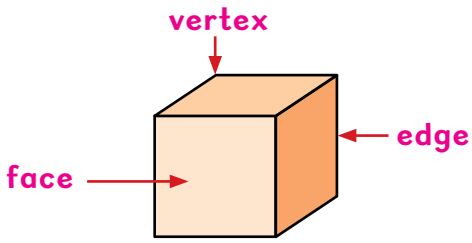
13 Nets

Prisms and Pyramids

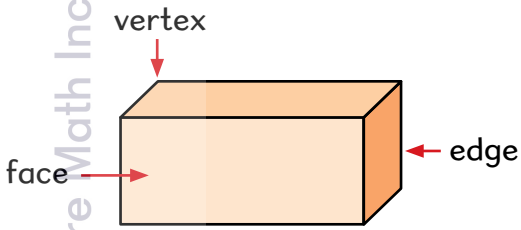
Recall

These are properties of 3-dimensional shapes and solids.



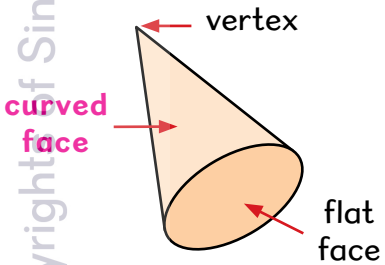
Cube

A cube has ☐ flat faces, ☐ vertices and ☐ edges.



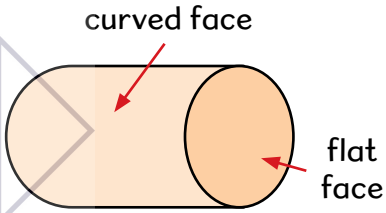
Cuboid

A cuboid has ☐ flat faces, ☐ vertices and ☐ edges.



Cone

A cone has ☐ flat face, ☐ vertex and ☐ curved face.



Cylinder

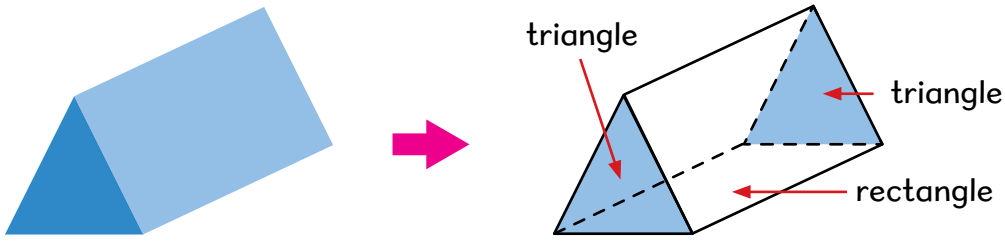
A cylinder has ☐ flat faces and ☐ curved face.

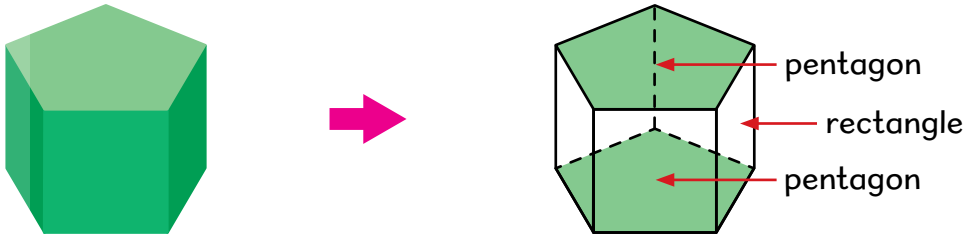
The 3-dimensional shapes and solids are also known as **geometric figures**.

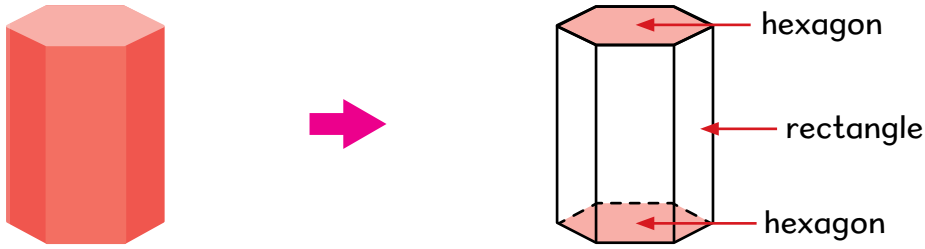
Go to PB 4B Practice 1

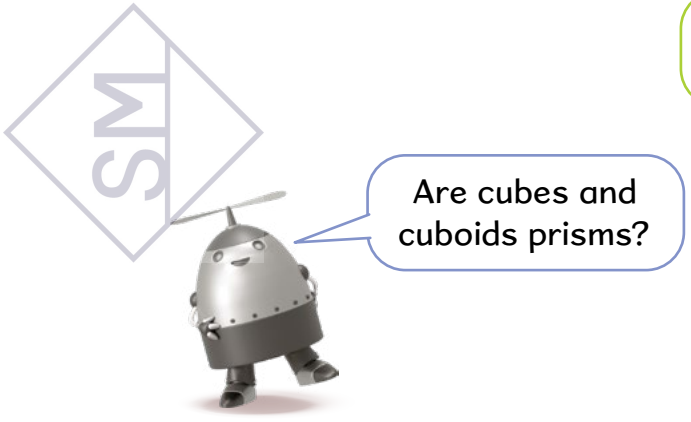
Let's Learn

1 A **prism** has faces of the **same shape** and **size** at opposite ends.
The identical faces at opposite ends are **parallel** to each other.
The other faces that connect the faces at the opposite ends are **rectangular** in shape.

