A THREE-DIMENSIONAL SHAPES

A.1 IDENTIFYING FLAT OR SOLID SHAPES

MCQ 1: Is this shape flat or solid?

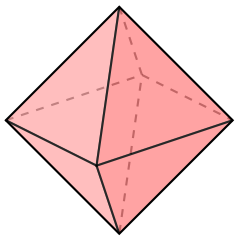
Pick the right answer:

☒ 2D shape

☐ 3D shape

Answer: It is a 2D shape because it's flat, with only length and width.

MCQ 2: Is this shape flat or solid?



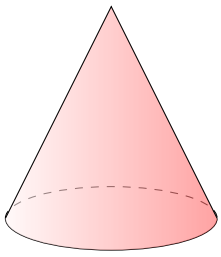
Pick the right answer:

☐ 2D shape

☒ 3D shape

Answer: It is a 3D shape because it's solid, with length, width, and depth.

MCQ 3: Is this shape flat or solid?



Pick the right answer:

☐ 2D shape

☒ 3D shape

Answer: It is a 3D shape because it's solid, with length, width, and depth.

MCQ 4: Is this shape flat or solid?

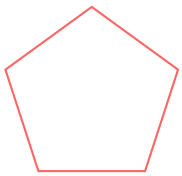
Pick the right answer:

☒ 2D shape

☐ 3D shape

Answer: It is a 2D shape because it's flat, with only length and width.

MCQ 5: Is this shape flat or solid?



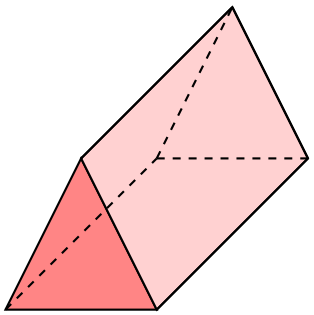
Pick the right answer:

☒ 2D shape

☐ 3D shape

Answer: It is a 2D shape because it's flat, with only length and width.

MCQ 6: Is this shape flat or solid?



Pick the right answer:

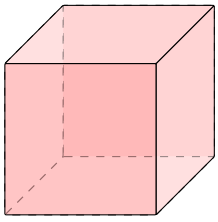
☐ 2D shape

☒ 3D shape

Answer: It is a 3D shape because it's solid, with length, width, and depth.

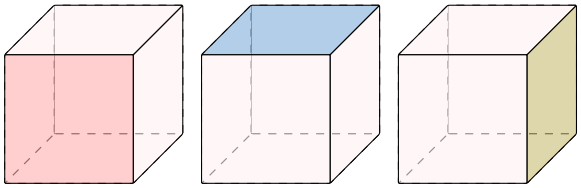
A.2 COUNTING FACES

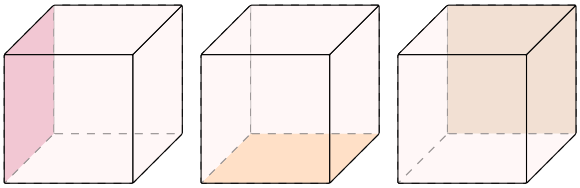
Ex 7: How many faces does this cube have?



6 faces

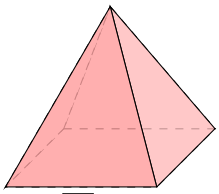
Answer: Count each flat surface to find the number of faces.





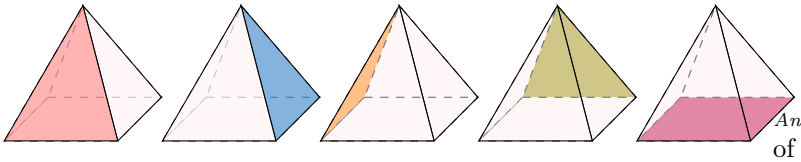
There are 6 faces.

Ex 8: How many faces does this square pyramid have?



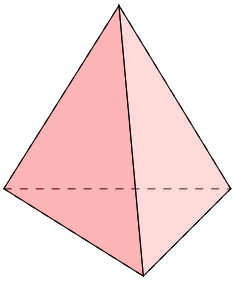
5 faces

Answer: Count each flat surface to find the number of faces.



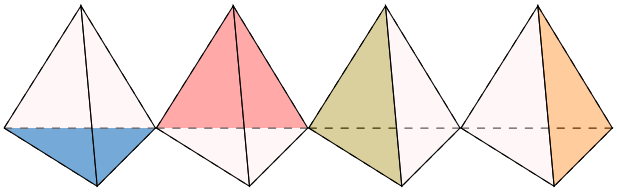
There are **5 faces**.

Ex 9: How many faces does this triangular pyramid have?



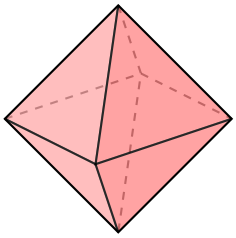
4 faces

Answer: Count each flat surface to find the number of faces.



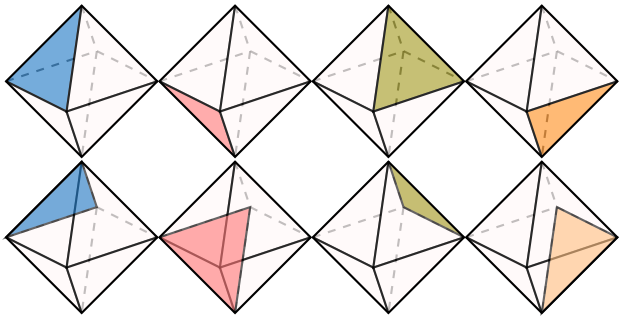
There are **4 faces**.

Ex 10: How many faces does this eight-faced die have?



8 faces

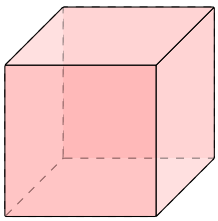
Answer: Count each flat surface to find the number of faces.



There are **8 faces**.

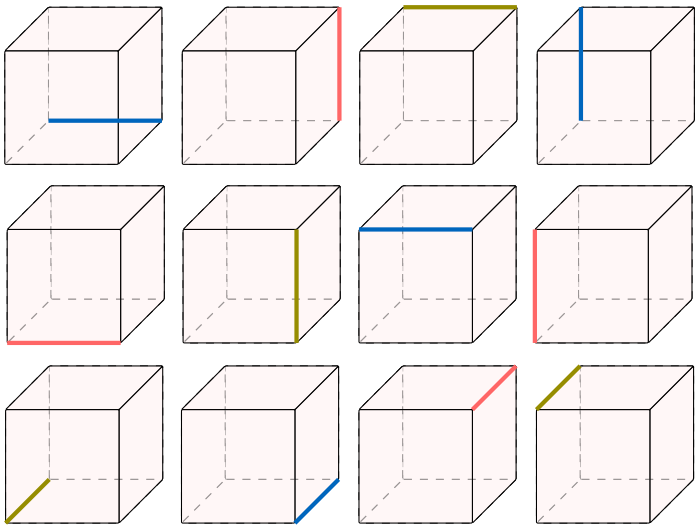
A.3 COUNTING EDGES

Ex 11: How many edges does this cube have?



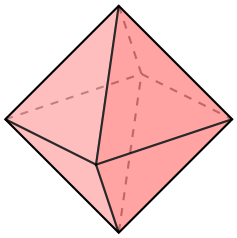
12 edges

Answer: Count each line where two faces meet to find the number of edges.



