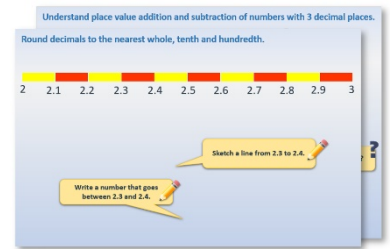


Week 13, Day 2

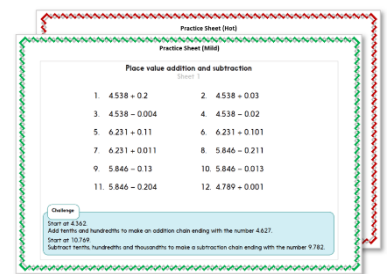
3-D shapes

Each day covers one maths topic. It should take you about 1 hour or just a little more.

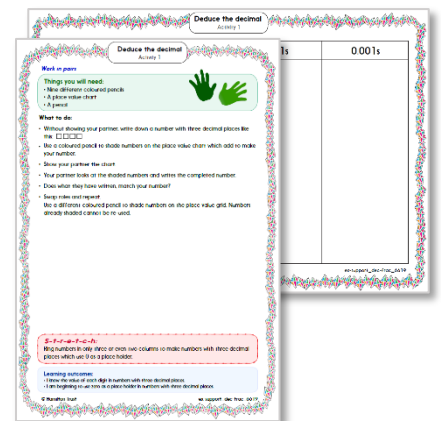
1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.



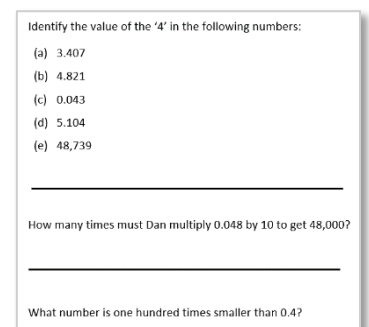
2. Tackle the questions on the **Practice Sheet**. There might be a choice of either **Mild** (easier) or **Hot** (harder)! Check the answers.



3. Finding it tricky? That's OK... have a go with a grown-up at **A Bit Stuck?**

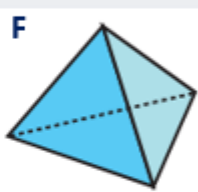
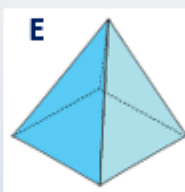
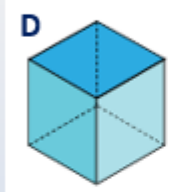
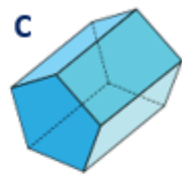
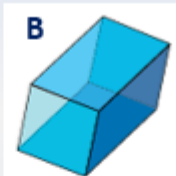


4. Have I mastered the topic? A few questions to **Check your understanding**. Fold the page to hide the answers!



Learning Reminders

Describe 3-D shapes.



Read each description.
Which shape is it describing?

This shape has 2 triangular faces and three rectangular faces, 6 vertices and 9 edges.

This shape has 2 square faces and 4 rectangular faces. It has 8 vertices and 12 edges.

This shape has 2 pentagonal faces and 5 rectangular faces. It has 10 vertices and 15 edges.

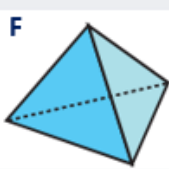
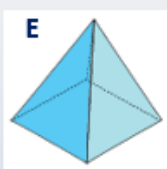
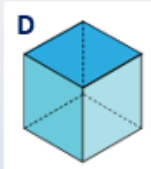
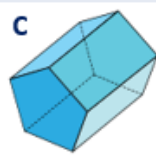
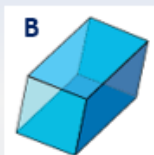
This shape has 4 triangular faces. It has 4 vertices and 6 edges.

This shape has 6 square faces, 8 vertices and 12 edges.

This shape has 1 square face and 4 triangular faces.

SPOILER below! Don't look till you've tried!

Describe 3-D shapes.



Read each description.
Which shape is it describing?