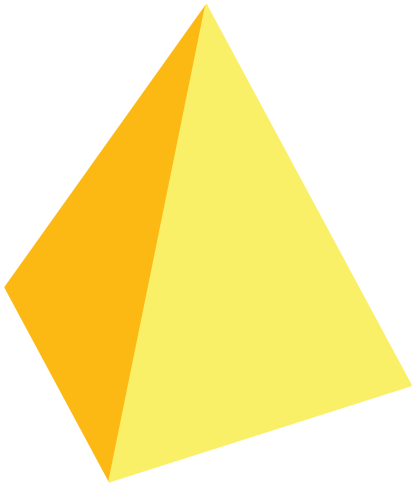


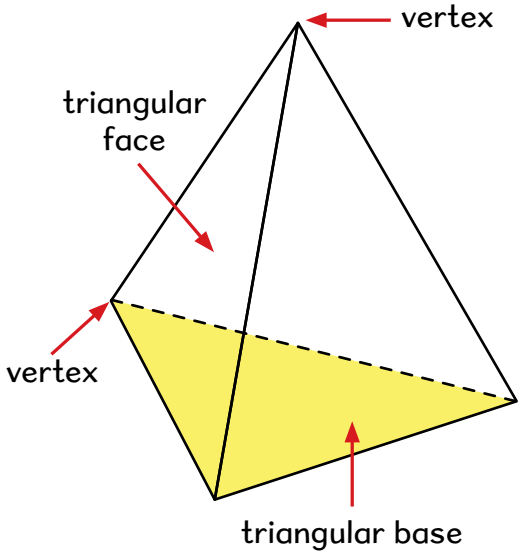


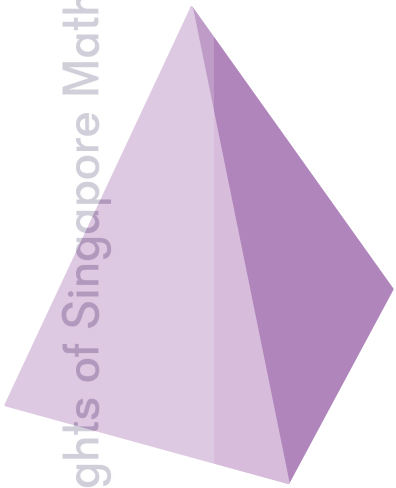


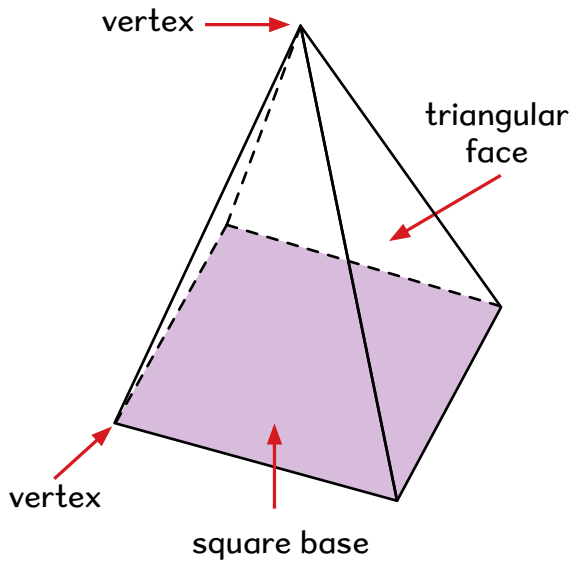


2 A **pyramid** has a **base** that can be of different shapes.
Its **triangular faces** meet at the **vertex**.









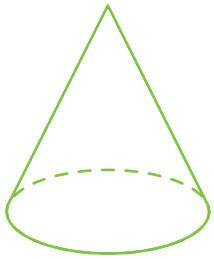
Maths Talk

Discuss in pairs.
What are these items? Where can they be found?
Are they prisms or pyramids?

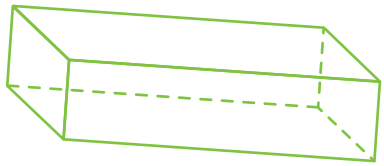
Let's Practise

Name the solid figures.

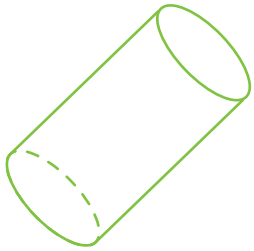
(a)



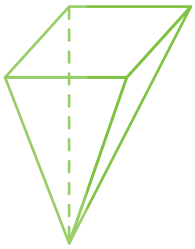
(b)



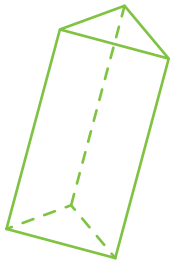
(c)



(d)



(e)



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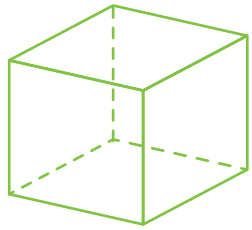
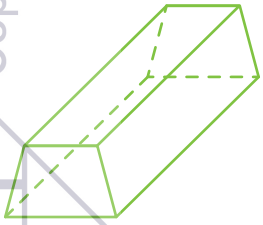
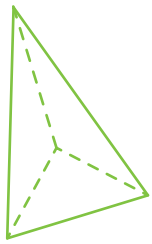


