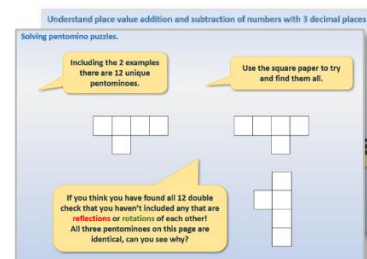


Week 15, Day 5

Transformations: reflection and rotation; pentomino puzzles

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

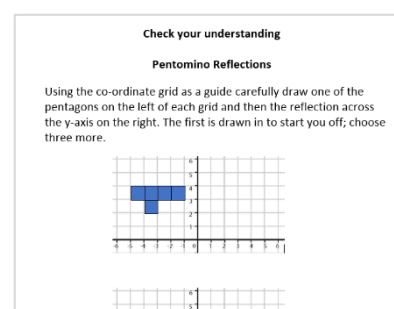
1. Start by reading through the **Learning Reminders**.



2. Think you've got it? Have a go at the **Investigative Practical Activity**.



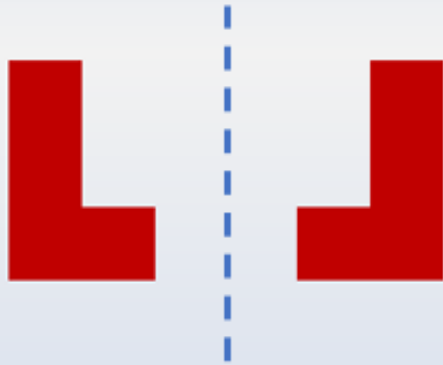
3. Have I mastered the topic? A few questions to **Check your understanding**.



Learning Reminders

Transformations: reflection and rotation.

To solve today's puzzles we will need to **reflect** and **rotate** shapes.



Here, the **L** shape has been **reflected** across the dotted line.
The shape on the right is the **mirror image** of the shape on the left.

Here, the **L** shape has been **rotated** (turned around) in anticlockwise steps of $\frac{1}{4}$ turn or 90° .



Learning Reminders

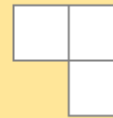
Transformations: reflection and rotation: pentomino puzzles.

So, what is a '**pentomino**'?

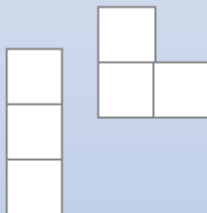
Well, we know that this is a **domino**:



Which makes this a **triomino**:
and this!



So, is this a different **triomino**?



And these?

NO. Each of these arrangements of 3 squares is either a **reflection** or **rotation** of an arrangement we have already found.

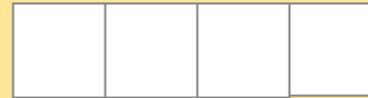
There are only two unique **triominoes**.

Learning Reminders

Transformations: reflection and rotation: pentomino puzzles.

So, what is a 'pentomino'?

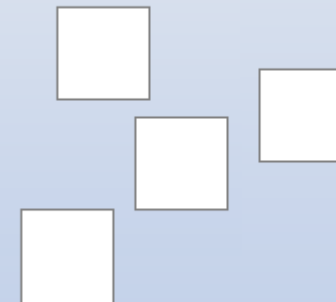
Four side-by-side squares make a tetromino:



How many other arrangements can you find?

REMEMBER – A unique tetromino will not be a **reflection** or **rotation** of an arrangement you have already found.

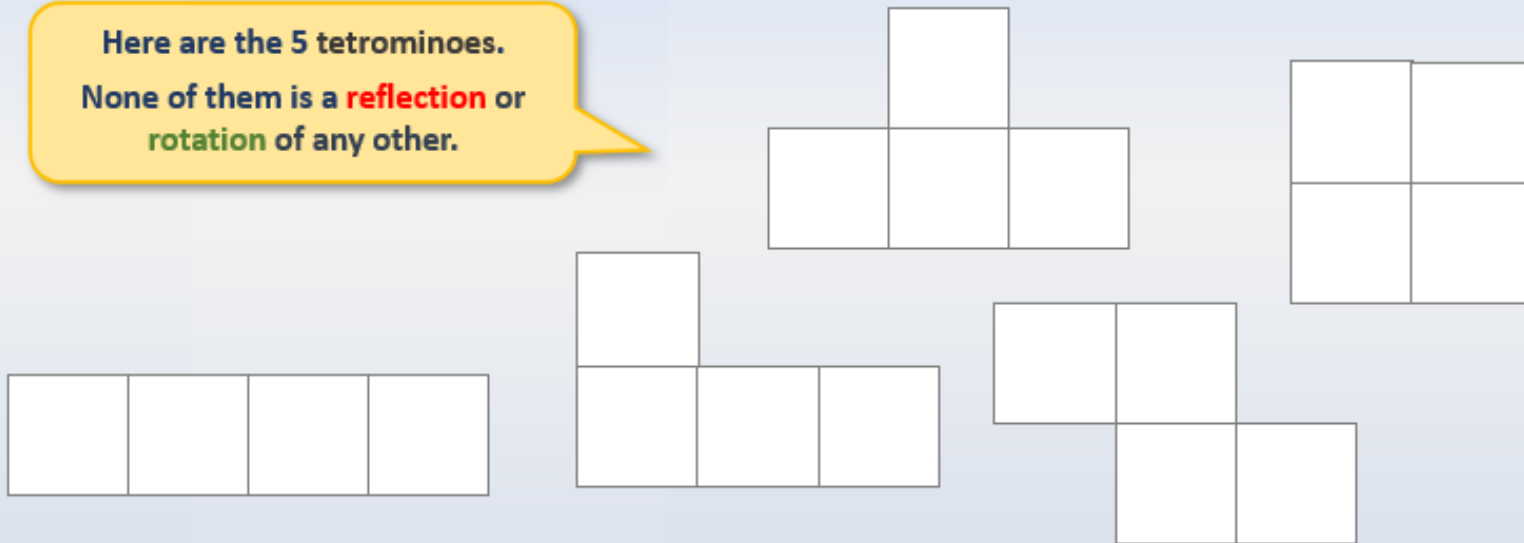
Investigate this for yourself before checking on the next slide...



