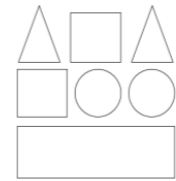
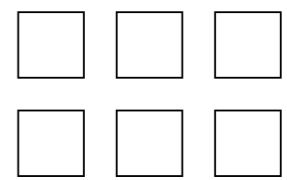



**MATHS MEDIUM TERM PLANNING**

<b>Year 2 – Geometry: Position and Direction (Approximately 2 weeks)</b>	
<b>Objectives from Progression Document</b>	describe movement of another person or robot using mathematical words like straight line, rotation, left, right describe rotation of another person or robot as clockwise or anti-clockwise describe rotation of another person or robot as a number of right angles for quarter, half and three-quarter turns
<b>Previous Learning</b>	describe position, using words like left, right, top, middle, bottom, on top of, in front of, above, between, around, near, close, far, inside, outside describe their own movement using words like forwards, backwards, sideways, left, right, up, down describe their own turning movement, including whole, half, quarter and three-quarter turns
<b>Vocabulary</b>	rotation, clockwise, anticlockwise, straight line, ninety degree turn, right angle,
<b>Key fact(s)</b>	To know that clockwise is a motion that turns to the right To know that anti-clockwise is a motion that turns to the left (opposite of clockwise)
<b>Number facts for fluency</b>	count in multiples of 3 up to 30 (in order)
<b>DfE Ready to Progress Guidance Pages</b> <a href="https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897806/Maths_guidance_KS_1_and_2.pdf">https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897806/Maths_guidance_KS_1_and_2.pdf</a>	Not applicable
<b>NCETM Ready to Progress Exemplification</b> <a href="https://www.ncetm.org.uk/classroom-resources/exemplification-of-ready-to-progress-criteria/">https://www.ncetm.org.uk/classroom-resources/exemplification-of-ready-to-progress-criteria/</a>	Not applicable
<b>Problem Solving and Reasoning Skills Objectives</b>	explain what they have found out using mathematical language
<b>Pre-assessment:</b>	Year 1 Shape: position and direction - describe position, movement and turning

## MATHS MEDIUM TERM PLANNING

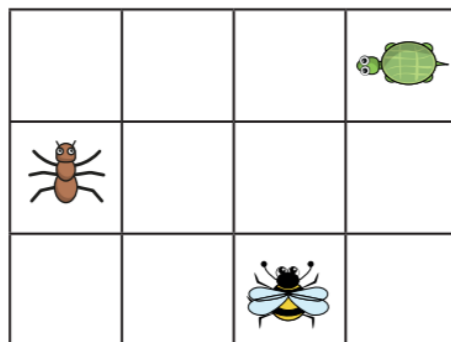
Sequence of Learning						
White Rose Small Steps	Learning Intention	Key Questions	Sentence Stems	Problem-solving links	Comments	Extension and Greater Depth Opportunities
Language of position	To understand and use words which describe position	How do you know which way is left/right? How would you describe the position of this object? Which object is to the left/right of the ___? Which object is above/below the ___? What does "between" mean?	The ___ is above/below the ___. The ___ is to the right/left of the ___. The ___ is between the ___ and the ___.	<a href="https://www.maths.org/turning-man">Turning Man (maths.org)</a> Interactivity to help understand the idea of $\frac{1}{4}$ , $\frac{1}{2}$ , $\frac{3}{4}$ turns.	This small step includes recap from Year 1 learning.  Discuss methods for remembering which way is left and which way is right.  They then think about other language to describe position, such as above, below and between	Use the clues to colour the shapes.  <ul style="list-style-type: none"><li>The circle in the middle is blue.</li><li>The circle on the right is red.</li><li>The shape up from the right circle is green.</li><li>The shape down from the circles is green.</li><li>The square to the left of the green triangle is red.</li><li>The four-sided shape up from the rectangle is blue.</li><li>The triangle on the left is red.</li></ul> Who is correct? Explain how you know.  Use these clues to colour each shape:  <ul style="list-style-type: none"><li>Blue is between green and red</li><li>Orange is below green</li><li>Yellow is to the left of both purple and orange</li></ul>
Describing movement	To describe movement on a grid using forwards, backwards, left, right, up and down	Which direction is left/right? How many squares has the object moved? Do you need to count the square that the object starts in? Which direction is forwards/backwards? If you move forwards, do you always move in the same direction? Which way would left/right be in this question? How do you know?	The ___ has moved ___ squares up/down /left/right.  The ___ has moved ___ squares forwards/ backwards and ___ squares left/right.		The children should first describe movement of an object as up, down, left and right as they look at it on a page.  Children will need careful modelling as the direction of forwards or left, for example, changes, depending on which way a person or object is facing.  Children may count the starting square, so miscount the number of squares an object has moved.	
Describing turns	To use the words clockwise, anti-clockwise, to describe movement	Where have you heard "half" and "quarter" before? What do they mean? Which direction will you be facing if you make a turn? Which way do the hands go round a clock? What do you think clockwise/anticlockwise means? What happens to the way you are facing when you make a half/full turn? What type of turn has this object made?	The ___ has turned a ___ turn ___. When I make a half turn, I will be facing ___. When I make a full turn, I will be facing ___.	<a href="https://www.maths.org/turning-man">Turning Man (maths.org)</a> Interactivity to help understand the idea of $\frac{1}{4}$ , $\frac{1}{2}$ , $\frac{3}{4}$ turns.	Links could be made to other areas of the curriculum (time, fractions) to help conceptualise the learning.  Children should be able to draw what an object would look like after a turn and describe the turn that an object has performed	Give your partner directions to move around the classroom. Use the word bank. 
Describing movement and turns	To describe movement in quarter, half, three-quarter and full turns	Which direction is left/right? Does it matter which way the object is facing? How do you know which direction the object has moved? Which direction is clockwise/anticlockwise? Which direction does the object need to move after the turn? How can you show the movement using arrows on the grid?	First I move ___ squares forwards. Then I turn ___. Then I move ___ squares forwards.	<a href="https://www.maths.org/en-counters">En-counters (maths.org)</a> Team Activity to reproduce design of one member using positional language.	Children need to visualise which way an object is facing and which way it will be facing if it turns left or right. Once this is secure, they can then think about describing movement and giving instructions to move an object from one place to another.	

