

3D Shapes and Nets

Introduction to 3D shapes

What is a 3D shape?

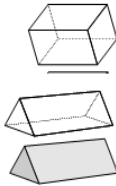
Any shape that is not flat and has volume

How do you know the name of the shape?

By looking at the properties of the shape

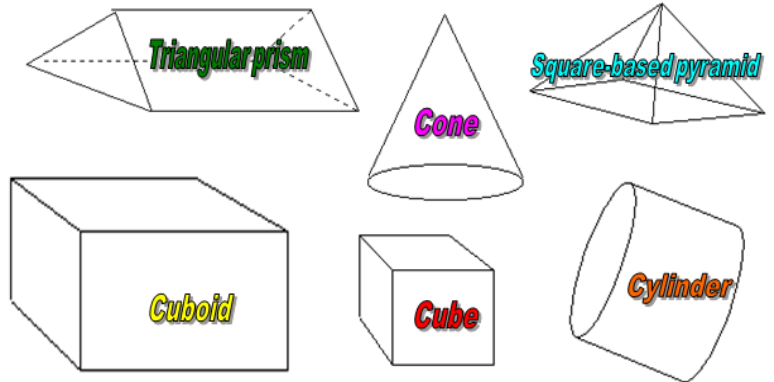
E.g. a cuboid has 6 faces and 8 vertices

E.g. a triangular prism has 3 rectangular faces and 2 triangular faces



3D shapes

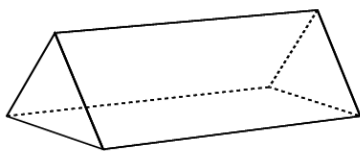
Do you know the names of these 3D shapes?



What is a prism?

A 3D shape with two flat shapes connected by rectangular faces

Whatever the flat shapes at the end are determines the type of prism

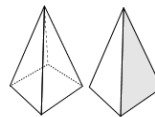


Triangular prism

What is a pyramid

A 3D shape with a flat shape as a base and triangular faces sloping up to a point

What ever the flat shape at the base is, determines the type of pyramid



Square-based pyramid

3D Shapes

Faces are the shape's surfaces.

Edges are the line segments where two faces meet.

Vertices are the places where 3 or more edges meet.

NETS

A **net** is a flat shape that can be folded up to make a 3D shape.

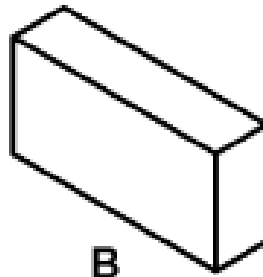
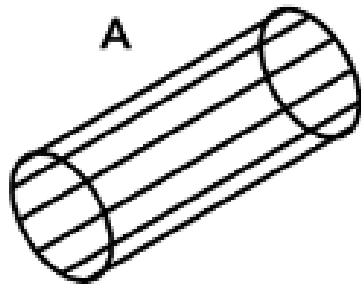
Here are a few examples.

Sometimes, different nets can make the same shape!

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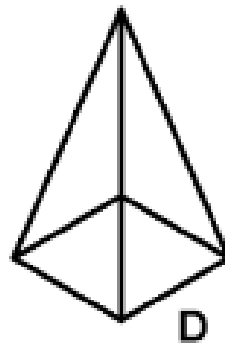
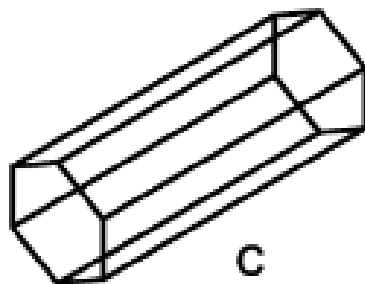
Task 1:

Match up the 3D shapes with the correct name



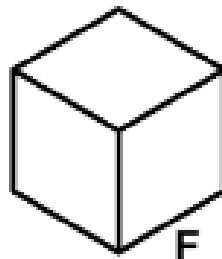
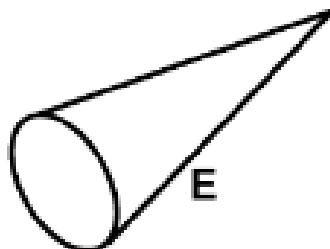
Cube

Cuboid



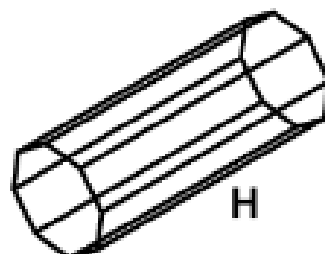
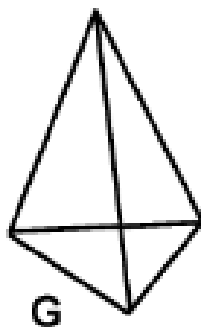
**Square based
pyramid**

Cone



Cylinder

Tetrahedron



Octagonal prism

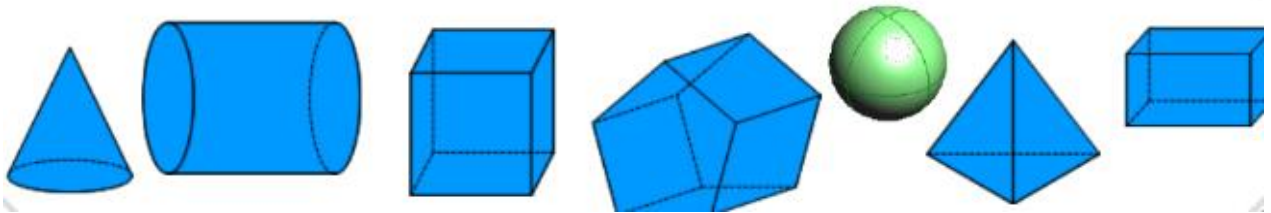
Hexagonal prism

Task 2:

Choose 2 3D Shapes. What is the same and what is different about the shapes?

Think about the number and shape of its faces, and the number of edges and vertices.