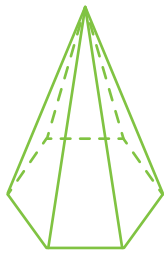
(g)



(h)



(i)

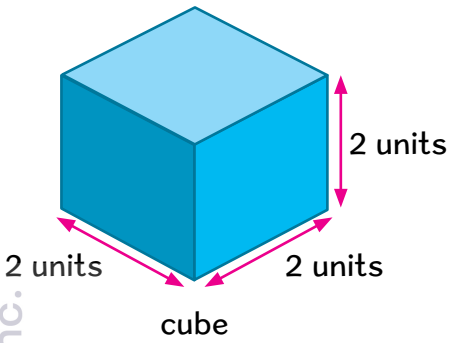


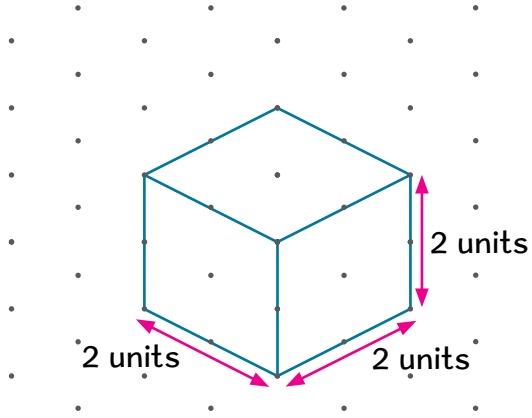
Drawing Geometric Figures

Let's Learn

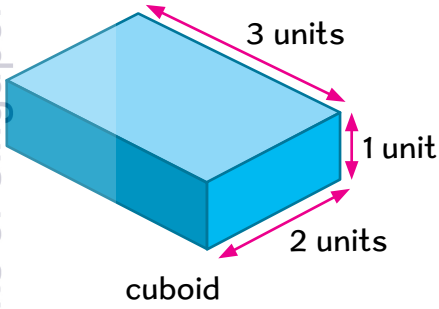
1 Draw each solid figure on the isometric grid.

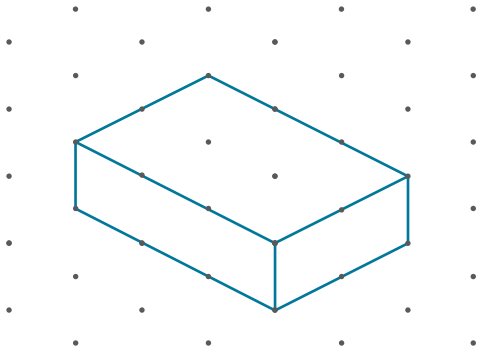
(a)



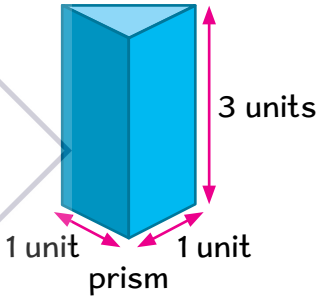


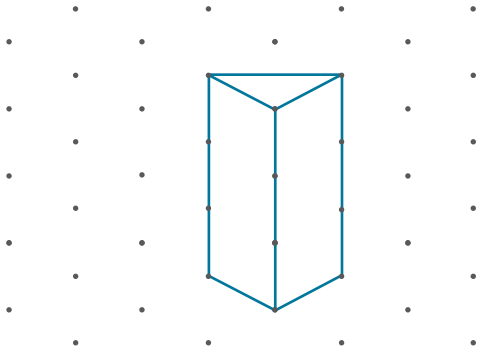
(b)



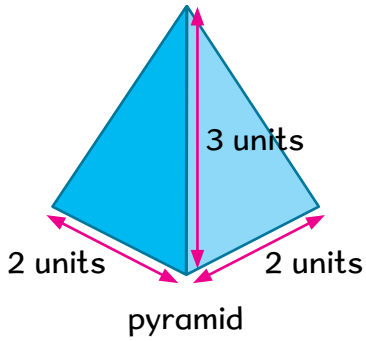


(c)

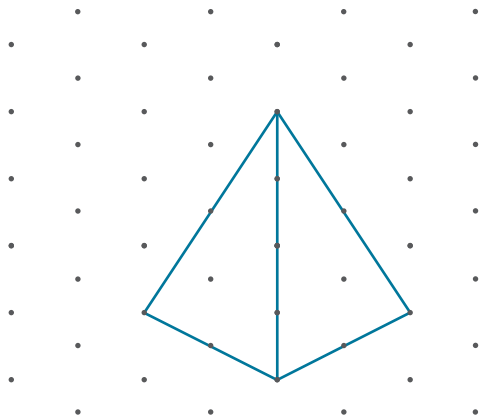




(d)