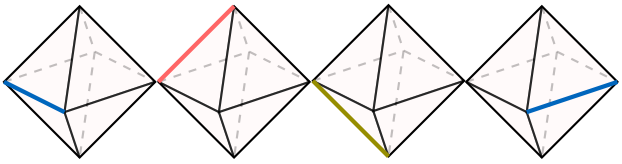
There are **12 edges**.

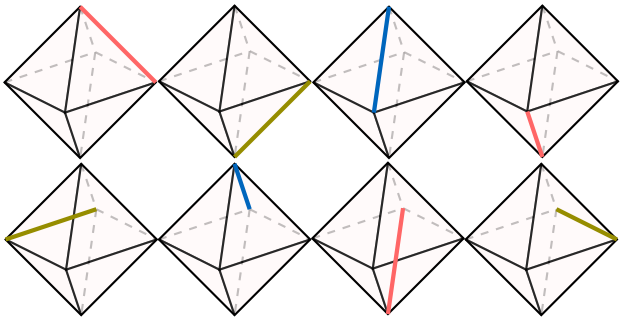
Ex 12: How many edges does this eight-faced die have?



12 edges

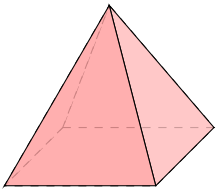
Answer: Count each line where two faces meet to find the number of edges.





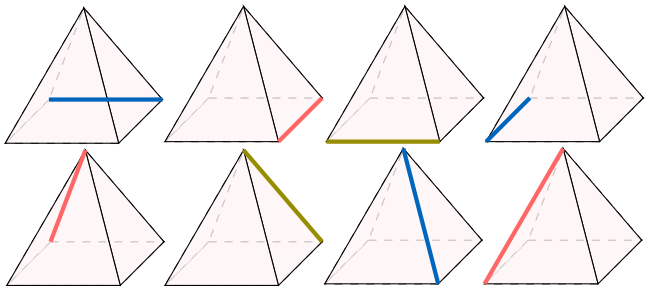
There are **12 edges**.

Ex 13: How many edges does this square pyramid have?



8 edges

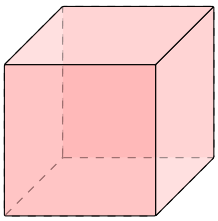
Answer: Count each line where two faces meet to find the number of edges.



There are **8 edges**.

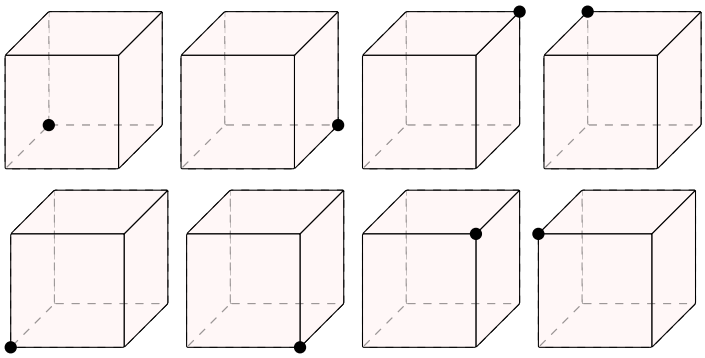
A.4 COUNTING VERTICES

Ex 14: How many vertices does this cube have?



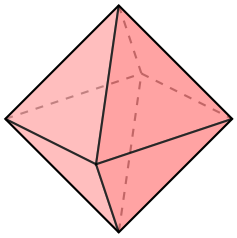
8 vertices

Answer: Count each corner where the lines meet to find the number of vertices.



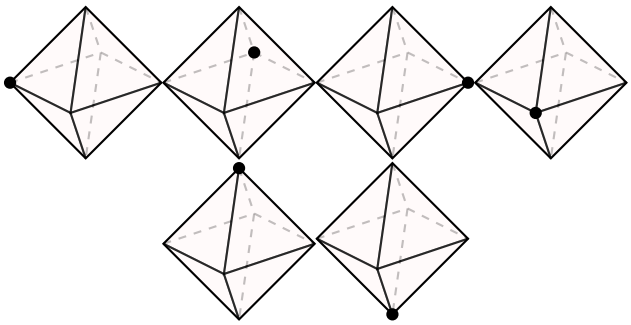
There are **8 vertices**.

Ex 15: How many vertices does this eight-faced die have?



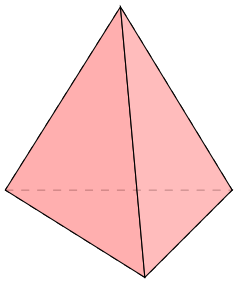
6 vertices

Answer: Count each corner where the lines meet to find the number of vertices.



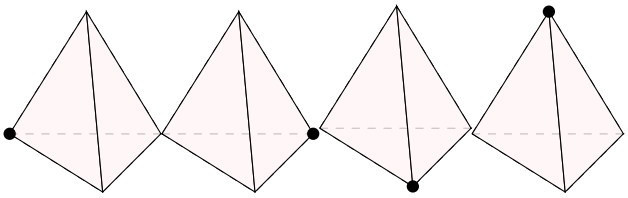
There are **6 vertices**.

Ex 16: How many vertices does this triangular pyramid have?



4 vertices

Answer: Count each corner where the lines meet to find the number of vertices.

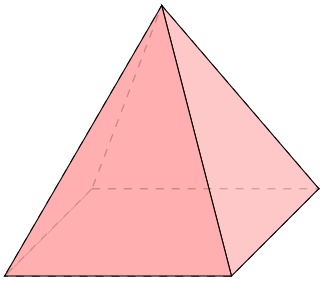


There are **4 vertices**.

B POLYHEDRON

B.1 IDENTIFYING POLYHEDRA

MCQ 17: Is this 3D figure a polyhedron?



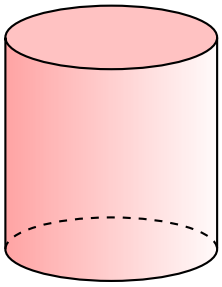
Choose one answer:

☒ True

☐ False

Answer: The correct answer is: True.
A polyhedron is a 3D shape with flat polygonal faces, straight edges, and sharp vertices. This figure is a square-based pyramid, which has one square base and four triangular faces. Since all faces are flat polygons with straight edges and sharp vertices, this figure is a polyhedron.

MCQ 18: Is this 3D figure a polyhedron?



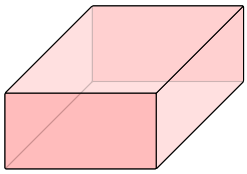
Choose one answer:

☐ True

☒ False

Answer: The correct answer is: False.
A polyhedron is a 3D shape with flat polygonal faces, straight edges, and sharp vertices. This figure is a cylinder, which has two circular bases and a curved surface connecting them. Since a cylinder has a curved surface instead of flat polygonal faces, it is not a polyhedron.

MCQ 19: Is this 3D figure a polyhedron?



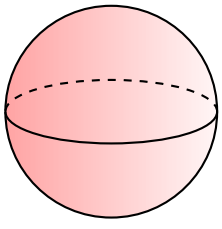
Choose one answer:

☒ True

☐ False

Answer: The correct answer is: True.
A polyhedron is a 3D shape with flat polygonal faces, straight edges, and sharp vertices. This figure is a rectangular prism, which has six rectangular faces. Since all faces are flat polygons with straight edges and sharp vertices, this figure is a polyhedron.

MCQ 20: Is this 3D figure a polyhedron?



Choose one answer:

☐ True

☒ False

Answer: The correct answer is: False.
A polyhedron is a 3D shape with flat polygonal faces, straight edges, and sharp vertices. This figure is a sphere, which has a completely curved surface and no flat faces, straight edges, or vertices. Therefore, a sphere is not a polyhedron.