This shape has 2 triangular faces and three rectangular faces, 6 vertices and 9 edges.

A – triangular prism

This shape has 2 square faces and 4 rectangular faces. It has 8 vertices and 12 edges.

B – cuboid

This shape has 2 pentagonal faces and 5 rectangular faces.

It has 10 vertices and 15 edges.

C – pentagonal prism

This shape has 4 triangular faces. It has 4 vertices and 6 edges.

F – tetrahedron

This shape has 6 square faces, 8 vertices and 12 edges.

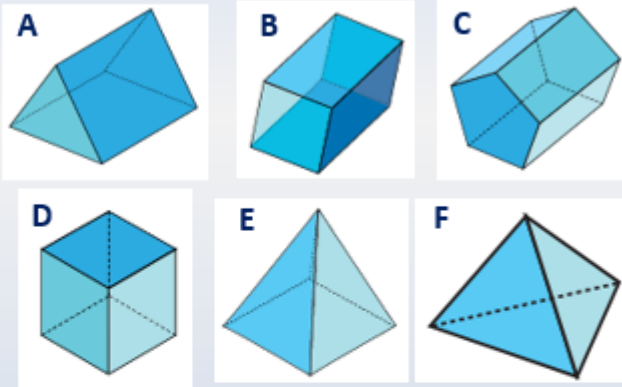
D – cube

This shape has 1 square face and 4 triangular faces.

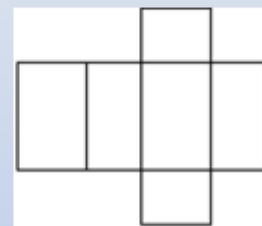
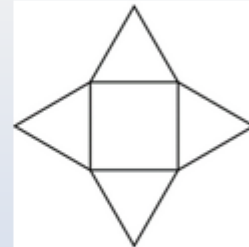
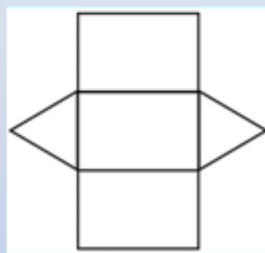
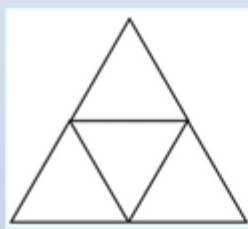
E – square-based pyramid

Learning Reminders

Identify nets.

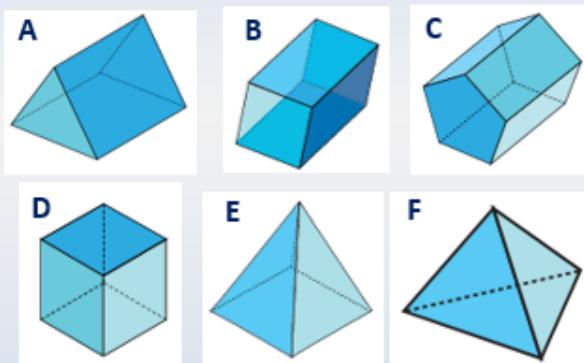


Below are nets of some of the 3-D shapes. Which nets could make which shapes?

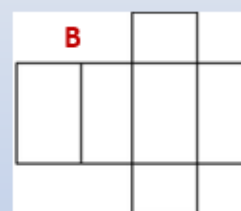
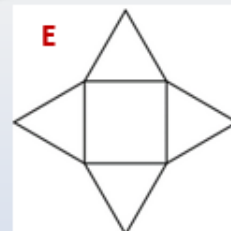
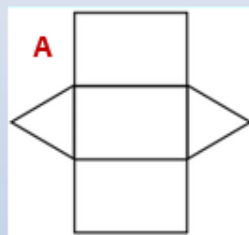
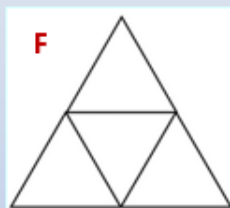


SPOILER below! Don't look till you've tried!

Identify nets.



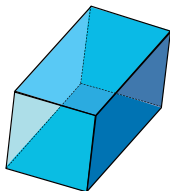
Below are nets of some of the 3-D shapes. Which nets could make which shapes?



