Objective: I can use my knowledge of the scale factor to solve problems.

NC RP3: solve problems involving similar shapes where the scale factor is known or can be found

Teacher Input Ideas:

- Look at Questions 5 and 6 together from the prior learning assessment. Talk about the information provided and how the children approached this question. Discuss key terms such as scale factor and drawn to scale. Children to make definition cards to display in the classroom.
- Provide the children with atlases or tablets to access maps. Children to look for scale keys to help them. Such as 1cm = 1KM. Provide the children with a variety of maps with different scales for the children to work out the distance or size of something. Provide the children with examples of when scales are used. Such as site plans, room plans, maps etc. Discuss what the scale is showing and how the information can be used to work out size/distance. Discuss why a scale is important.
- Create a class plan of the playground/classroom. Children to measure the size of the area/space. They could apply knowledge of perimeter and area here too. How can we use the measurements to draw to scale? For example: the perimeter of the room is 20 meters. The length of this wall is 6 meters. How can I show this on a plan of the classroom? Why is it important that we draw to scale? What shall we use as our scale factor? Draw together the outline of the room using a scale factor agreed such as 5 cm squares to 1 m. Link to ratio 5 :1 = 5 squares to 1 meter. So how many squares will I need to show 6 meters (establish 6 x 5 = 30) the other wall is 6m too. The other 2 walls are 4m in length; how many squares will I need to use? What is the area of the shape I have created? What would this be in M? How have you worked this out? What is the perimeter? What is this in meters?
  Encourage the children to measure different things in the room to place on the plan. Can the children use the scale factor to draw this on the plan? Ensure the children discuss any difficulties they have and suggest any solutions.

Practice Activities

Purple Practice: Most suited for children who made errors in Question 5 and 6 of the prior learning assessment and demonstrate little understanding of using a scale.

This activity is a practical activity to introduce the children to using a scale and secure the children's understanding of ratio. The children will be given a simple scale factor using blocks of paper. The task uses measurements of animals from the Galapagos Islands. Each measurement has been scaled down so that the children can use the scale

of one block = 50cm. Before the session starts, 10 cm lengths/blocks of paper will need to be prepared and stuck together as follows:
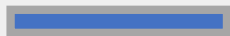
Galapagos Fur Seal's length = 30 cm (3 x 10 cm blocks)
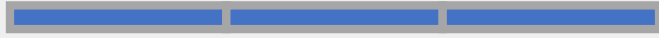
Galapagos Albatross wingspan = 50 cm (5 x 10 cm blocks)
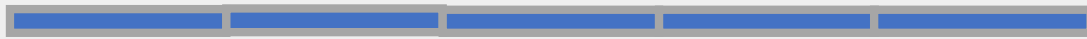
Galapagos Penguin's height= 10 cm (1 x 10cm block)

Galapagos Land Iguana's length = 20 cm (2 x 10cm blocks)

Tortoise's length : 25 cm (2 and ½ blocks)

Flightless Cormorant's length = 20 cm (2 x 10cm blocks)

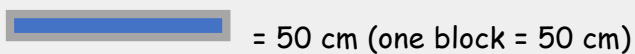Salty Lightfoot Crab = 2.5 cm in length (¼ of a block)

(the actual measurements of the animals are in the answers section)

Share with the children the scale factor

 = 50 cm (one block = 50 cm)

Ask the children how will they use this information to work out the actual measurements of each of the animals from the Galapagos Islands. Encourage the children to work out the size of the animal's length/ height/wingspan by using the scale factor that each block = 50 cm. Some children may the calculate the answers, such as 2 blocks = 2 x 50. Some children may need to measure out 50cm each time with a meter stick or string. The children could then show the actual measurements of the animals by using string or paper. The children can also be challenged by introducing that each block is 10cm, so the scale can also be presented/written as 10cm = 50cm or 10:50.

Green Practice: Most suited for children who made errors in Q5 of the prior learning assessment.

As above, the children should be set the same task. However, they should be presented with pieces of string in the same lengths as above. Rather than giving the children the scale of 1 block= 50cm, you should inform the children the scale of 10 cm = 50cm. The children should suggest measuring the lengths of string they have been given and workout the heights/lengths/wingspan of the animals using the measurements they have. They should show some understanding that 10:50 is the same as 1:5 and that to work out the actual measurements of the animals they need to make each measurement 5 x bigger.