C CROSS SECTIONS

C.1 IDENTIFYING UNIFORM CROSS SECTION

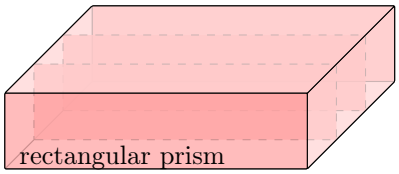
MCQ 21: Does this 3D shape have a uniform cross section?

Choose one answer:

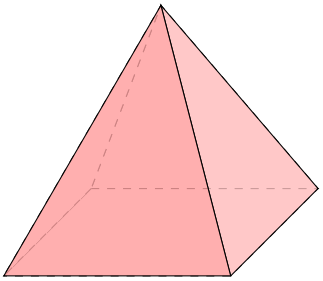
☒ True

☐ False

Answer: The correct answer is: True.
A uniform cross section means the cross section of a solid has the same size and shape at every point along its length. This figure is a rectangular prism, and when sliced perpendicular to its length, each cross section is a rectangle of the same size and shape, confirming it has a uniform cross section.



MCQ 22: Does this 3D shape have a uniform cross section?



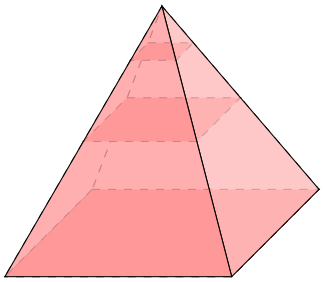
square-based pyramid

Choose one answer:

☐ True

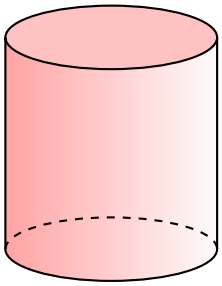
☒ False

Answer: The correct answer is: False.
A uniform cross section means the cross section of a solid has the same size and shape at every point along its length. This figure is a square-based pyramid, which tapers to a point (apex) from a square base. When sliced perpendicular to its height, the cross sections are squares, but they decrease in size as you move toward the apex, meaning the cross section is not uniform.



pyramide à base carrée

MCQ 23: Does this 3D shape have a uniform cross section?

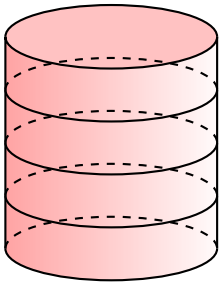


Choose one answer:

☒ True

☐ False

Answer: The correct answer is: True.
A uniform cross section means the cross section of a solid has the same size and shape at every point along its length. This figure is a cylinder, and when sliced perpendicular to its length, each cross section is a circle of the same size and shape, confirming it has a uniform cross section.



MCQ 24: Does this building have a uniform cross section?

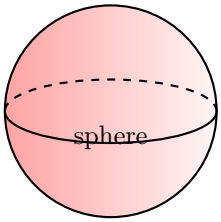
Choose one answer:

☒ True

☐ False

Answer: The correct answer is: True.
A uniform cross section means the cross section of a solid has the same size and shape at every point along its length. This building is shaped like a rectangular prism, and when sliced perpendicular to its height, each cross section is a rectangle of the same size and shape, confirming it has a uniform cross section.

MCQ 25: Does this 3D shape have a uniform cross section?



Choose one answer:

☐ True

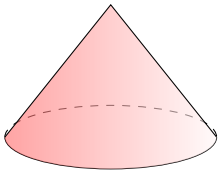
☒ False

Answer: The correct answer is: False.
A uniform cross section means the cross section of a solid has the same size and shape at every point along its length. This figure is a sphere, and when sliced perpendicular to any axis, the cross sections are circles, but their sizes vary depending on the position of the slice (largest at the center, smaller near the edges). Therefore, the cross section is not uniform.

D CLASSIFICATION

D.1 CLASSIFYING 3D SHAPES

MCQ 26: Which 3D shape is shown below?



Choose one answer:

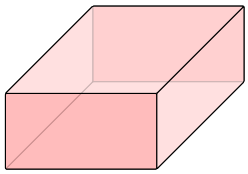
☒ Cone

☐ Cylinder

☐ Triangular prism

Answer: The correct answer is: Cone.
A cone is a 3D shape with a single circular base and a curved surface that tapers to a point called the apex. The shape above has a circular base and a curved surface leading to a single apex, matching the description of a cone.

MCQ 27: Which 3D shape is shown below?



Choose one answer:

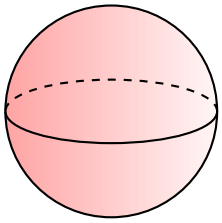
☐ Cone

☐ Triangular prism

☒ Rectangular prism

Answer: The correct answer is: Rectangular prism.
A rectangular prism has two parallel rectangular bases connected by four rectangular faces. The shape above has rectangular bases and faces, matching the description of a rectangular prism.

MCQ 28: Which 3D shape is shown below?



The shape above matches this description.

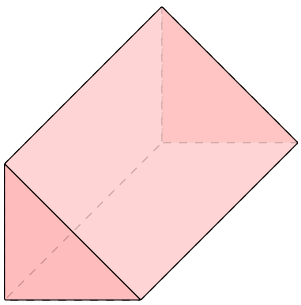
☐ Cone

☒ Sphere

☐ Cylinder

Answer: The correct answer is: Sphere.
A sphere is a 3D shape where every point on the surface is equidistant from its center. The shape above is a round object with a uniform curved surface, matching the description of a sphere.

MCQ 29: Which 3D shape is shown below?



Choose one answer:

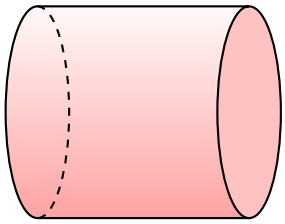
☐ Cylinder

☒ Triangular prism

☐ Rectangular prism

Answer: The correct answer is: Triangular prism.
A triangular prism has two parallel triangular bases connected by three rectangular faces. The shape above has triangular bases and rectangular lateral faces, matching the description of a triangular prism.

MCQ 30: Which 3D shape is shown below?



Choose one answer:

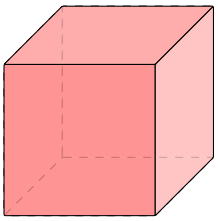
☒ Cylinder

☐ Cone

☐ Sphere

Answer: The correct answer is: Cylinder.
A cylinder has two parallel circular bases connected by a curved surface. The shape above has two circular bases and a curved surface connecting them, matching the description of a cylinder.

MCQ 31: Which 3D shape is shown below?



Choose one answer:

☐ Rectangular pyramid

☐ Square pyramid

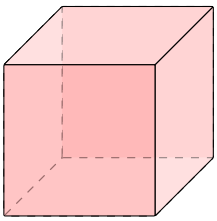
☒ Cube

Answer: The correct answer is: Cube.
A cube is a 3D shape with six square faces of equal size, where all edges are of the same length. The shape above has six square faces of equal size, matching the description of a cube.