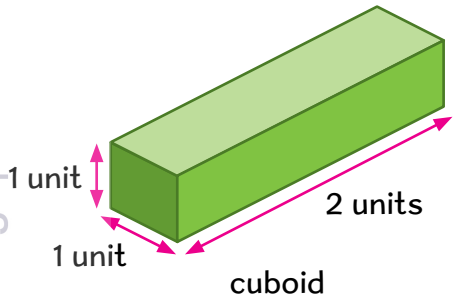
pyramid



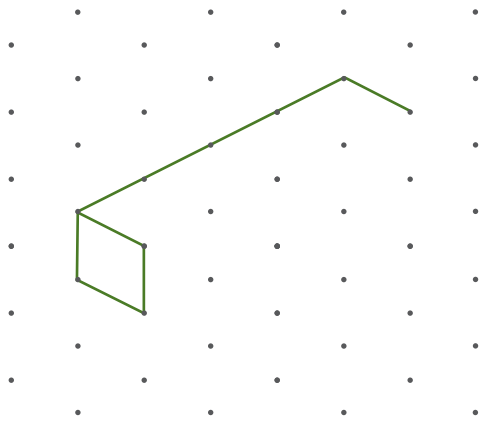
Let's Practise

1 Complete the drawing of each solid figure on the isometric grid.

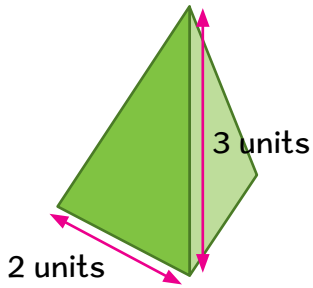
(a)



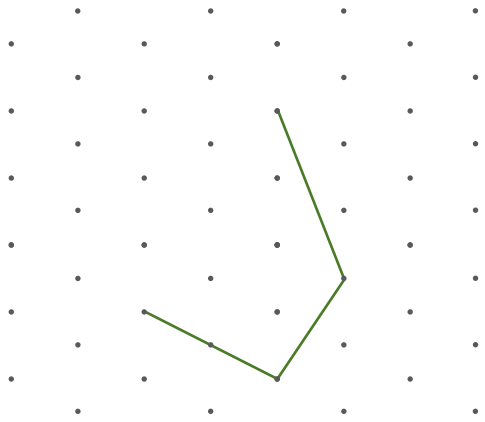
cuboid



(b)



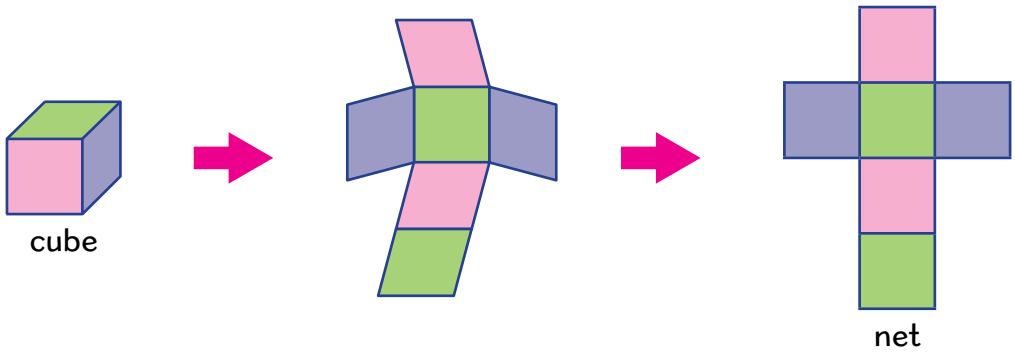
pyramid



Nets of Geometric Figures

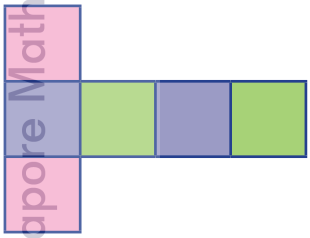
Let's Learn

1 When the faces of a cube are unfolded, the **net** of the cube is formed.

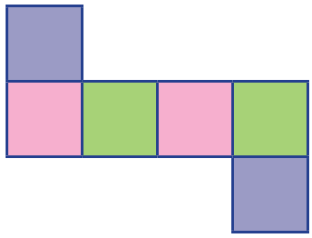


A **cube** has more than one net as shown below.

(a)

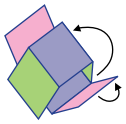


(b)



A net of a solid is a flat figure with faces that can be folded to form the solid.

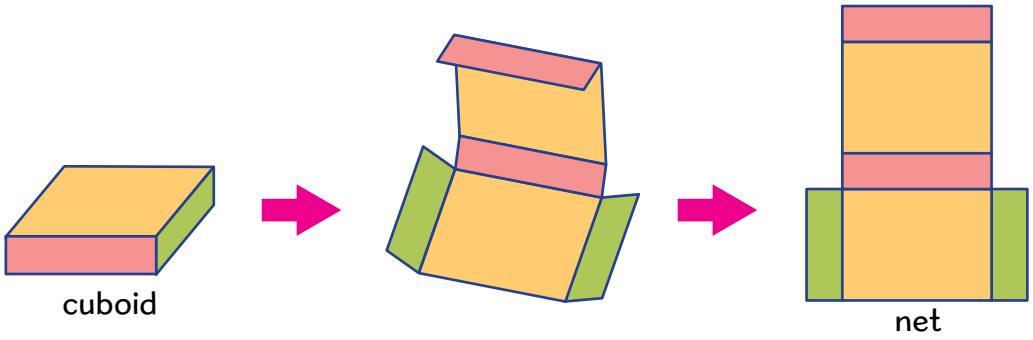
I can form a cube from its net.