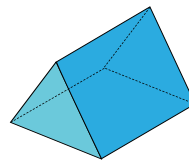
Practice Sheet Mild

Properties of 3-D shapes

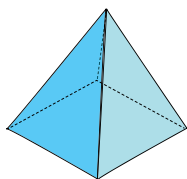
1. Tick blue each shape with 5 faces.
2. Tick red each shape with more than 5 vertices.
3. Tick black each shape with an even number of edges.



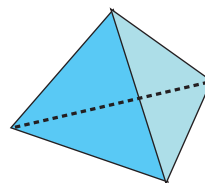
cuboid

☐
☐
☐


triangular prism

☐
☐
☐


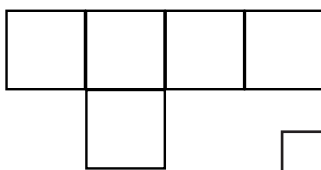
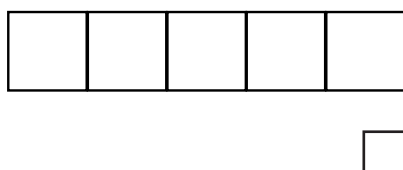
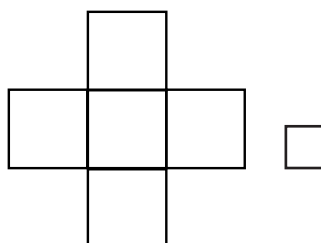
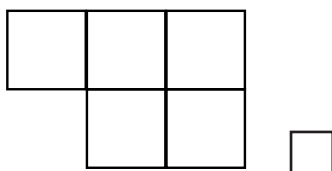
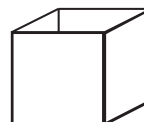
square-based pyramid

☐
☐
☐


triangular-based pyramid

☐
☐
☐

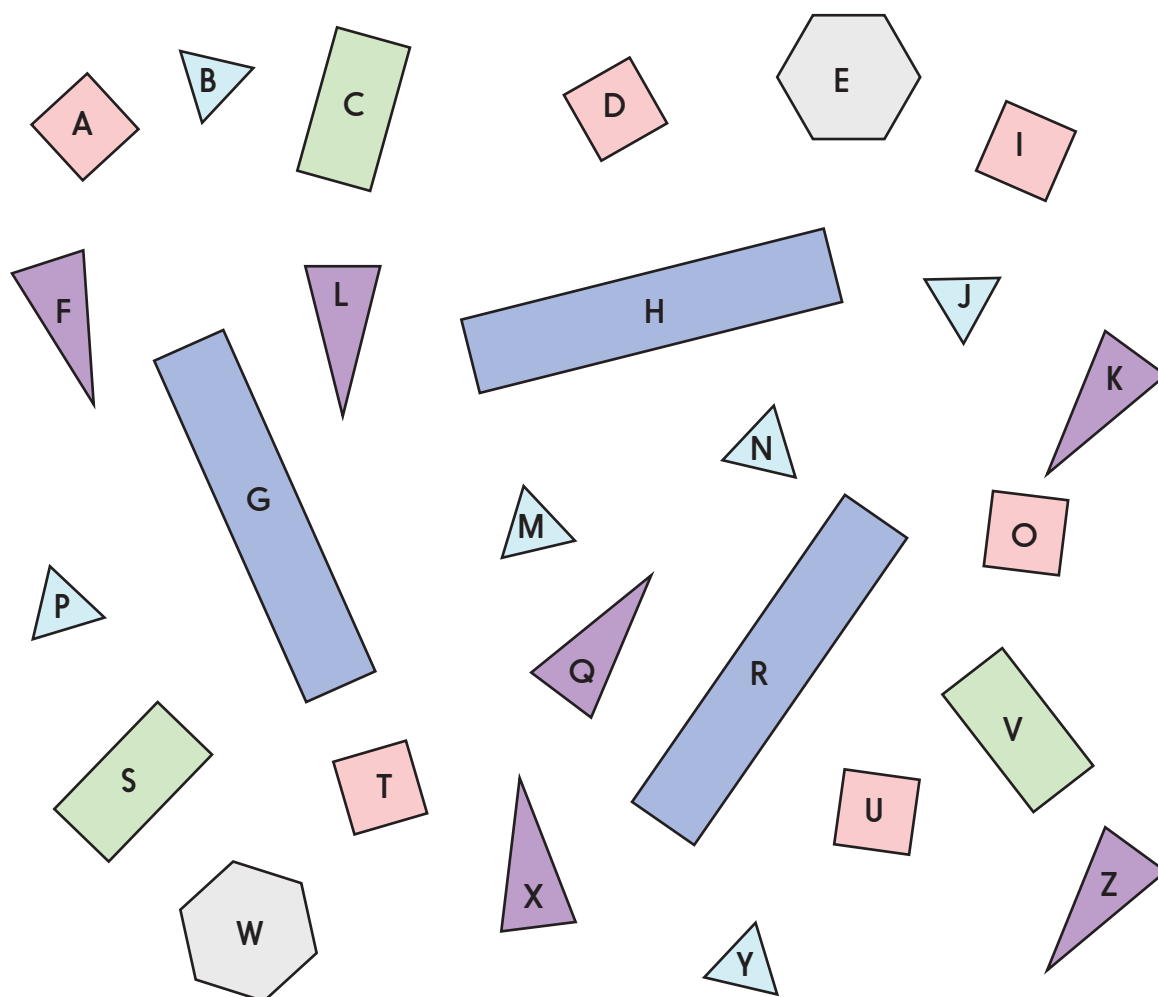
4. Tick each net that will make an open cube.