So, if the children measure the string to be 20cm, they need to make the measurement 5 x bigger= 100cm or 1 m. Children could measure out the new lengths, take photos and record the calculations they have done. They can also convert their measurements from cm to m or mm.

Yellow: Most suited for children who made errors in Q6 of the prior learning assessment.

The children are presented with the sizes of animals on the Galapagos Islands and they are to draw each animal to scale. The children are presented with a table of measurements and a suggested scale factor to use (1 block = 20cm). The children will need to convert the measurements, which are recorded in metres, in to centimetres so they can use the scale factor.

This activity can also be amended to meet the needs of the children such as:

- Children can use the scale factor provided, they could think of their own, or be provided with one by yourself.
- The measurements provided could be converted into cm as a group to support any children showing difficulty.
- Children can be provided with images of the animals or could research these.
- Children could research other measurements such as the height of animals where they have the length, to ensure that they produce a more accurate drawing.

Mastery: the children are presented with a plan of a classroom. They are provided with the scale factor of 2 squares = 1m. The children are to apply their knowledge of using the scale factor to find out the measurements of the carpet area in the classroom. Once the children have worked out the measurements they are encouraged

to find the area. This is a fluency opportunity to ensure that the children are able to apply the formula for finding the area of a rectangle.

Answers:

Purple and Green

Galapagos Fur Seal = 1.5 metres in length

Galapagos Albatross wingspan = 2.5 meters

Galapagos Penguin height = 50 cm

Galapagos Land Iguana = 1 meter

Tortoise= 125cm

Flightless Cormorant= 1m

Salty Lightfoot Crab = 12.5cm

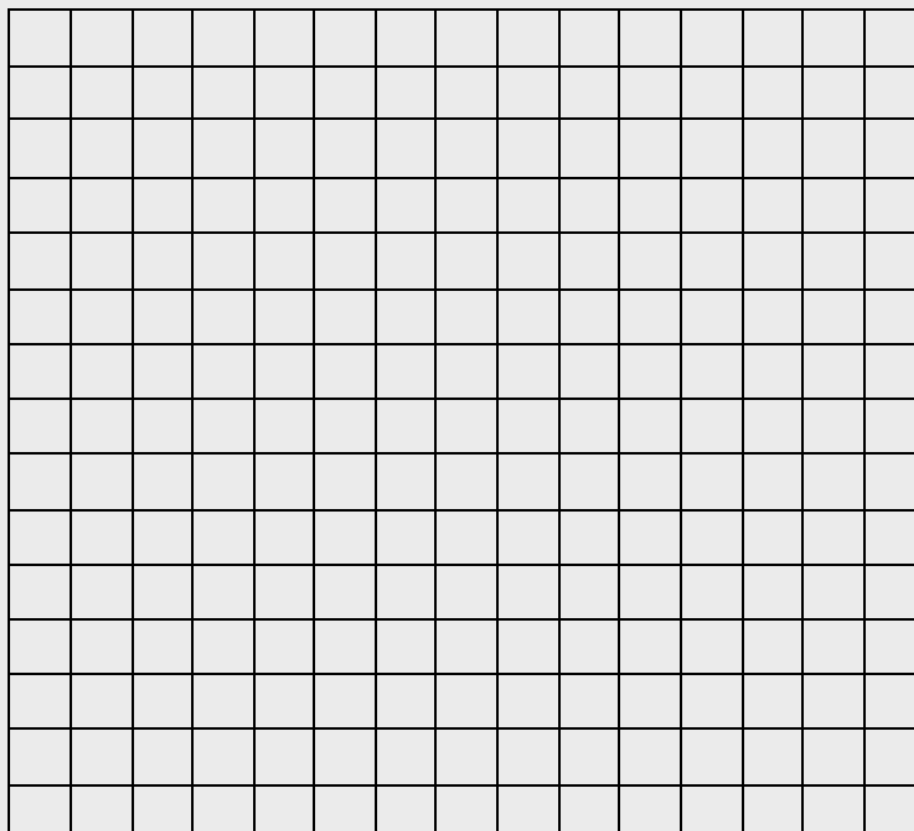**Mastery:**

$4.5 \times 2 = 9m_2$

Yellow Practice

LO: use my knowledge of scale factor to produce accurate drawings.

