

Face Shape Detectives

Sort solids by the shapes of their faces.

2.MG.4.b "Compare and contrast models and nets (cutouts) of cubes and rectangular prisms (e.g., number and shapes of faces, edges, vertices)."

NAME _____

DATE _____

CUBE

A cube has 6 faces, and every face is a square.
Its edges are all the same length.

A game die is a cube.

RECTANGULAR PRISM, NOT A CUBE

This solid has 6 faces, but some faces are rectangles that are not squares. It does not have all square faces.

A shoebox is a rectangular prism, not a cube.

1 SORT

8 items

For each item, circle CUBE or PRISM, then choose two items and write how their faces helped you decide.

1. A net is made of 6 same-size squares.

CUBE

PRISM

2. A box has 2 square faces and 4 long rectangle faces.

CUBE

PRISM

3. A cutout folds into a box with 2 square ends and 4 rectangle sides.

CUBE

PRISM

4. A solid has 6 faces. Every face is a square.

CUBE

PRISM

5. A block has 8 vertices, and all 6 faces are squares.

CUBE

PRISM

6. A cutout folds into a solid with 6 same-size square faces.

CUBE

PRISM

7. A tissue box has rectangle faces, and its faces are not all squares.

CUBE

PRISM

8. A net has 2 square faces and 4 rectangle faces.

CUBE

PRISM

2 PROVE IT Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

ITEM # _____ HOW I KNEW _____

ITEM # _____ HOW I KNEW _____

3 MAKE YOUR OWN One of each

Write one new example of a CUBE and one new example of a PRISM that is not a cube.

CUBE _____

PRISM _____

CHALLENGE

A solid has 6 faces, 12 edges, and 8 vertices. Can you tell if it is a cube or a prism that is not a cube? Explain what else you need to know.

PART 1 • SORT

#	ITEM	CATEGORY	WHY
1	A net is made of 6 same-size squares.	CUBE	A cube net has six congruent square faces.
2	A box has 2 square faces and 4 long rectangle faces.	PRISM	It has rectangular faces that are not squares, so it is not a cube.
3	A cutout folds into a box with 2 square ends and 4 rectangle sides.	PRISM	The four rectangular sides are not squares, so it is a rectangular prism that is not a cube.
4	A solid has 6 faces. Every face is a square.	CUBE	All six faces are squares, which identifies a cube.
5	A block has 8 vertices, and all 6 faces are squares.	CUBE	A solid with six square faces is a cube.
6	A cutout folds into a solid with 6 same-size square faces.	CUBE	Six same-size square faces make a cube.
7	A tissue box has rectangle faces, and its faces are not all squares.	PRISM	It has faces that are rectangles but not squares, so it is not a cube.
8	A net has 2 square faces and 4 rectangle faces.	PRISM	Because four faces are rectangles that are not squares, it is a rectangular prism that is not a cube.

PART 2 • PROVE IT

Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 • MAKE YOUR OWN (SAMPLE ANSWERS)

- **CUBE:** A sugar cube is a cube.
- **PRISM:** A hardcover book is a rectangular prism, not a cube.

Challenge: No. Both a cube and a rectangular prism that is not a cube have 6 faces, 12 edges, and 8 vertices. I need to know whether all the faces are squares.

For Part 2, accept explanations that use face shapes, such as all six faces are squares for a cube or some faces are rectangles that are not squares for a prism. The challenge checks that face, edge, and vertex counts alone do not tell the two solids apart.