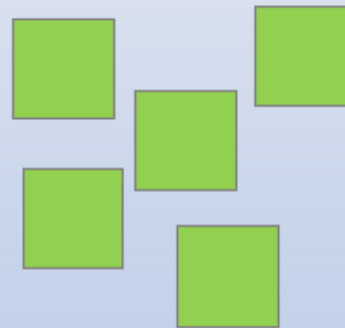
Learning Reminders

Transformations: reflection and rotation: pentomino puzzles.

Here are the 5 tetrominoes.
None of them is a **reflection** or
rotation of any other.



So, can you use 5 side-by-side
squares to make every
possible unique **pentomino**?!
Use the squared paper to
sketch and investigate...



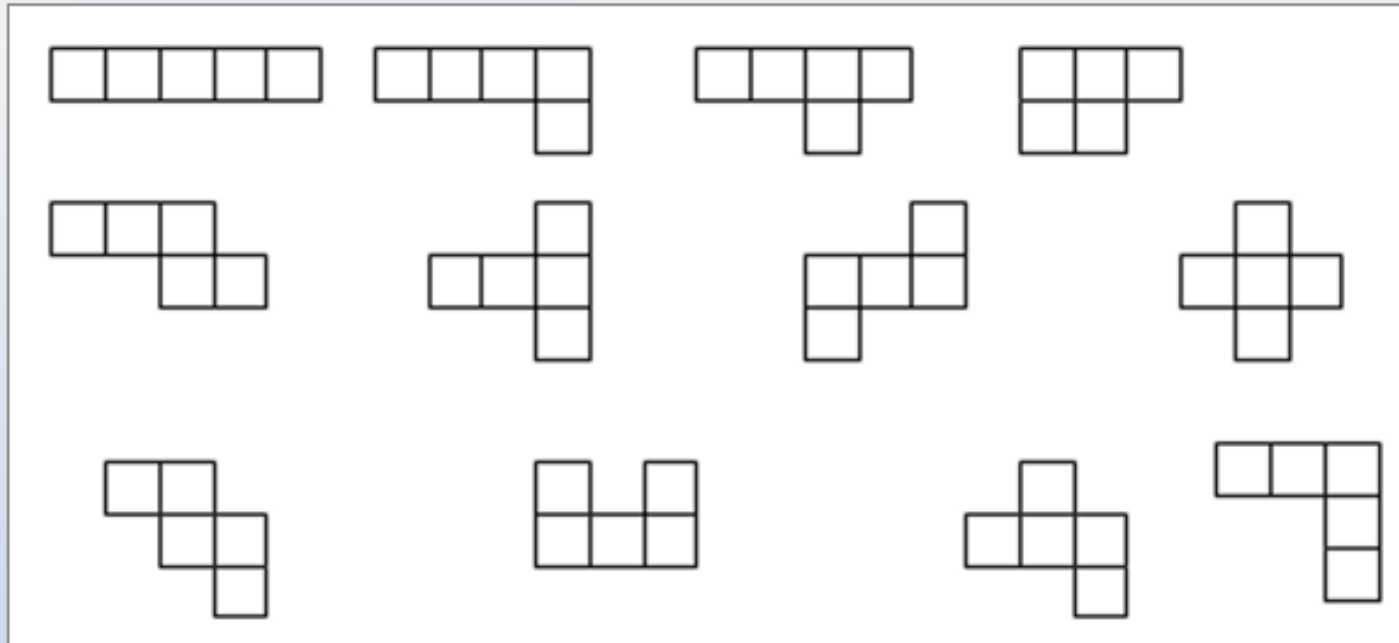
HINT

*There are more than 10,
so persevere before
checking out the whole
set on the next slide...!*

Learning Reminders

Transformations: reflection and rotation: pentomino puzzles.

Here they are...
The 12 unique pentominoes.



Did you find them all?!

Remember, you may have a **reflection** or **rotation** of one of these, so it looks a bit different but is actually the same shape...

If in doubt, cut out your shape, then rotate or reflect it to try to sit it on top of one of these 12...