E DRAWING THREE-DIMENSIONAL SHAPES

E.1 COUNTING VISIBLE AND HIDDEN EDGES

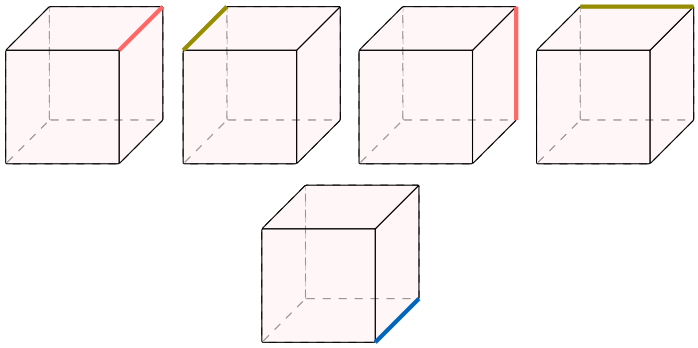
Ex 32: Count the number of visible and hidden edges on this cube



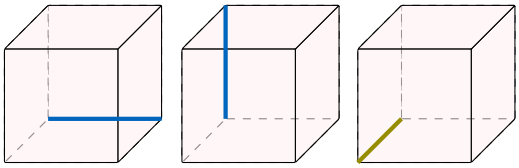
9 visible edges
3 hidden edges

Answer:

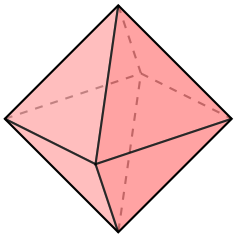
- 9 visible edges:



- 3 hidden edges:



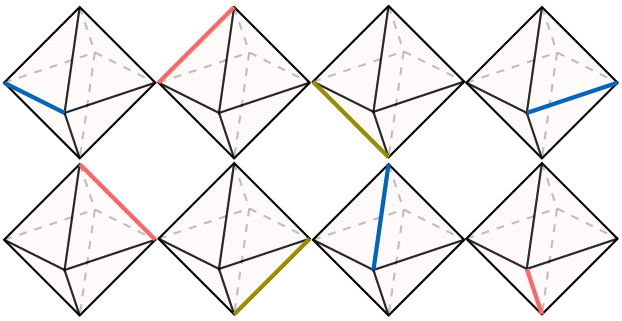
Ex 33: Count the number of visible and hidden edges on this eight-faced die.



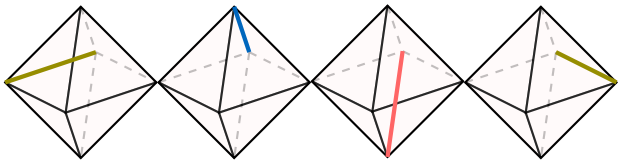
8 visible edges
4 hidden edges

Answer:

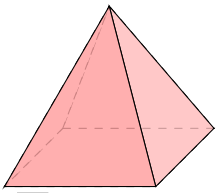
- 8 visible edges



- 4 hidden edges



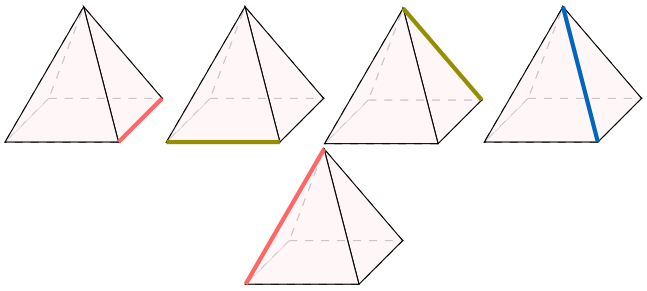
Ex 34: Count the number of visible and hidden edges on this square Pyramid.



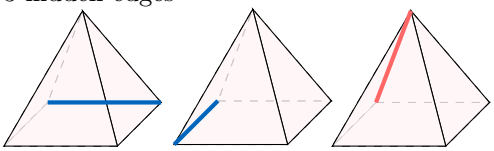
5 visible edges
3 hidden edges

Answer:

- 5 visible edges

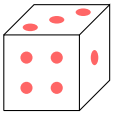


- 3 hidden edges

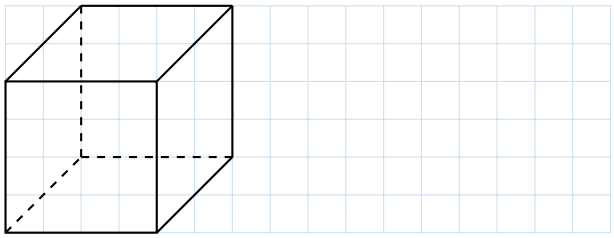


E.2 DRAWING THREE-DIMENSIONAL SHAPES

Ex 35:

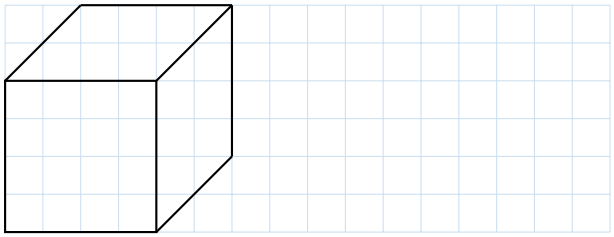


Draw this cube on your graph paper.

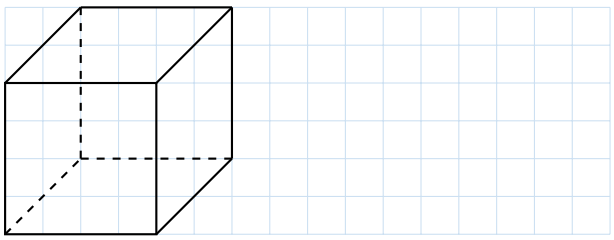


Answer:

1. Draw the visible edges with solid lines:

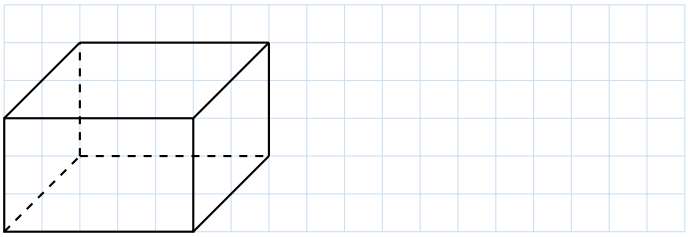


2. Draw the hidden edges with dotted lines:



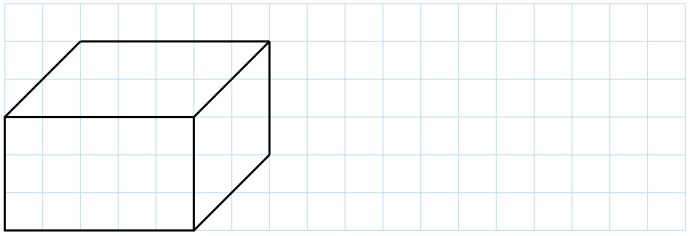
Ex 36:

Draw this solid on your graph paper.

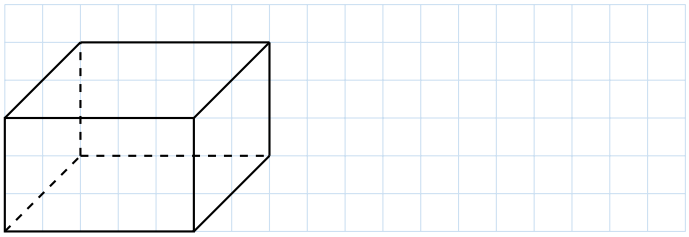


Answer:

1. Draw the visible edges with solid lines:

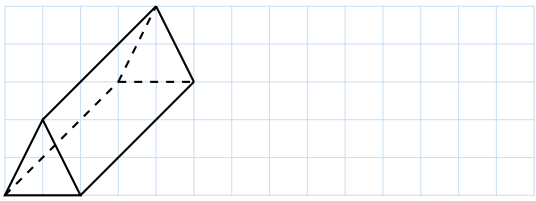


2. Draw the hidden edges with dotted lines:



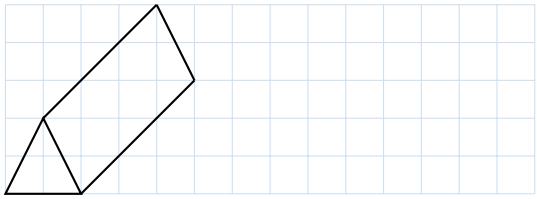
Ex 37:

Draw this triangular prism on your graph paper.