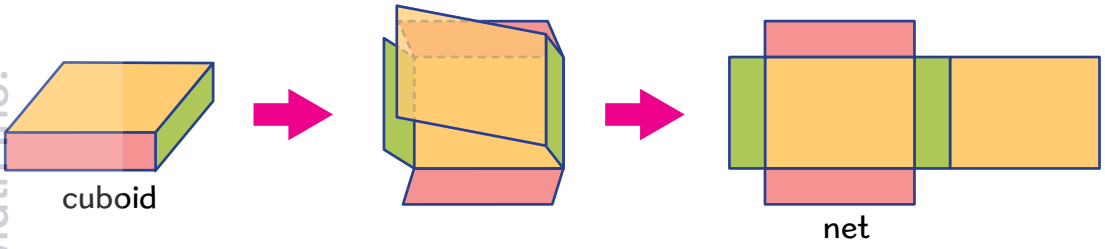
What are other nets that can form a cube?

2 A **cuboid** also has more than one net.

(a)

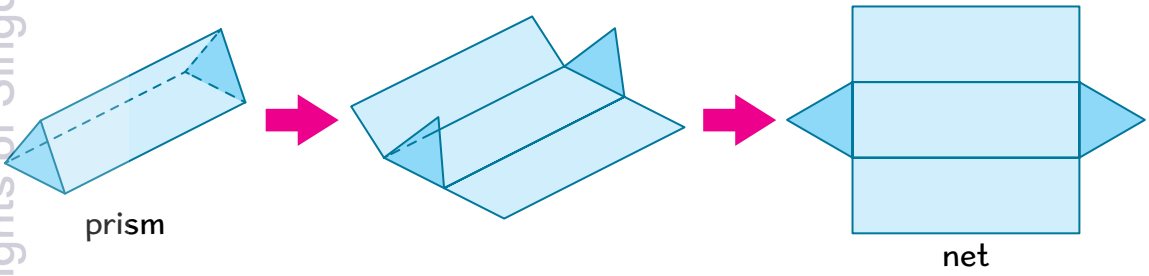


(b) Here is another example of a net for the same cuboid.

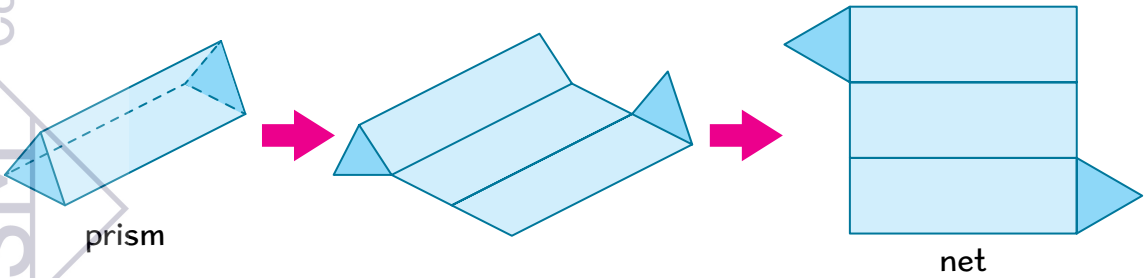


3 A **prism** can have more than one net.

(a)

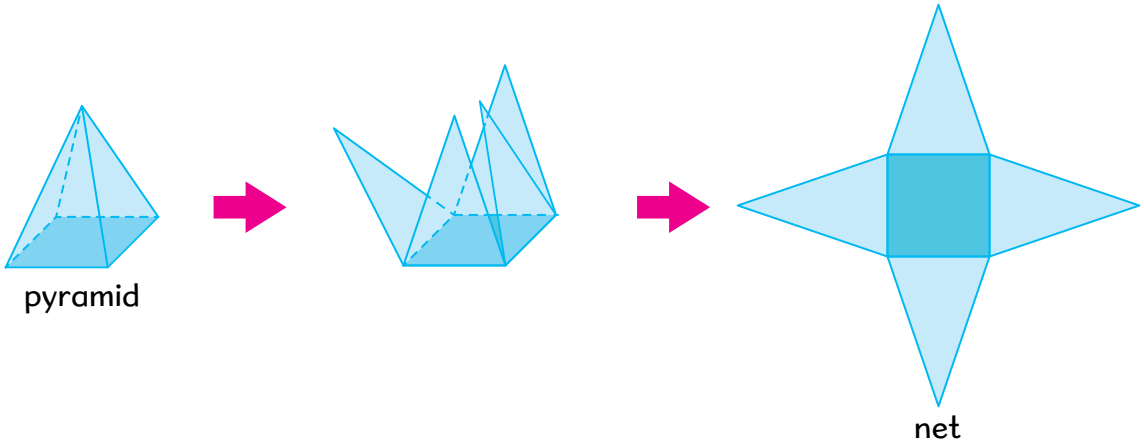


(b)