Practice Sheet Hot

Faces of prisms and pyramids

What different 3-D shapes can you make using the faces below?
Write the name of each shape (e.g. triangle-based pyramid) and list the faces that would be on it. How many different 3-D shapes can you find?
All shapes are drawn to scale.



Challenge

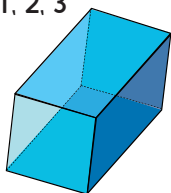
Tyrone wants to make a triangular prism. He uses G, L and F.
What shapes will he need to draw to be the other two faces?

Draw the net of his prism.

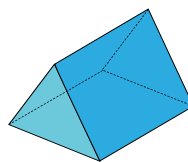
Practice Sheets Answers

Properties of 3-D shapes (mild)

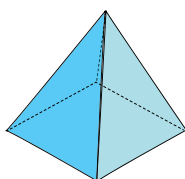
1, 2, 3



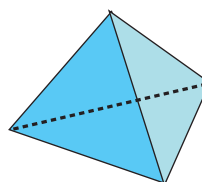
cuboid

☐
☒
☒


triangular prism

☒
☒
☐


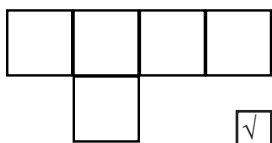
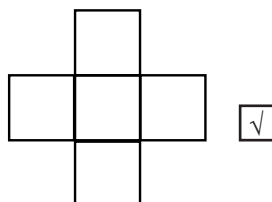
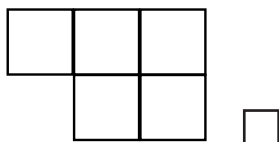
square-based pyramid

☒
☐
☒


triangular-based pyramid

☐
☐
☒

4.



Faces of prisms and pyramids (hot)

Cube = A, D, T, U, I, O

Tetrahedron = B, J, M, N (or P or Y)

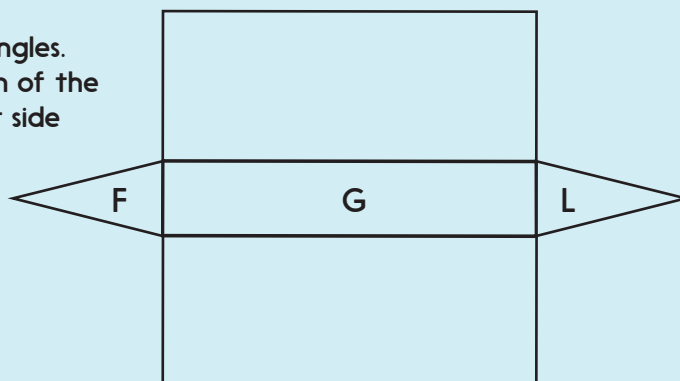
Triangle-based pyramid = B (or J, M, N, P or Y) with any three of F, L, K, Q, X or Z