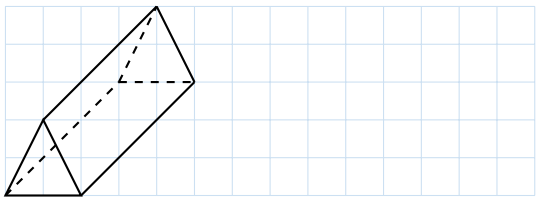


Answer:

1. Draw the visible edges with solid lines:

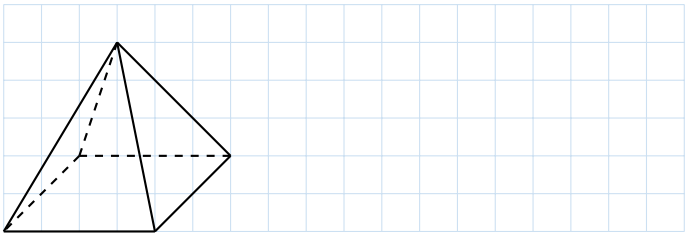


2. Draw the hidden edges with dotted lines:



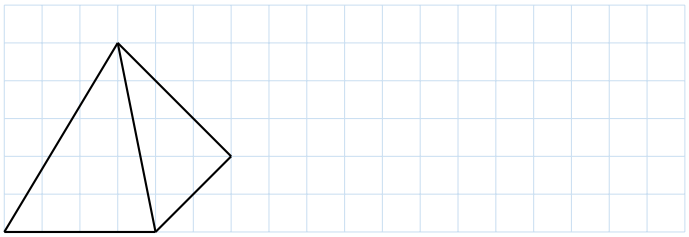
Ex 38:

Draw this pyramid on your graph paper.

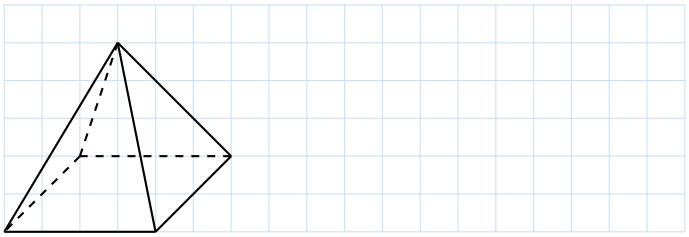


Answer:

1. Draw the visible edges with solid lines:



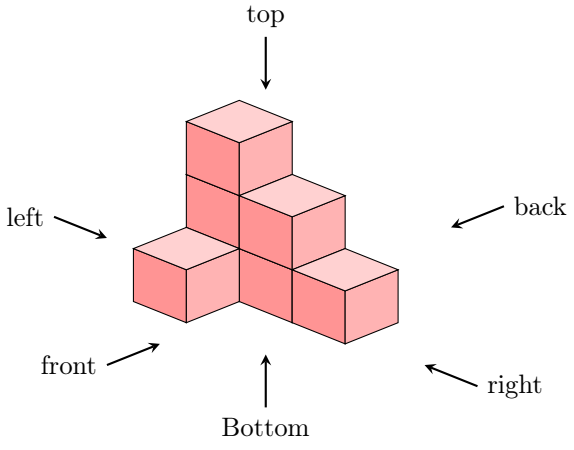
2. Draw the hidden edges with dotted lines:



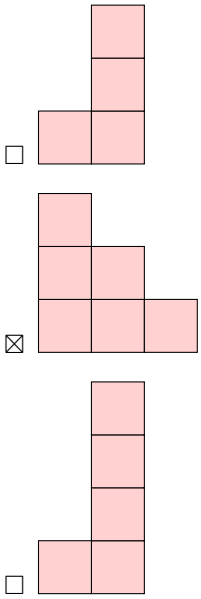
F MULTI-VIEW PROJECTION

F.1 FINDING THE PROJECTION

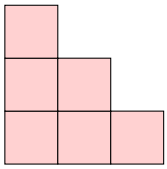
MCQ 39: Identify the front view of this solid.



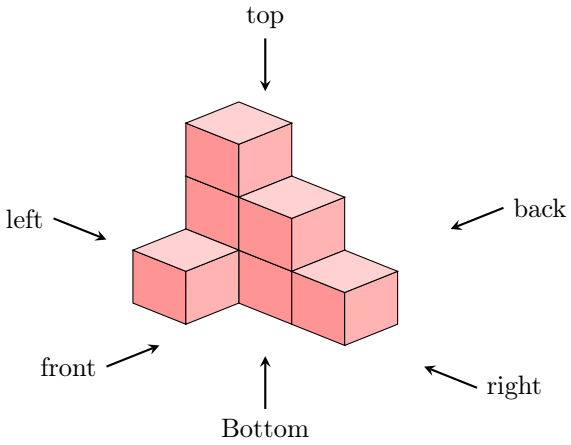
Choose one answer:



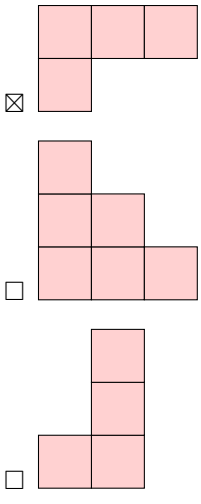
Answer: The correct front view is the second option:



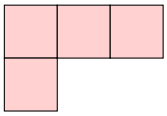
MCQ 40: Identify the top view of this solid.



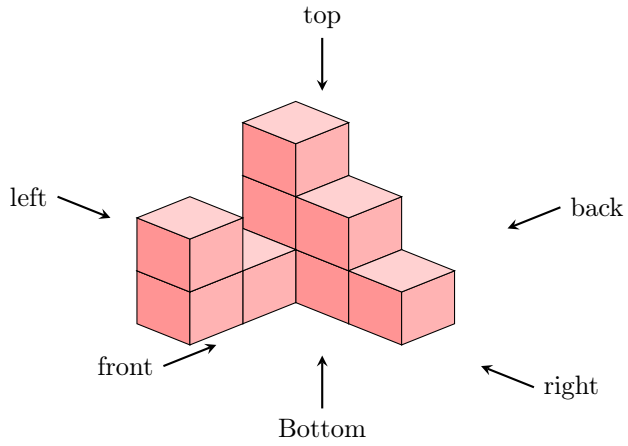
Choose one answer:



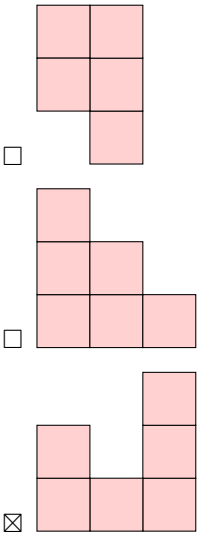
Answer: The correct top view is the first option:



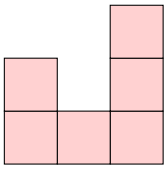
MCQ 41: Identify the right view of this solid.