## MATHS MEDIUM TERM PLANNING

<p>Shape patterns with turns</p>	<p>To continue patterns using shapes which have been turned</p>	<p>What are patterns? Which shape(s) is/are repeating? How can you describe this pattern? How can you make a pattern with one shape? How can you describe the turn in each pattern? What is the next shape?</p>	<p>In this pattern, the shape turns a ___ turn ____. The next shape is ___ because...</p>	<p>Time could be spent recapping patterns that just use different shapes first, including different ways to form patterns, before introducing them to patterns with one or two shapes that include a turn.</p> <p>Discuss what happens when a shape completes a full turn and why this may not be useful when creating patterns.</p>	<table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>Whitney</td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td>Dora</td></tr> </table> <p>How many different ways can you describe the position of the 2p coin?</p>	Whitney								Dora
Whitney														
		Dora												

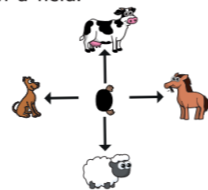
Colour the balloons.

- The red balloon is to the left of the green balloon.
- The balloon in the middle is green.
- The other balloon is blue.



How can the tortoise move to the ant?  
Is there more than one way?

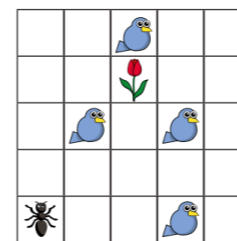
There are four animals in a field.  
Mo is facing the horse.



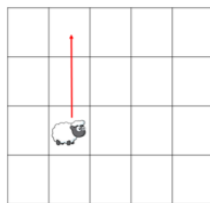
Mo makes a quarter turn.  
a) Circle the animals he could be facing now.  
b) Explain why there is more than one answer.

In a game, the ant must not land on the same square as a bird.

What path can the ant take to get to the flower?



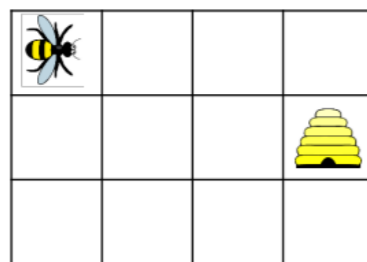
Amir: The sheep has moved 2 squares forward.



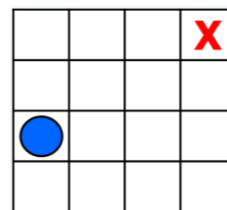
Is Amir correct?  
Explain your reasoning.

How many different routes can you write for the bee to get to the hive?

Use the words forwards, backwards, left and right.



Create your own grid game and record the movements of your pieces.



The shortest route from the counter to the end point is 6 steps.

True or false?

Look at the number shape below:



How could the number shape have turned?

Describe all possibilities.

A square has been turned.



Complete the sentence.

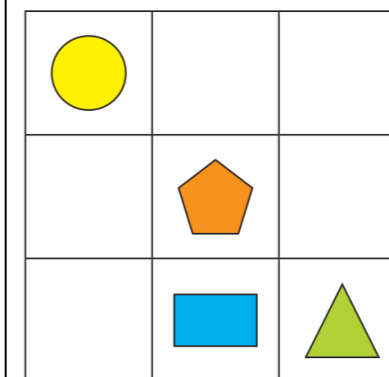
The square has turned a \_\_\_\_\_

turn \_\_\_\_\_.

Is there more than one answer?

Make your own tower of cubes and describe it to a partner.

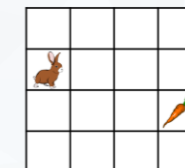
Can your partner build the tower?



There is a pentagon in the middle.  
There is a star to the right of the circle.  
There is a smiley face to the left of the rectangle.  
There is a heart above the triangle.  
There is a square below the circle.