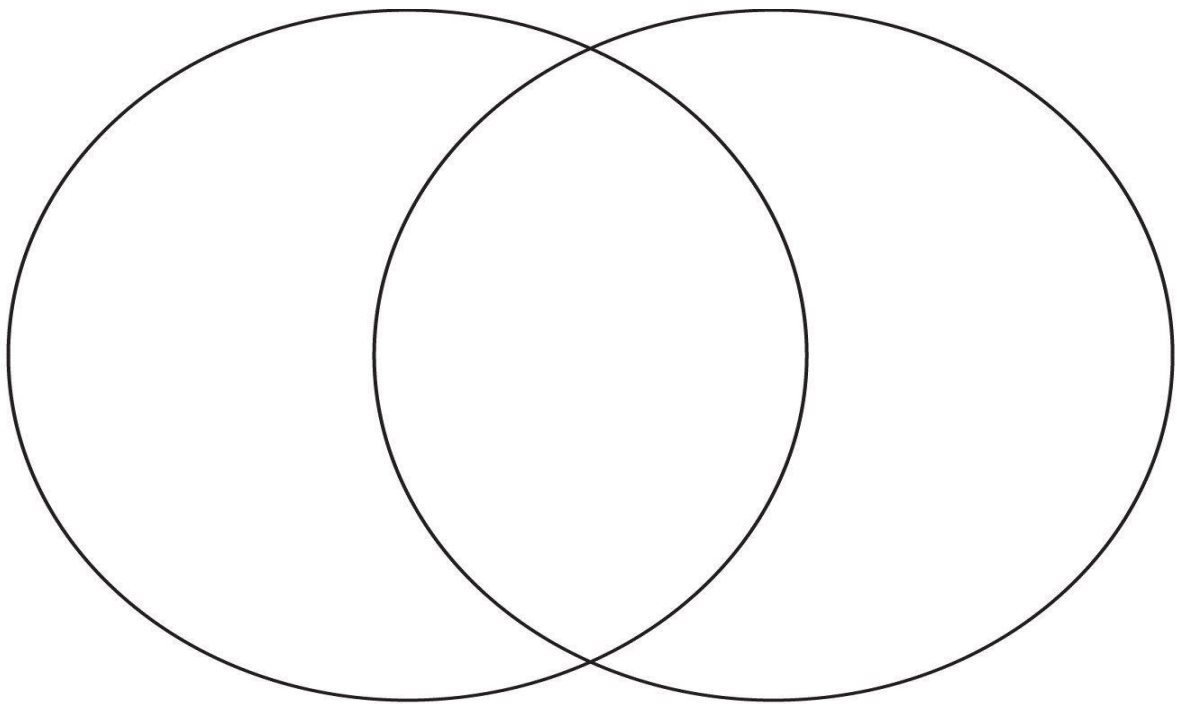
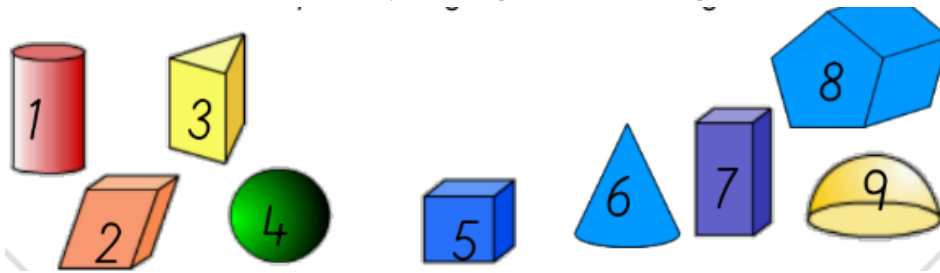
Do this a few times comparing different 3D shapes



<i>Shape 1</i>	<i>Shape 2</i>	<i>Similarities</i>	<i>Differences</i>

Task 3:

Sort these shapes using the Venn Diagram



Prism

8 Vertices

Can you also name each shape?

[illegible]

Task 4:



Archies chooses a 3D shape, he says it is a cube. Can you explain to him why he is incorrect?

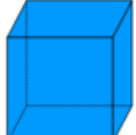


edges vertices

number of faces shape of faces



Archie is comparing 3D shapes, he says that the cube and cuboid are similar because they both have 6 faces. Can you find any more similarities or any differences?

If the answer is...



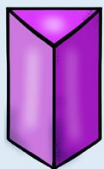
What could the question be?

Can you think of an answer using your knowledge of 3D shapes?



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If the answer is...



What could the question be?

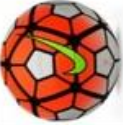
Can you think of an answer using your knowledge of 3D shapes?



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Task 5:

Identify the properties of the shapes below

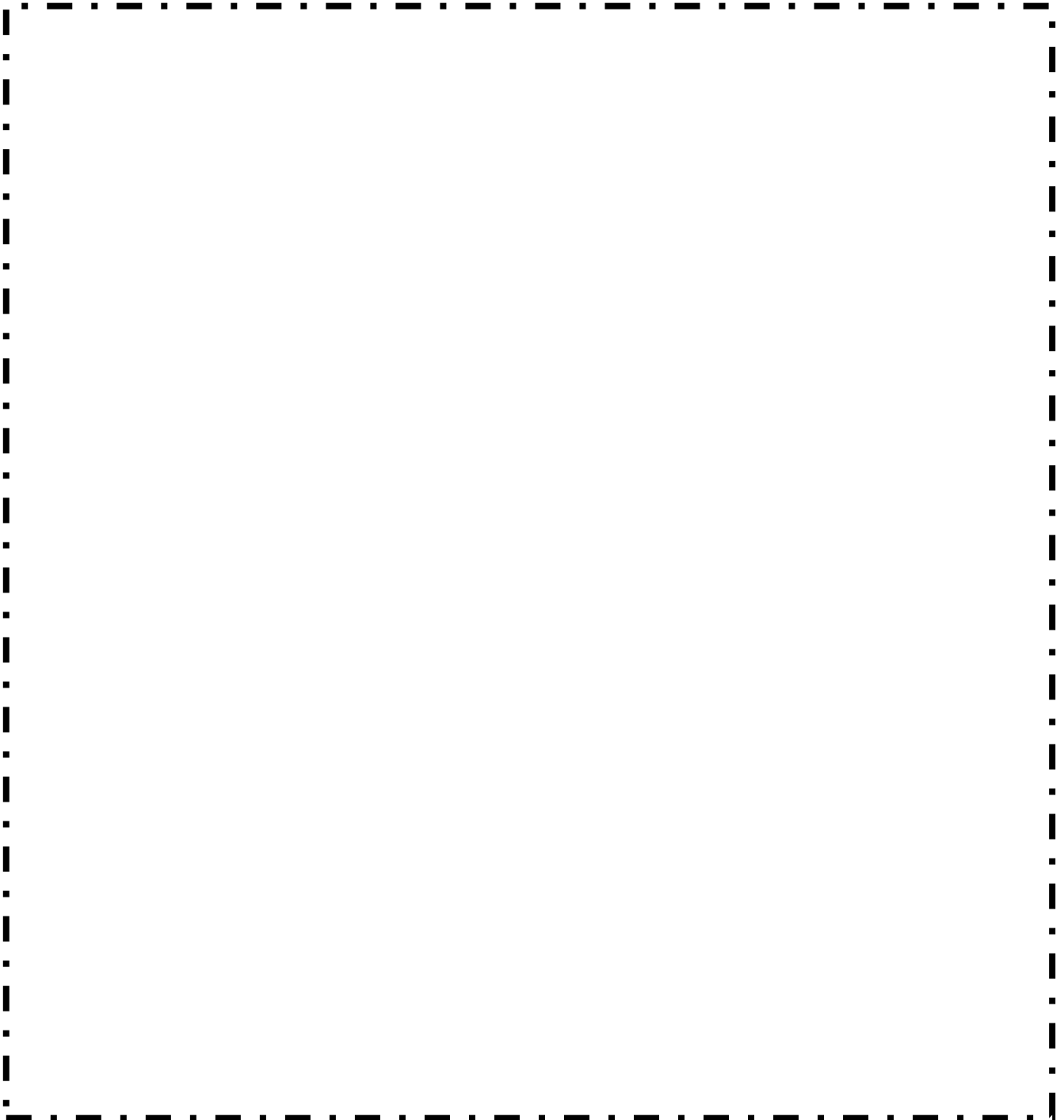
 Name: _____ Faces: _____ Vertices: _____ Edges: _____	 Name: _____ Faces: _____ Vertices: _____ Edges: _____	 Name: _____ Faces: _____ Vertices: _____ Edges: _____
 Name: _____ Faces: _____ Vertices: _____ Edges: _____	 Name: _____ Faces: _____ Vertices: _____ Edges: _____	 Name: _____ Faces: _____ Vertices: _____ Edges: _____

Task 6:

3D SHAPE HUNT!