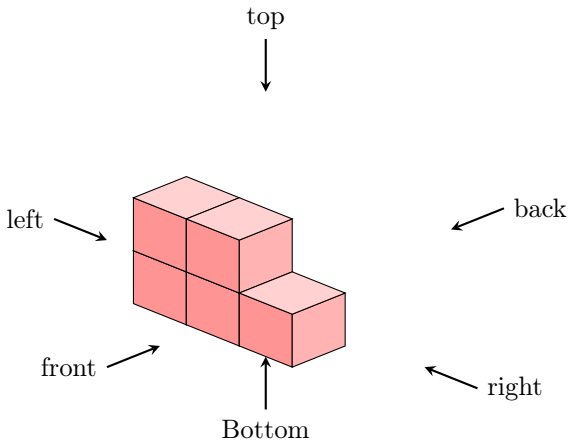
Choose one answer:



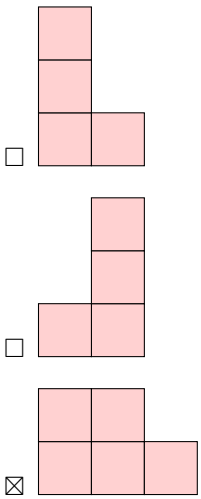
Answer: The correct right view is the third option:



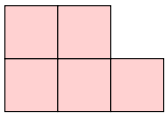
MCQ 42: Identify the front view of this solid.



Choose one answer:

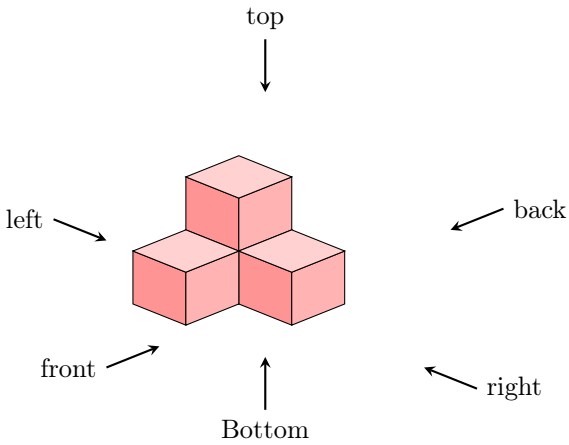


Answer: The correct front view is the third option:

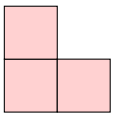


F.2 DRAWING THE PROJECTION

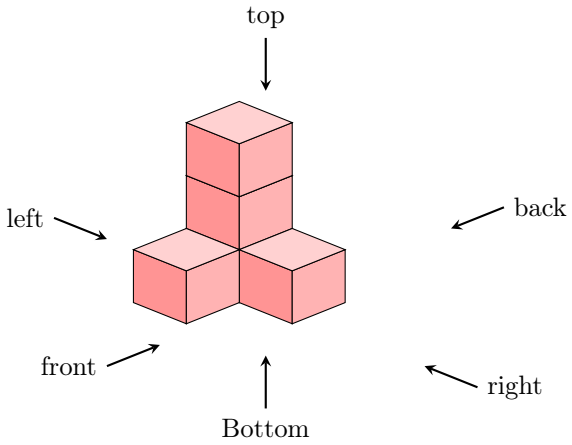
Ex 43: Draw the front view of this solid on your graph paper.



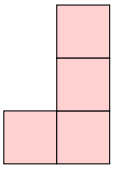
Answer: The front view is:



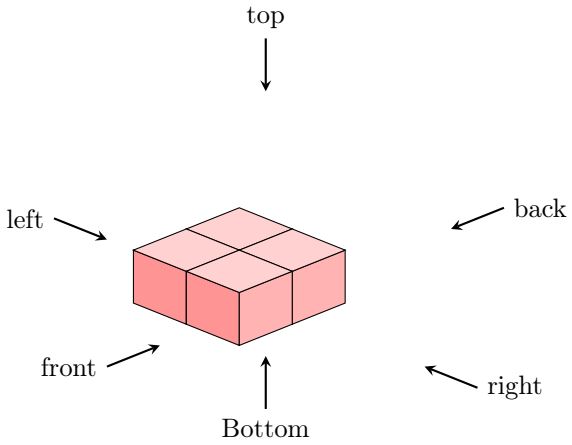
Ex 44: Draw the right view of this solid on your graph paper.



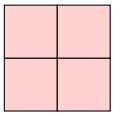
Answer: The right view is:



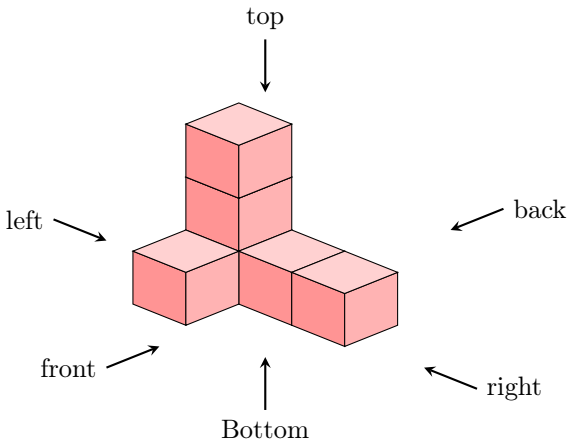
Ex 45: Draw the top view of this solid on your graph paper.



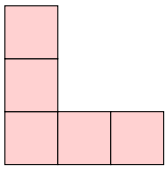
Answer: The top view is:



Ex 46: Draw the front view of this solid on your graph paper.



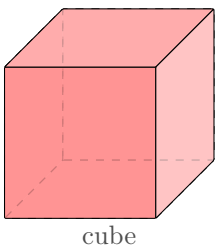
Answer: The front view is:



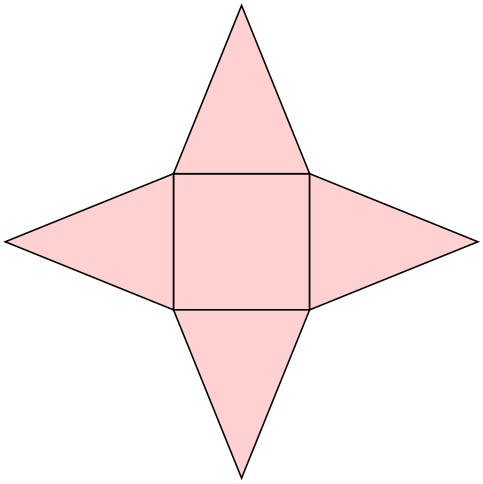
G SOLID CONSTRUCTIONS

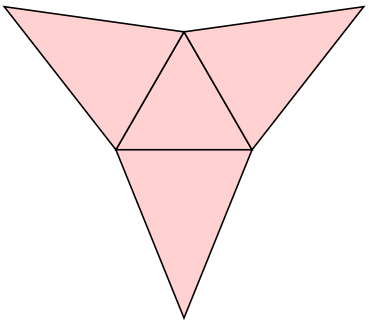
G.1 IDENTIFYING NETS

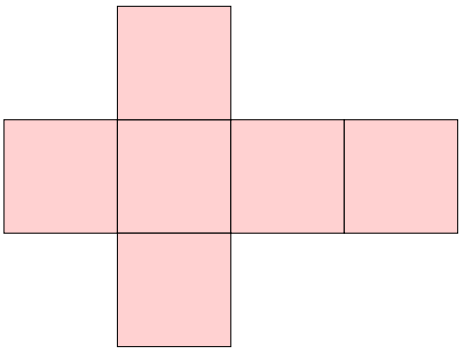
MCQ 47: Identify the net that can be folded to form this 3D shape.