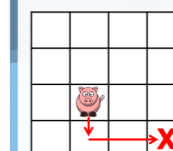
Make up your own problem like this for a partner.

Write a route that the rabbit can take to get to the carrot.



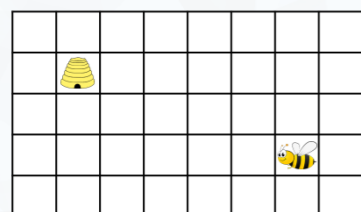
What is the shortest route?  
What is the longest route?  
How many routes can you find?

Which instructions best fit?  
Explain your reasoning.



- 1 step down, 2 steps right.
- 1 step backwards, 2 steps right.
- 1 step forwards, 2 steps right.
- 1 step up, 2 steps right.

What is the shortest route from the bee to its nest?



How many other routes can you find?

**Describing Movement**

Explain how the mouse got to the cheese.

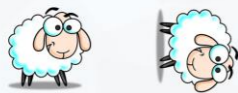
Can you find another way for the mouse to get to the cheese?

### Always, Sometimes, Never

If two objects turn in different directions they will not be facing the same way.

## MATHS MEDIUM TERM PLANNING

The toy sheep has turned a quarter turn anticlockwise.



True or false?  
Explain your answer.

How many quarter turns clockwise would be needed to move the clock hand to the 6?



Explain how you know.



A quarter turn would move the hand to .....

How many different ways can you describe the turns made?



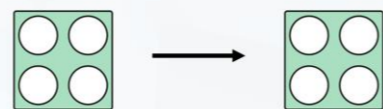
For example:  
A half turn clockwise then a quarter turn clockwise.

This frame has been turned a quarter turn clockwise twice.



True or false?  
Explain your answer.

What do you notice about the way this shape has been turned?



How many different routes can you find to get from start to finish. Use the words 'forwards', 'backwards', 'clockwise', 'anti-clockwise' and 'quarter turn'.



Is Whitney correct?



A quarter turn clockwise is the same as a three-quarter turn anticlockwise.

Convince me.

Always, Sometimes or Never true?

A half turn left is the same as two quarter turns left.

Always Sometimes Never

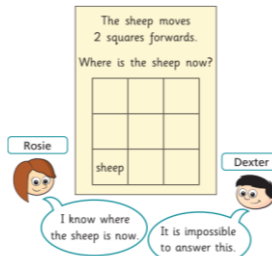
If one object turns clockwise and another turns anti-clockwise, they will be facing different directions.

Always Sometimes Never

A quarter turn clockwise is the same as a three-quarter turn anti-clockwise.

Always Sometimes Never

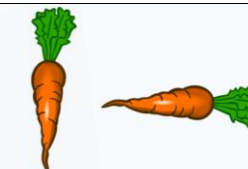
Rosie and Dexter are answering a question.



Who do you agree with?  
Talk about it with a partner.



The carrot has been turned a half turn clockwise then a quarter turn clockwise.



Do you agree? Why?

**Describing Turns**

True or false?  
There are 4 different ways to draw this grid after it has been turned.

Prove it!

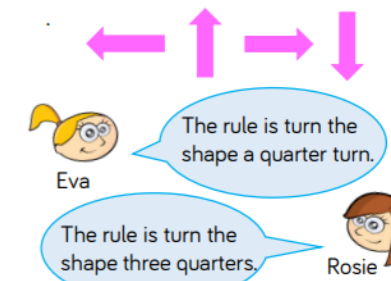
How many different ways can you turn the grid to create its different positions?  
Can you use 2 different turns to create a position?

**Describing Movements and Turns**

The ladybird is going to move all around the shape and back to where it started.

Describe the route the ladybird takes.  
On squared paper, draw shapes and describe the routes around the sides.

How many different patterns can you create using this shape?



Who is correct?



Turning a quarter turn left is the same as turning a quarter turn clockwise.

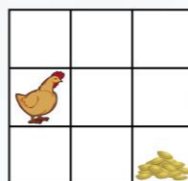
Do you agree with Dom?  
Explain your answer.

**Problem Solving**

Write the shortest route from the monkey to the banana?

How many other routes can you find?

Spot the mistake in the route.



2 steps forwards.  
A quarter turn anticlockwise.  
1 step forward.

Spot the mistake in each pattern.  
Explain why they are incorrect.



**Reasoning**

The pattern shows the shapes turning a quarter turn clockwise each time.

True or false?  
Explain your answer.

**Making Patterns With Shapes**

The triangles show half turns clockwise.  
The rectangles show quarter turns clockwise.

Is this true?  
What would the next 4 shapes look like?

Can you finish these sentences?  
The triangles show \_\_\_\_\_ turns.  
The rhombuses show \_\_\_\_\_ turns.  
The pentagons show \_\_\_\_\_ turns.

quarter half whole clockwise anticlockwise

Can you make a pattern that shows quarter, half and whole turns?  
Are the shapes turning clockwise or anticlockwise?

Post-assessment:

WRH end of block position and direction assessment – snip as feel appropriate  
Previous time SATs questions – snip as feel appropriate