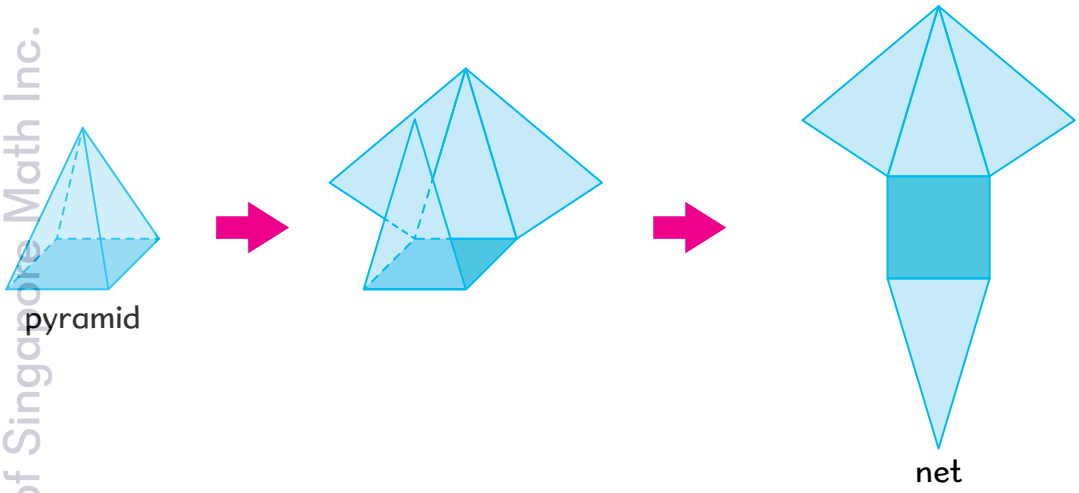


4 A **pyramid** can have more than one net.

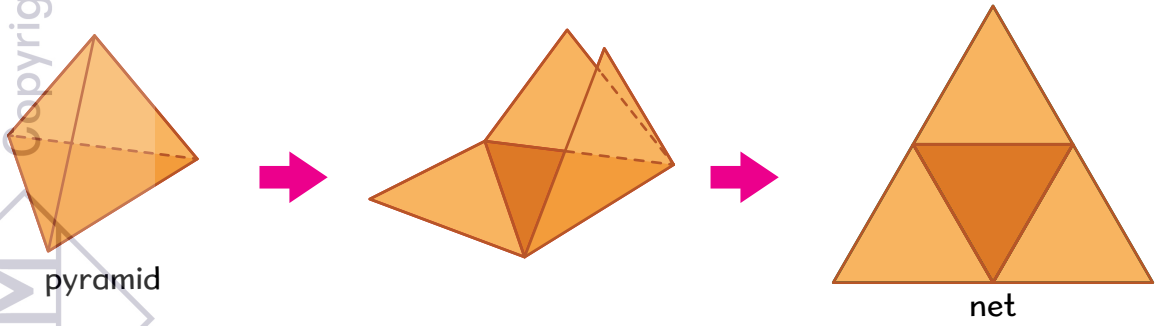
(a)



(b) Here is another example of a net for the same pyramid.

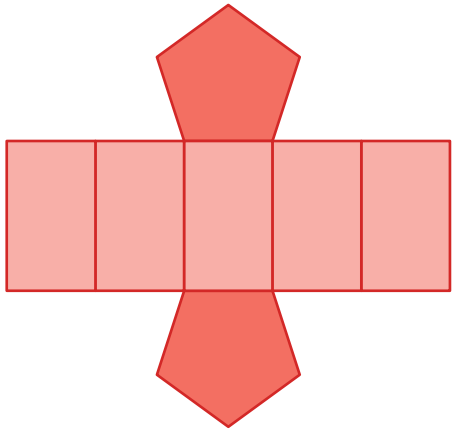


5 Here is an example of a net for another pyramid.

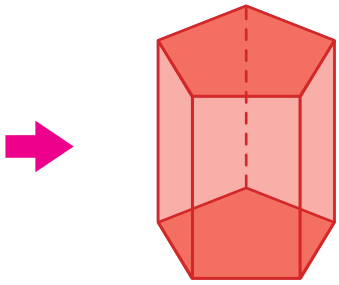


6 Identify the solid based on the given net.

(a)

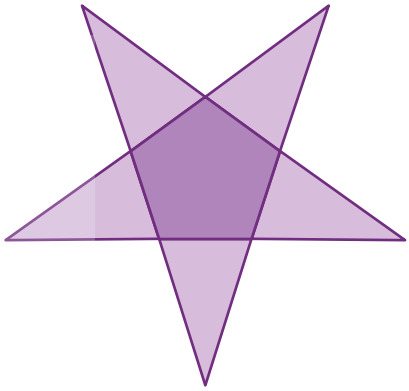


net

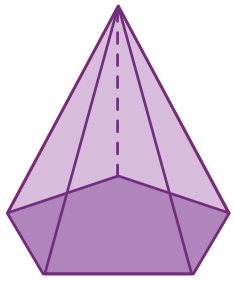


prism

(b)



net



pyramid

Hands-on Activity

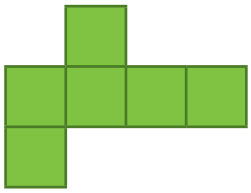
Work in groups.
Make the following solid figures using geoshapes.