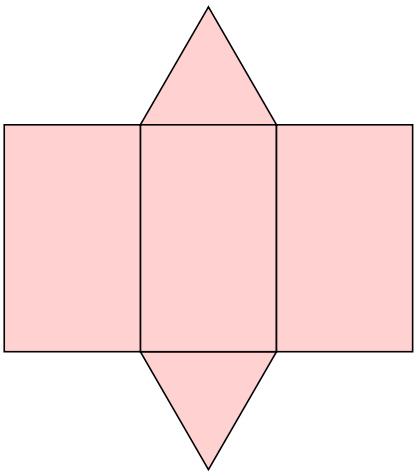

cube

Choose one answer:

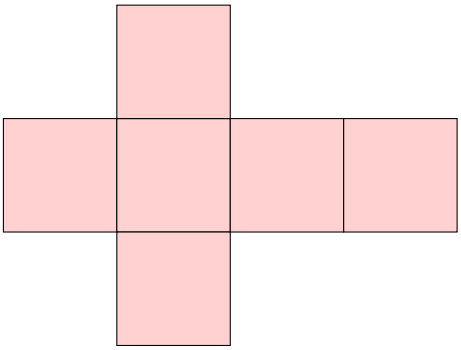

☐


☐


☒

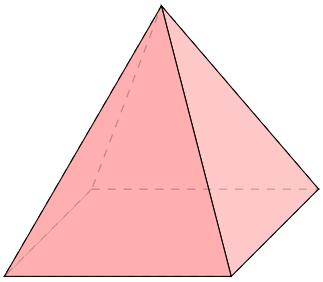

☐

Answer: The correct net is the third option:



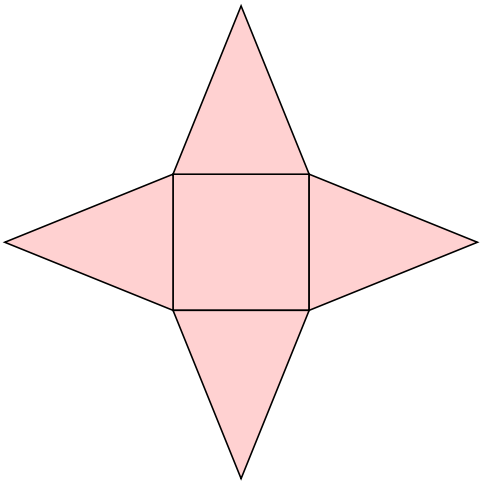
A cube has 6 square faces. The third net has 6 squares arranged in a cross pattern, which can be folded to form a cube.

MCQ 48: Identify the net that can be folded to form this 3D shape.

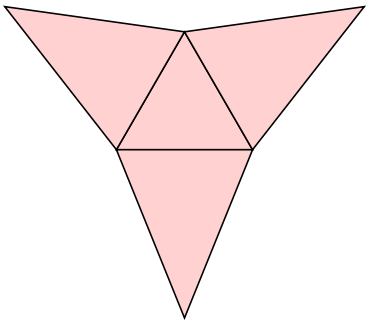


square-based pyramid

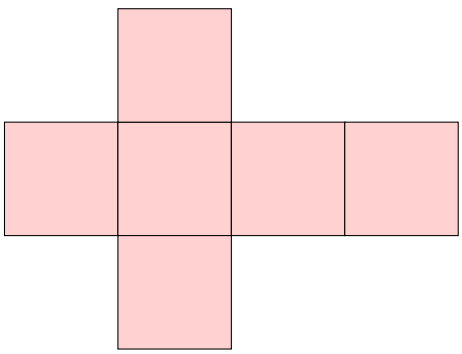
Choose one answer:



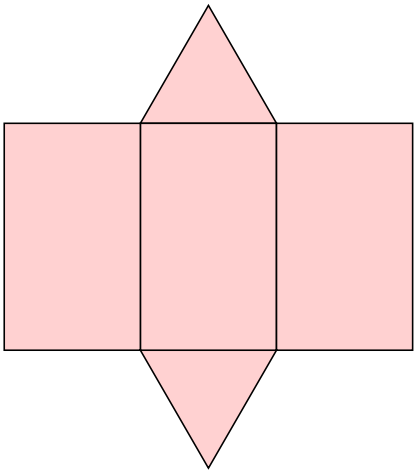
☒



☐

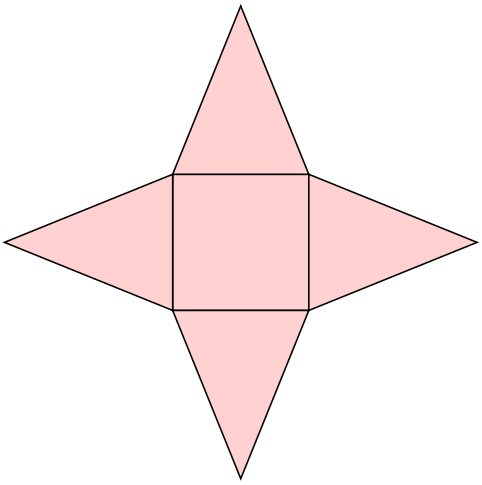


☐



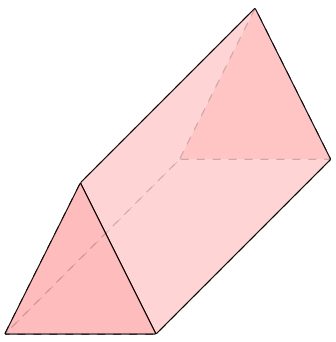
☐

Answer: The correct net is the first option:



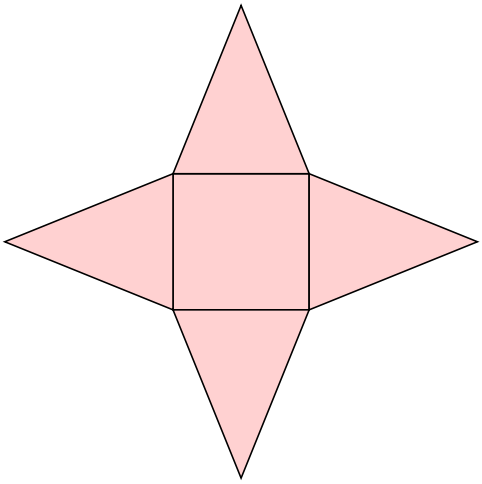
A square-based pyramid has 1 square base and 4 triangular faces. The first net has 1 square and 4 triangles arranged around it, which can be folded to form a square-based pyramid.

MCQ 49: Identify the net that can be folded to form this 3D shape.



triangular prism

Choose one answer:



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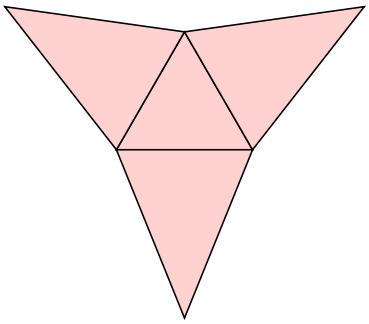

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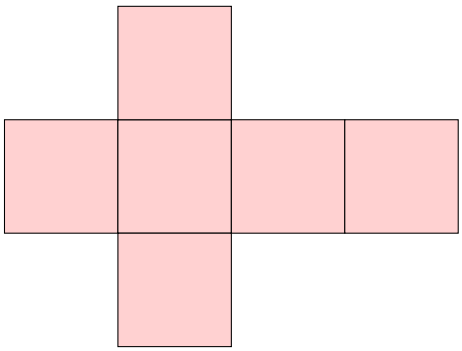