Square-based pyramid = A (or D, I, O, T or U) with any four of F, L, K, Q, X or Z

Triangular prism = any two of B, J, M, N, P and Y with either C, S and V or G, H and R

Challenge

Tyrone needs to draw two rectangles.
These have a long side the length of the
long side on G. They have a short side
the length of the long side on F.



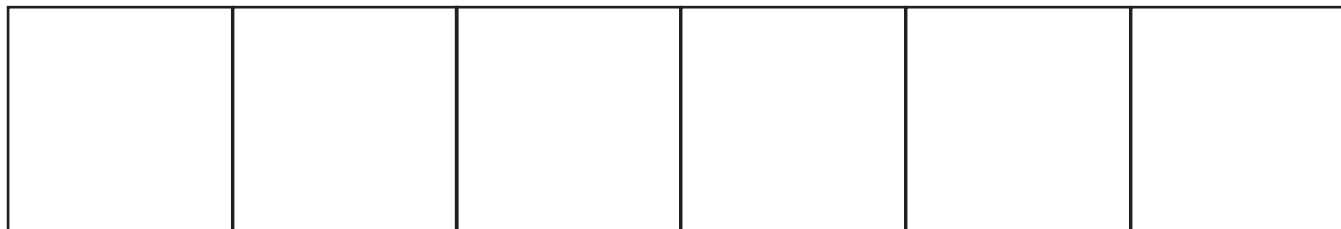
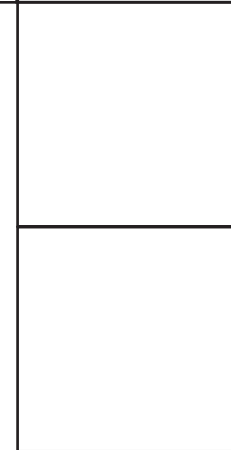
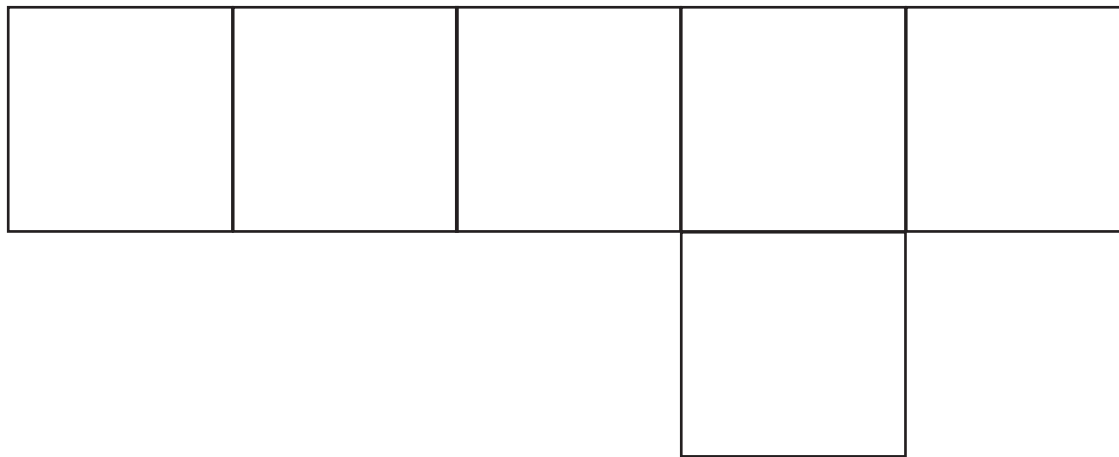
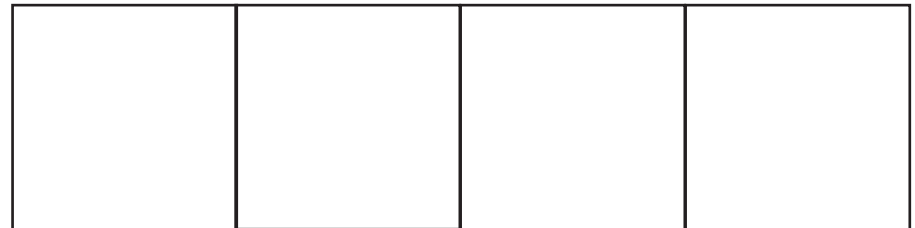
A Bit Stuck? Fold it up

