.
3 Row, left to right: 1, 3, 6, 4 (6 is opposite 1, 4 is opposite 3). Box below the row: 5 (opposite 2).
4 e.g. six squares in a 2 × 3 block, or five in a row plus one: faces overlap when folded / a face is missing, so the arrangement matters, not just the number of squares.

GREATER DEPTH

1 a) sometimes (only 11 arrangements of six squares fold into a cube) b) sometimes (true for triangular-based and square-based pyramids; a pentagonal-based pyramid has 5) c) always (the curved surface unrolls to a rectangle) d) never (faces that touch in a net are next to each other on the solid)
2 Height 2 cm (side flap width), length = 9 – 2 – 2 = 5 cm, 2w + 2 × 2 = 10 so width 3 cm. 5 cm × 3 cm × 2 cm
3 $6 \times 6 + 4 \times (6 \times 5 \div 2) = 36 + 60 = 96$ cm²
4 Any four of the 11 cube nets (e.g. the 1–4–1 "cross", 1–4–1 offset, 2–3–1, 2–2–2 staircase, 3–3).