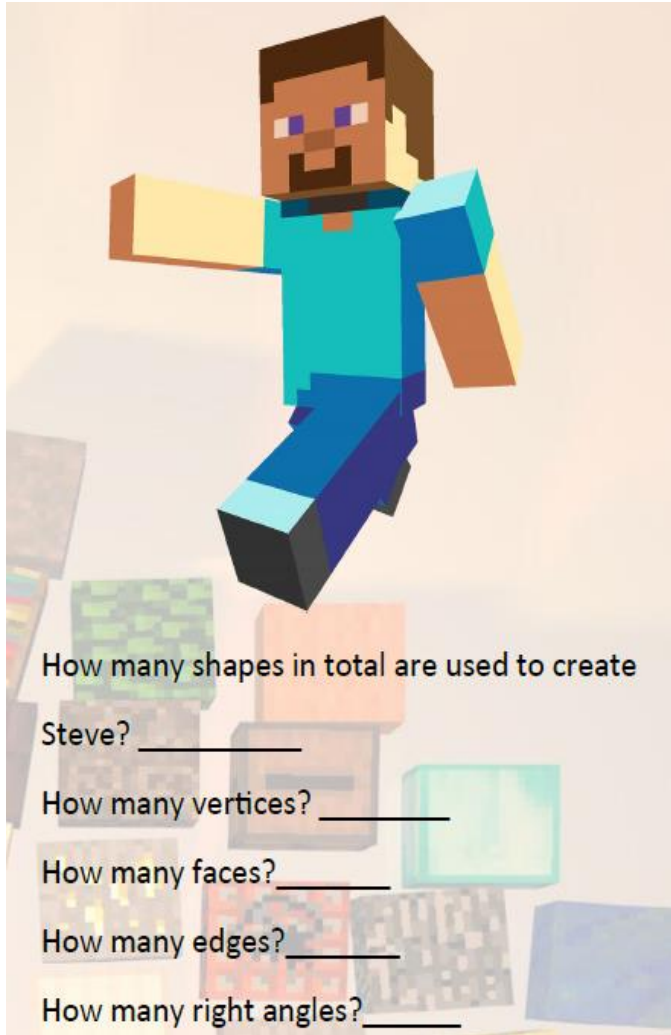
What can you find?

- Go on a 3D Shape hunt around your home and garden
- Draw or stick photos of the shapes that you find

A large rectangular area defined by a dashed line, intended for drawing or sticking photos of 3D shapes. The dashed line is composed of short horizontal and vertical segments, creating a clear boundary for the activity.

Task 7:

Minecraft Mega Shape Challenge



EXTENSION:

Can you create your own animal or character made up of a range of 3D shapes?

Have a go at making it or drawing it.

Chat to a family member about what 3D shapes you have used and about the properties found within the whole creation - Enjoy!