You will need:

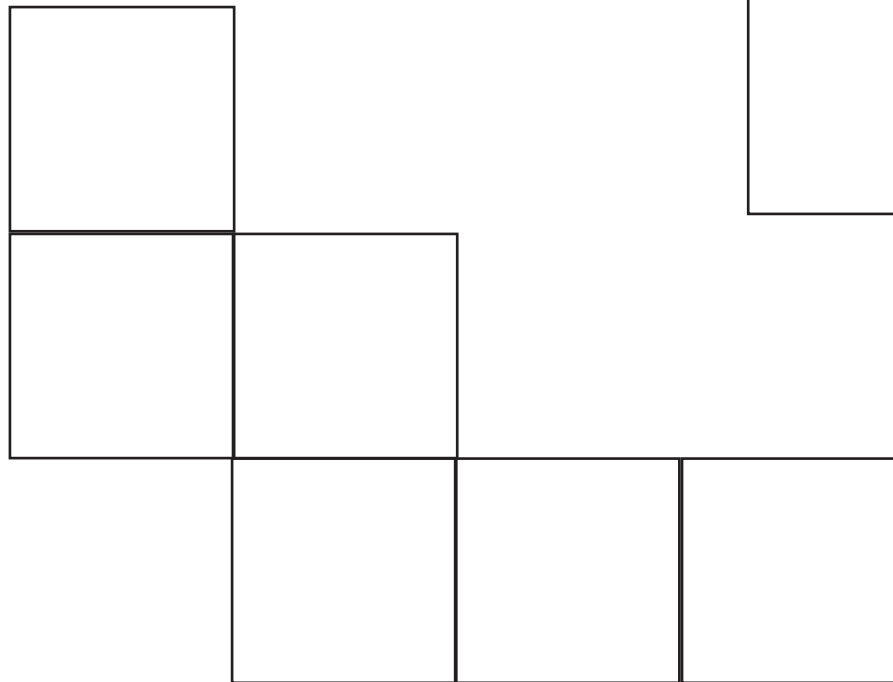
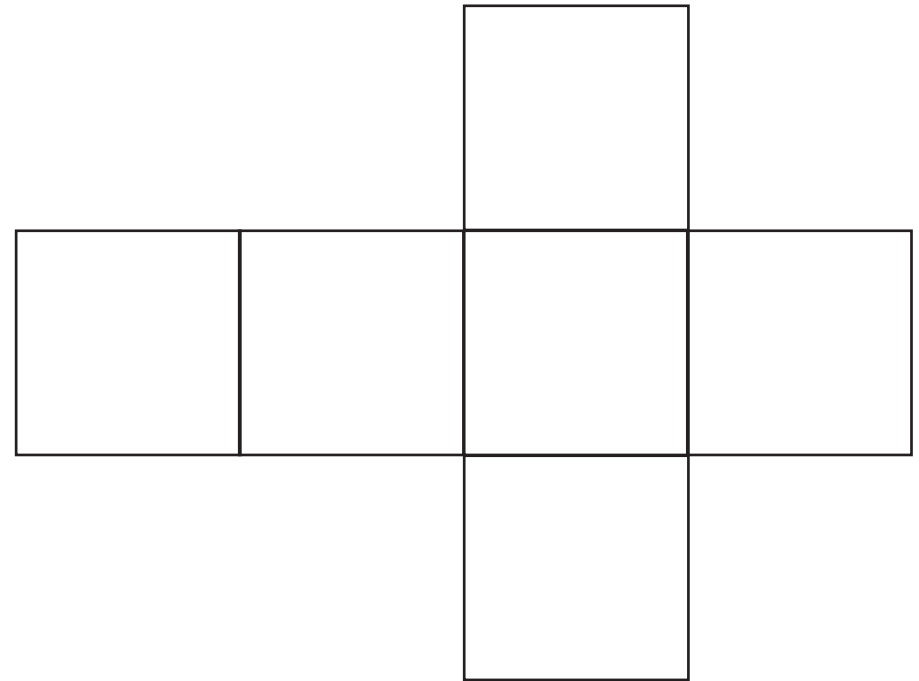
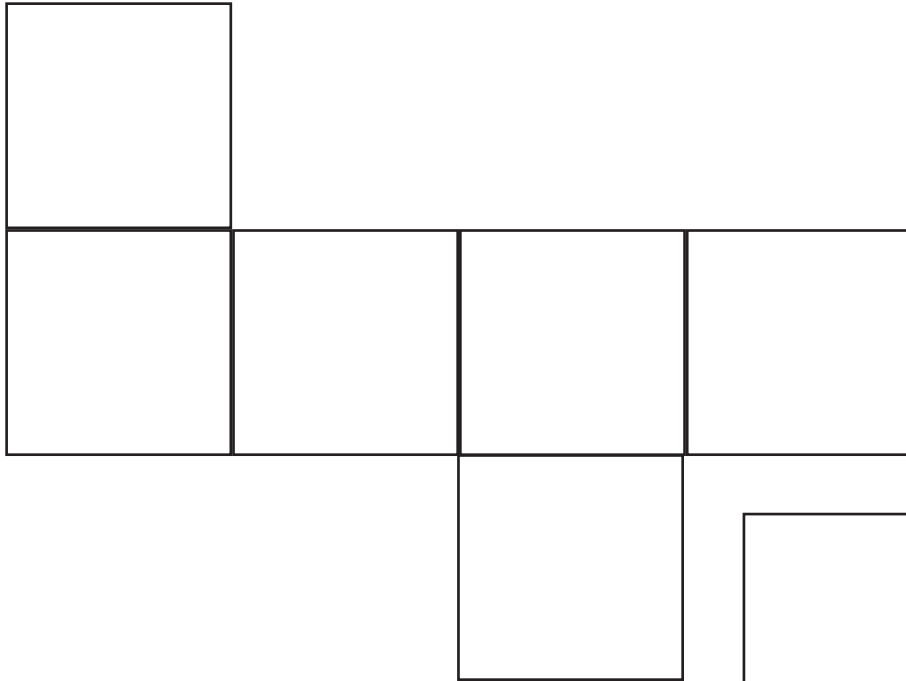
- Scissors and sticky tape