(a) cube
(b) cuboid
(c) prism
(d) pyramid

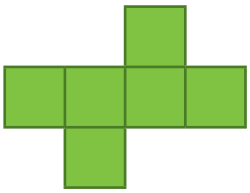
Let's Practise

1 **(a)** Which of the following are nets of the cube shown below?
(b) Explain why the others are **not** nets of a cube.

cube

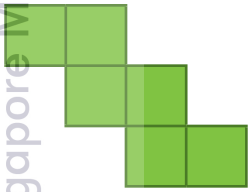


A

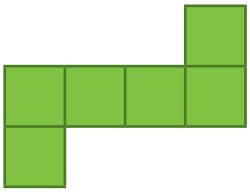


B

C

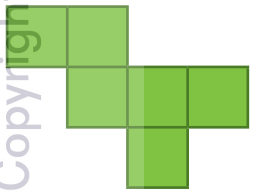


D

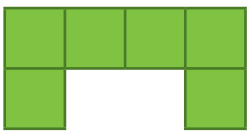


E

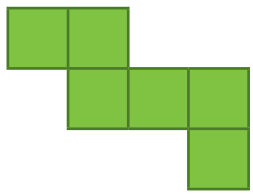
F



G

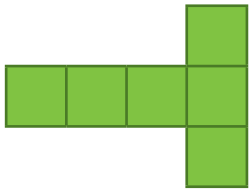


H

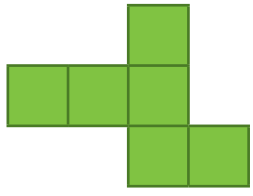


I

J



K



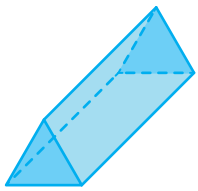
L

2 Which of the following are nets of the cuboid shown below?

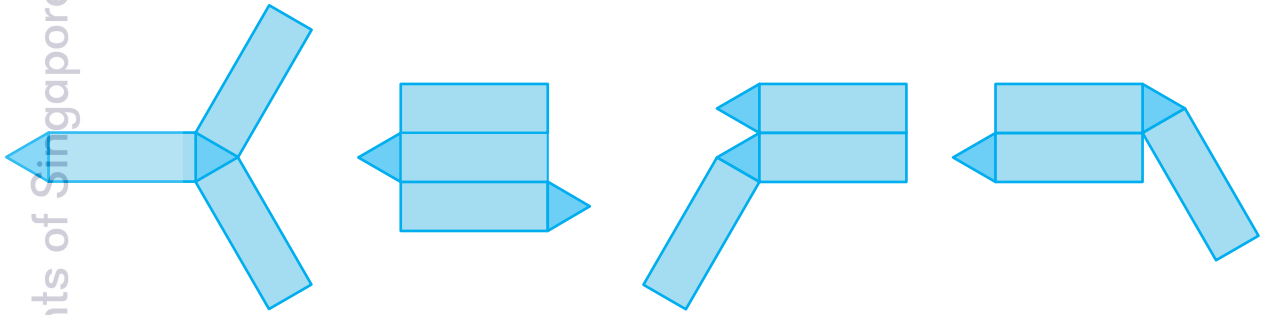
cuboid

E F G H

3 Which of the following are nets of the prism shown below?

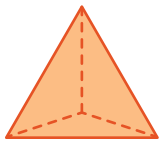


prism

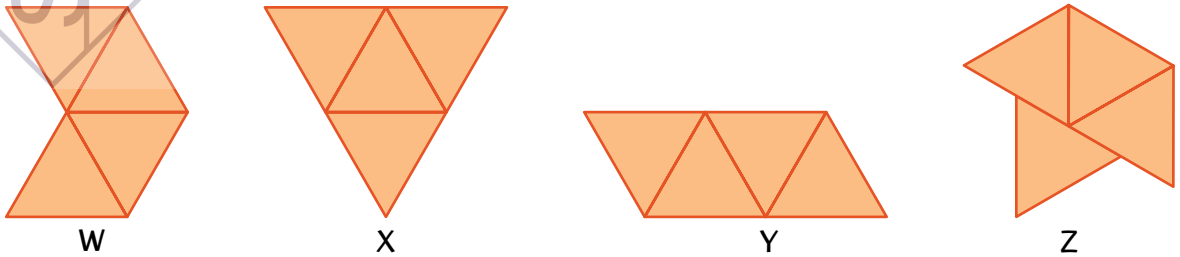


P Q R S

4 Which of the following are nets of the pyramid shown below?



pyramid



W X Y Z

Mathematics Around Us

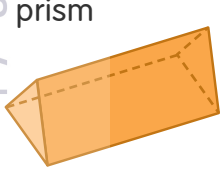
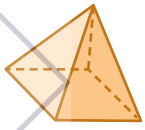
Some families make rice dumplings, which are traditionally eaten by the Chinese to celebrate the Dragon Boat Festival.

(a) Does the rice dumpling in the photo look like a prism or a pyramid? Why?

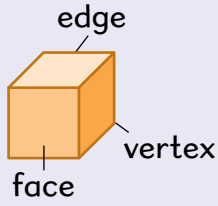
(b) What are some other objects that have the same shape as the rice dumpling shown?

Thinking Aloud

1. Work in groups.
Each group will receive the following solid figures: cube, cuboid, prism and pyramid. Use them to find the number of faces, vertices and edges for each shape.

3D-figure	Number of faces (F)	Number of vertices (V)	Number of edges (E)	F + V – E
(a) cube 				
(b) cuboid 				
(c) prism 				
(d) pyramid 				

In the last column, find the **sum** of **Number of faces** and **Number of vertices**.
Then subtract **Number of edges** from the **sum**.
What do you notice?