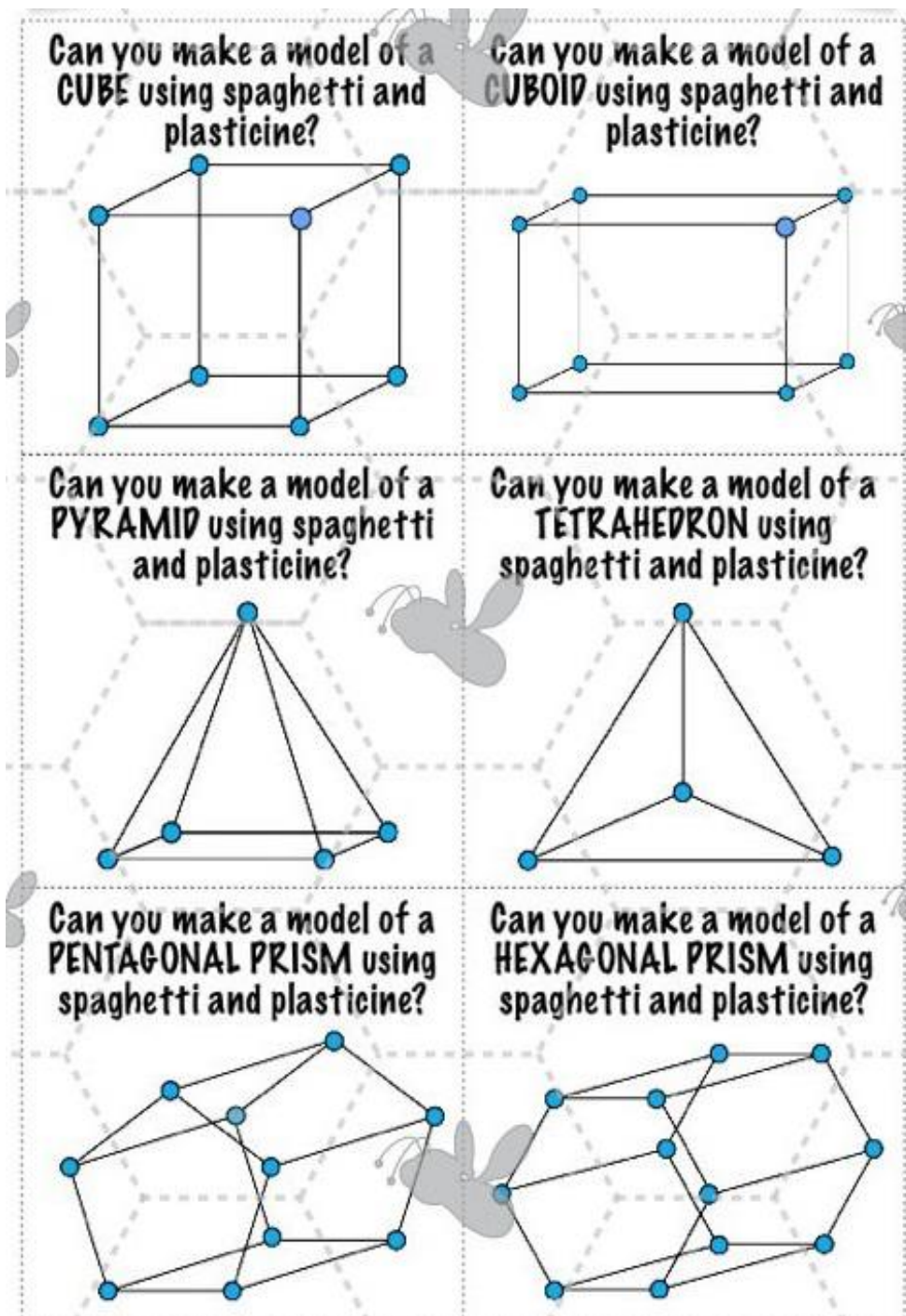


Task 8:

Have a go at creating some 3D shapes out of items you have at home.

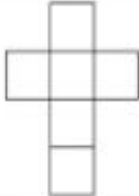
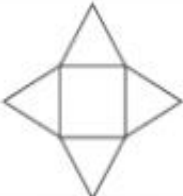
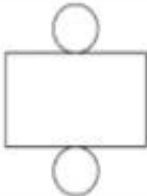
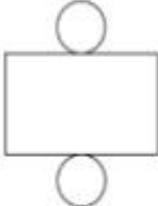
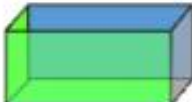
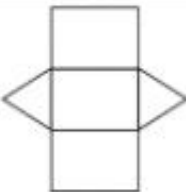
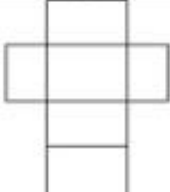
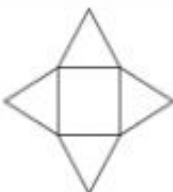
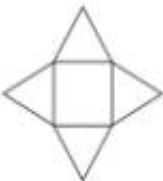
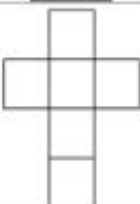
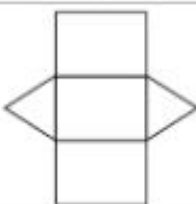
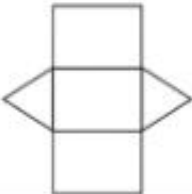
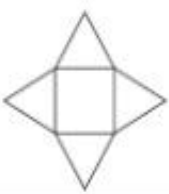
Possible options:

- Spaghetti and Marshmallows (STEM club should be good at this!)
 - Pencils and plasticine
 - Straws and pipe cleaners



Task 9:

For each 3d shape, shade the correct net.