What to do:

- Some of the nets below and on the next page will make a cube, and some won't!
Which do you think will work...?
- Cut them all out and have a go!
- Do the nets that 'work' share any properties?
What about the nets that don't 'work'?



A Bit Stuck?
Fold it up



Check your understanding

Questions

What do we call a circular-based pyramid?

How many vertices does a pyramid with a pentagon base have?

How many edges does a prism with pentagon ends have?

True or false?

- A prism always has two parallel faces
- A pyramid cannot have any parallel faces

Sketch the net of a cuboid with no 'lid'.

Check your understanding

Answers

What do we call a circular-based pyramid? **A cone.**

How many vertices does a pyramid with a pentagon base have? **6.**

The five around the base plus the apex.

How many edges does a prism with pentagon ends have? **15.**

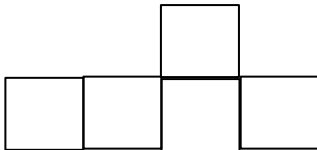
Five at either 'end', plus five joining the two pentagons at either end.

True or false?

- A prism always has two parallel faces **False, It will always have *at least* one pair, the shape at either end, e.g. the triangles of a triangular prism, but can have more, e.g. a cuboid which has three pairs of parallel faces.**
 - A pyramid cannot have any parallel faces. **True since, apart from the base, the faces are all sloped to the apex.**
-

Sketch the net of a cuboid with no 'lid'.

Below is an example: the net should have 5 squares joined.



A straight line of 5 squares is an example of one arrangement that *doesn't* work.