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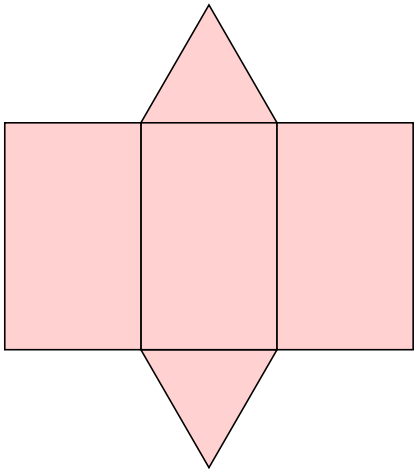
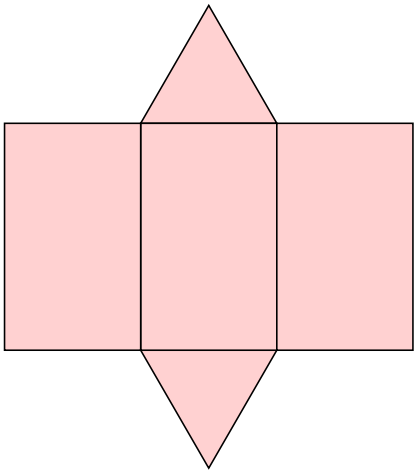


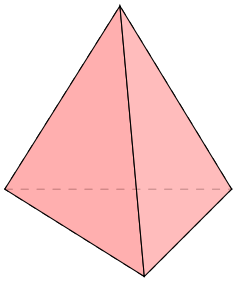
☒

Answer: The correct net is the fourth option:



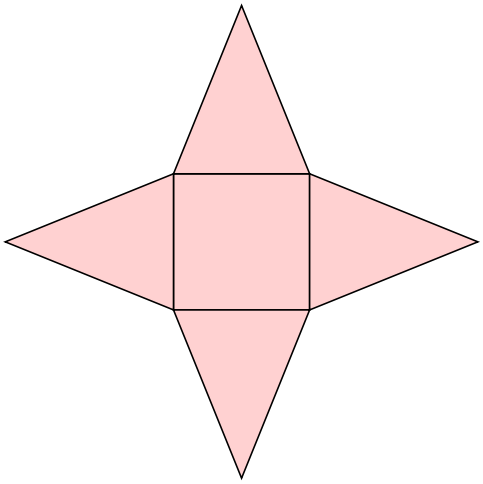
A triangular prism has 2 triangular bases and 3 rectangular faces. The fourth net has 2 triangles and 3 rectangles arranged in a pattern that can be folded to form a triangular prism.

MCQ 50: Identify the net that can be folded to form this 3D shape.



tetrahedron

Choose one answer:



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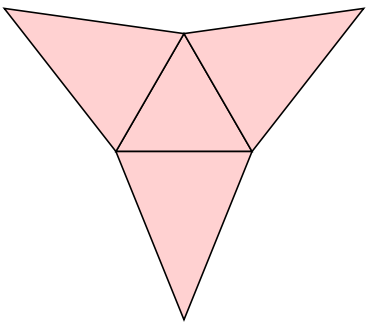

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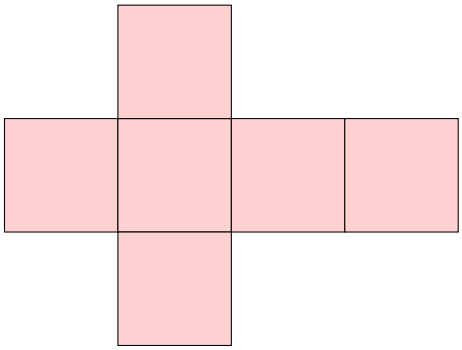
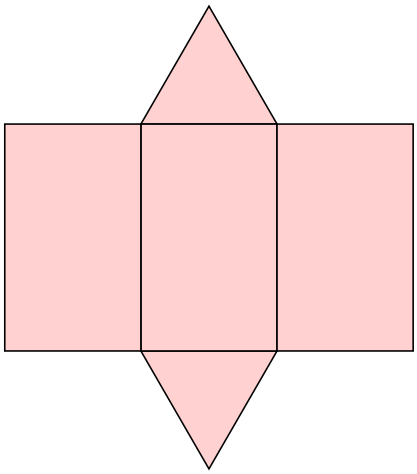
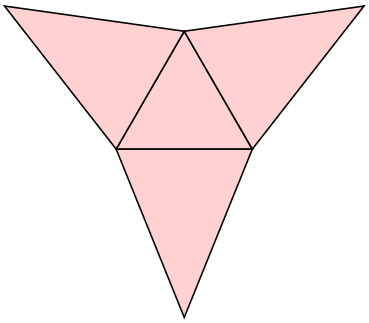


□



□

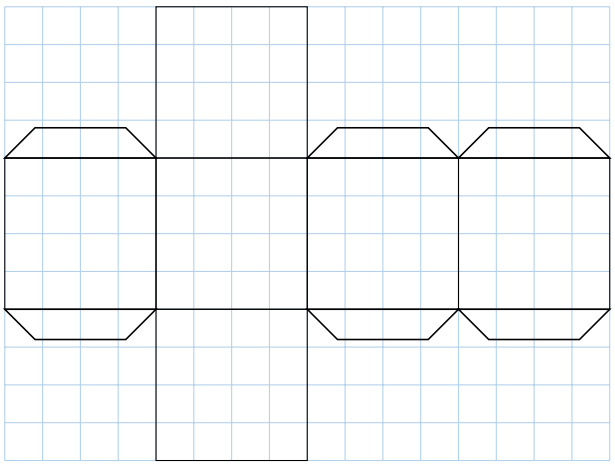
Answer: The correct net is the second option:



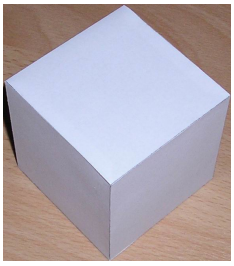
A tetrahedron has 4 triangular faces. The second net has 4 triangles arranged in a pattern that can be folded to form a tetrahedron.

G.2 CONSTRUCTING 3D SOLIDS FROM PAPER

Ex 51: Draw this net on graph paper. Cut it out (keeping the tabs), fold it, and glue the tabs to form a cube. You can decorate its different faces. I look forward to seeing your photographs.

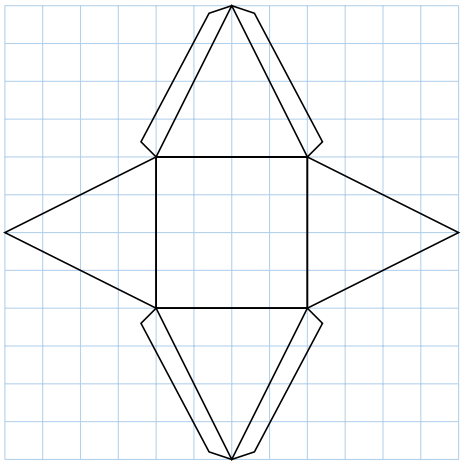


Answer: Your cube should look like this:



Follow these steps: Draw the net on graph paper, cut it out with the tabs, fold along the edges of the squares, and glue the tabs to the corresponding faces to form the cube.

Ex 52: Draw this net on graph paper. Cut it out (keeping the tabs), fold it, and glue the tabs to form a square-based pyramid. You can decorate its different faces. I look forward to seeing your photographs.



Answer: Your square-based pyramid should look like this:

Follow these steps: Draw the net on graph paper, cut it out with the tabs, fold along the edges of the square base and triangles, and glue the tabs to the corresponding faces to form the pyramid.