Task 10: Nets of 3D Shapes

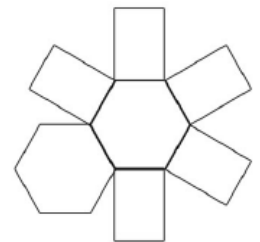
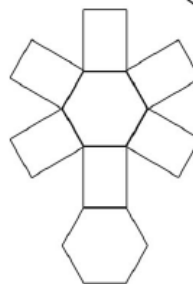
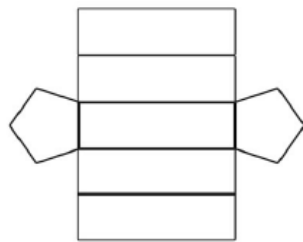
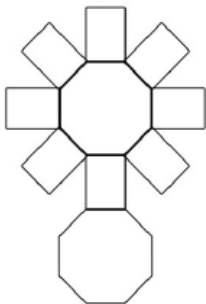
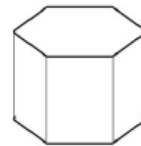
Maths Strategy:

When looking at the net of a 3D shape, use your hands to help you imagine that you are folding it together. You can also 'open' a 3D shape back up to make its net.

Handy Tip!

Look carefully at the number of the faces that make up the net and the shape of these. Some nets will not fold together to make a 3D shape.

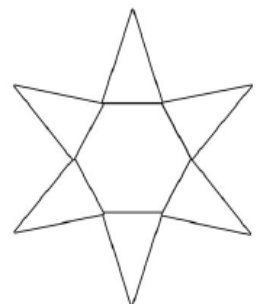
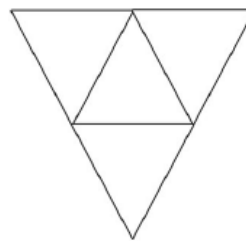
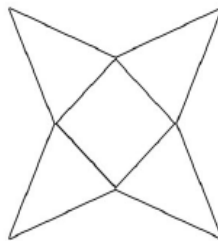
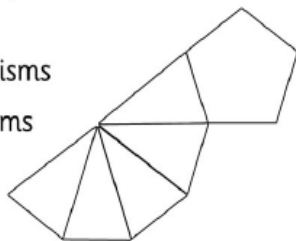
1. Which of the following nets would fold to make this 3D shape?
Ring the correct answer.



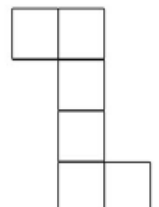
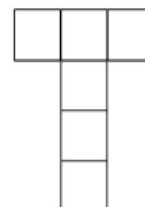
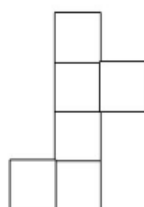
2. Hamad made this net.
What 3D shape will it make?
- ☐ A rectangular prism
☐ A square-based prism
☐ A triangular prism
☐ A triangular-based pyramid
3. The net of an octagonal prism will be made of:
- ☐ 6 octagons and 6 rectangles.
☐ 8 octagons and 2 rectangles.
☐ 2 octagons and 6 rectangles.
☐ 2 octagons and 8 rectangles.

4. These nets will all fold to make:

- ☐ rectangular prisms
☐ triangular prisms
☐ pyramids
☐ cubes



5. Which net does not make a cube?
Ring the correct answer.



Task 11:

Have a look at the **Making and Playing Rugby Dice** task and try using the cube nets to create the dice. How accurately can you make your dice?

Have a go at the game or create your own version of the game using the dice you have made

Task 12:

Design your own Net for a 3D Shape and using paper or card have a go at creating the shape using the net.

How will you secure it together? Tabs? Glue? Cellotape?

Will you decorate your shapes?

Make sure to use a ruler to create accurate shapes in your net which then makes folding it into the 3D shape easier.

How many different 3D shapes can you create?