2 Derrick says that Figure A and Figure B are nets of a cuboid.

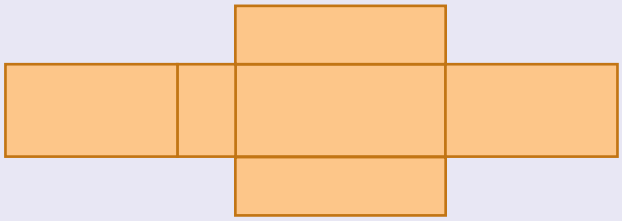


Figure A

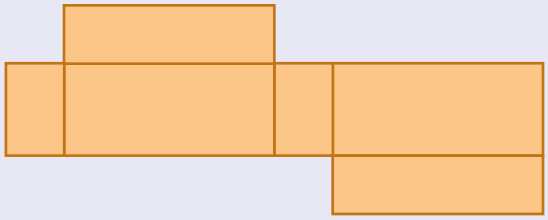


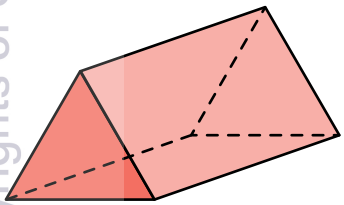
Figure B

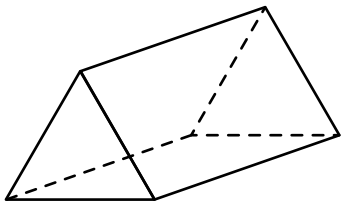
Do you agree with him? Explain.

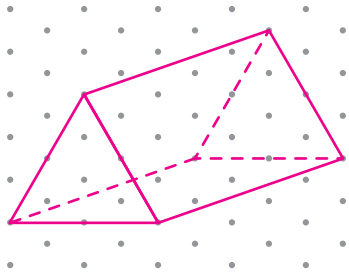
What Have I Learnt?

1 **Geometric figures.**

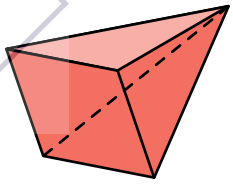
(a) A **prism** has flat faces of the same shape and size at opposite ends that are parallel to each other.

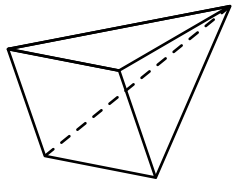


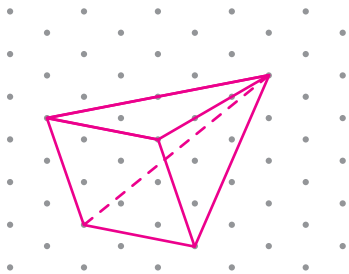




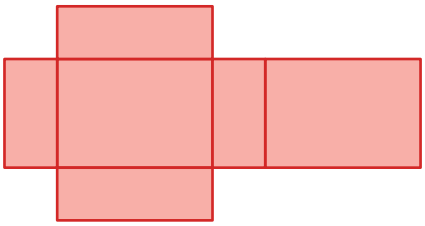
(b) A **pyramid** has a flat base and triangular faces that meet at a vertex.

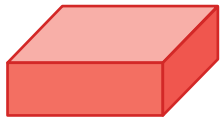




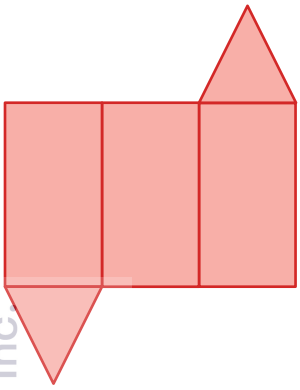


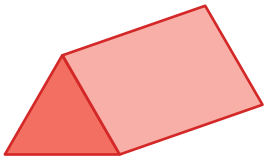
A **net** of a solid is a flat figure with faces that can be folded to form the solid.



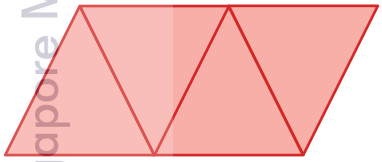


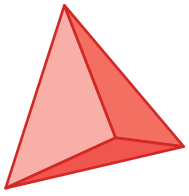
prism



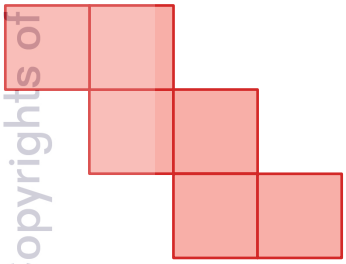


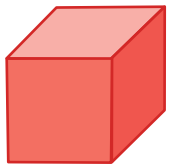
prism



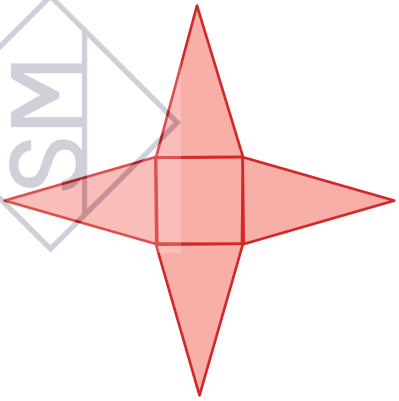


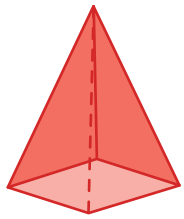
pyramid





cube





pyramid