Sanjay wants to create an information leaflet about animals that live on the Galapagos Islands. He wants to include images of the animals drawn to scale.

Use the information in the table to create an image of each of the animals drawn to scale.

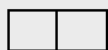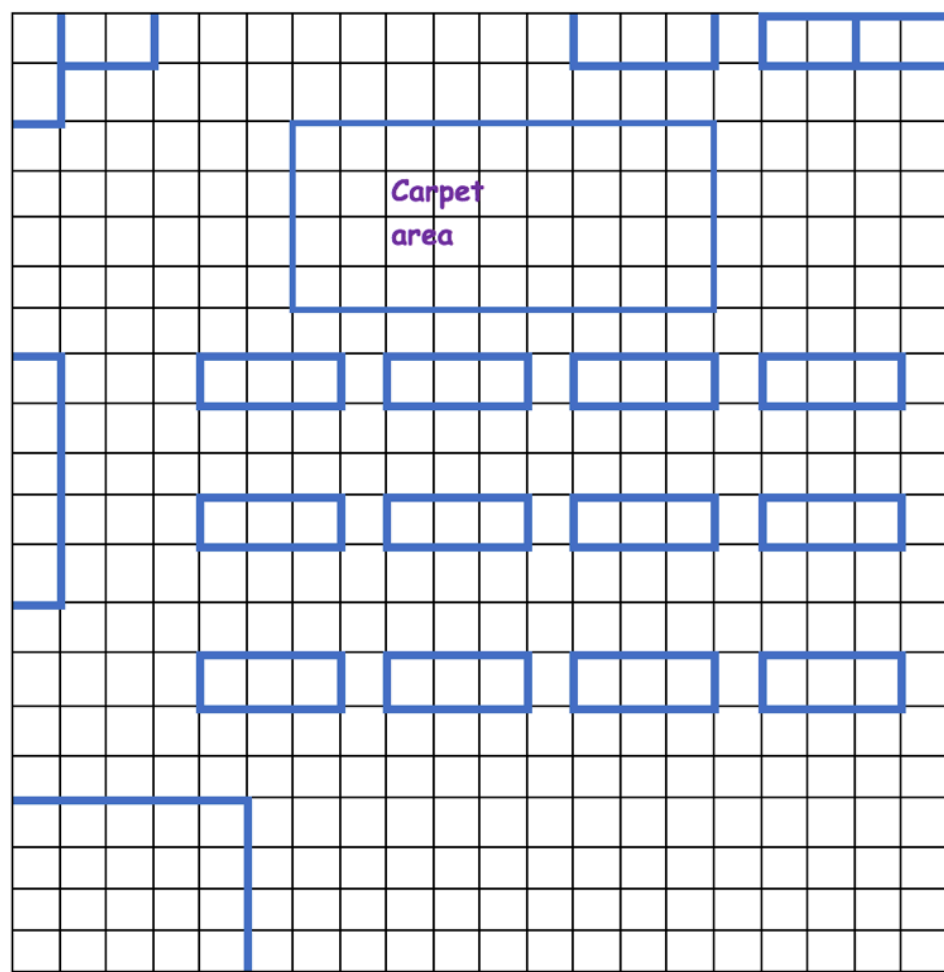| Name of Animal	Measurements
Galapagos Fur Seal	1.5 m in length
Galapagos Albatross	2.5 m wingspan
Galapagos Penguin	0.5 m height
Galapagos Land Iguana	1m length
Tortoise	1.25 m length
Salty Light Foot Crab	0.125m in length

Scale suggestion: ☐ = 20cm

BRICKWORK
mathematics

Here is a plan of a classroom in Holly Well Primary School.

The scale factor is

☐☐ = 1 metre

Carpet area

What is the area of the carpet area?

Challenge: Can you draw your classroom using a scale factor of your choice?