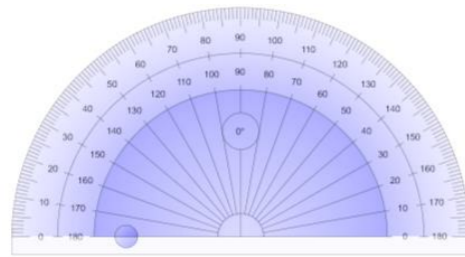


Year 6 Unit 6: Coordinates and shape (2 weeks)

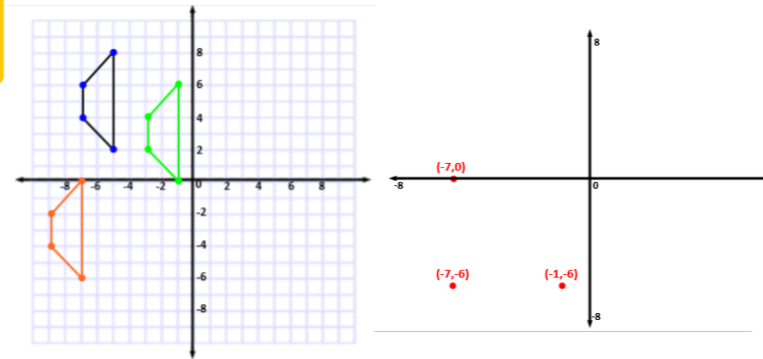
Before you start...

- What do pupils already know about 2-D shape, particularly quadrilaterals and triangles?
- How secure are pupils in using negative numbers?
- How confident are pupils in using rulers and protractors and reading the different scales?

Video: Using a protractor



Video: Calculating intervals across zero



Negative numbers, including calculating intervals across zero are consolidated within this unit in the context of coordinates. There are further tasks related to negative numbers in the Positive and Negative Number Task Bank which you may wish to build into Do Now tasks or use during consolidation lessons to explore further.

It's all negative

This [article](#) from NRICH provides further suggestions for introducing and using negative numbers in context. This NRICH [article](#) provides an insight into calculating intervals across zero. This Espresso [article](#) from Cambridge Mathematics provides research into introducing negative numbers.

Video: Translating points and shapes

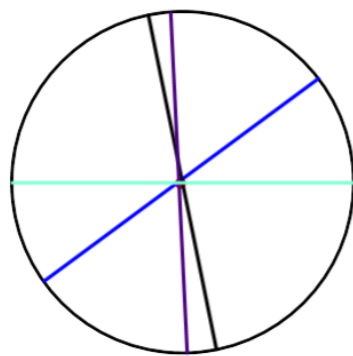
Video: Reflection or Translation?

Lesson 7 is a suggested consolidation lesson. You may wish to use this to extend problem solving opportunities with coordinates.

Drawing 2-D shapes

L1 Draw 2-D shapes

Pupils begin the unit by drawing 2-D shapes using given instructions, consolidating their understanding of the properties of shapes as well as the skill of using a ruler and protractor accurately. Take time to ensure these skills are secure and consider how you will clearly model the use of this equipment.

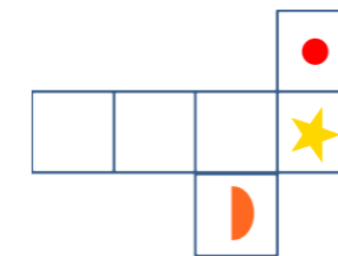
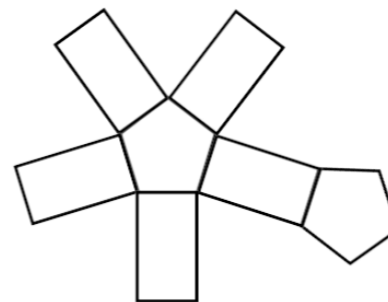


Using and applying coordinates

- L2 Describe coordinates in all four quadrants
- L3 Draw and translate 2-D shapes
- L4 Draw and reflect 2-D shapes
- L5&6 Solve problems involving coordinates

Pupils consolidate their understanding of describing and plotting coordinates before extending this to consider a full coordinate grid. Consider how this lesson can be used to explore key difficulty points including the order coordinates appear in and the coordinates of points on the axes. By the end of lesson 2 pupils should be able to generalise about the values of coordinates in each quadrant. Pupils have experienced translation and reflection of 2-D shapes in previous learning and this is extended in lesson 3 and 4 by translating and reflecting across the axes. Opportunities to pattern seek and identify the relationships between coordinates before and after reflection and translation should be taken, with pupils beginning to visualise and calculate the new coordinates as a result of the transformation. In lesson 5 and 6 pupils apply their deepening understanding of 2-D shapes on a coordinates plane to finding missing points first with, and then without gridlines. They draw on their understanding of the properties of 2-D shapes to calculate and plot missing points.

- ? What difficulty points may pupils encounter when translating and reflecting and how might you anticipate these when modelling?
- ? How will you encourage pupils to imagine, visualise and predict the new coordinates as a result of translation or reflection?



Describing circles

L10 Illustrate and name parts of a circle

Pupils learn the names of different parts of the circle and this knowledge should be regularly revisited in Maths Meetings. Ensure exposure to examples and non-examples of key parts such as the radius and diameter to deepen understanding. Pupils then solve problems involving the relationship between radius and diameter.

- ? How will you ensure all pupils have multiple opportunities to use the key language introduced in this lesson?

Exploring 3-D shape

- L8 Describe 3-D shapes including from nets
- L9 Recognise and build 3-D shapes from nets

Pupils compare and classify a range of 3-D shapes, applying their understanding of the properties of 2-D shapes. This allows opportunities to generalise about the properties of categories of 3-D shapes such as prisms. Throughout this lesson pupils should be exposed to a range of concrete and pictorial 3-D shapes. They then explore nets and discuss the 2-D shapes required to build a net, before solving problems involving nets, such as the position of dots on the net of a die. Alongside encouraging pupils to visualise folding nets, pupils should have opportunities to practically experience this.

- ? What representations and examples will you provide to support pupils in identifying 3-D shapes based on their properties?