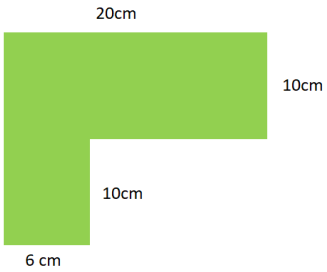
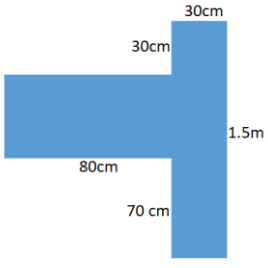
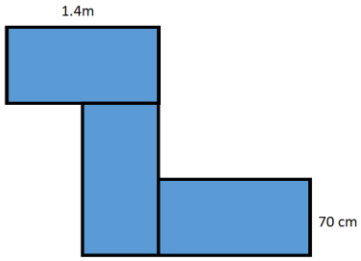
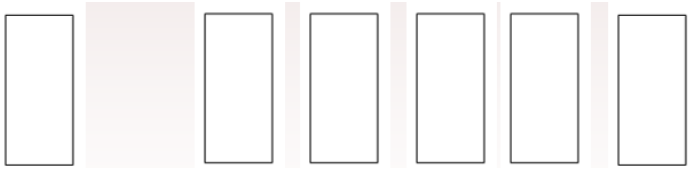
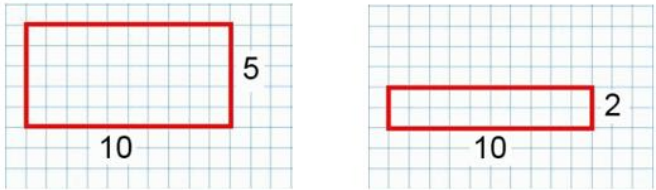
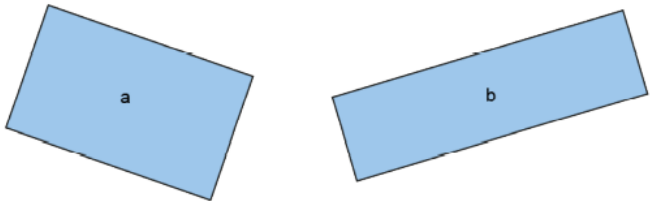
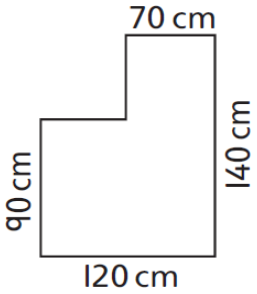
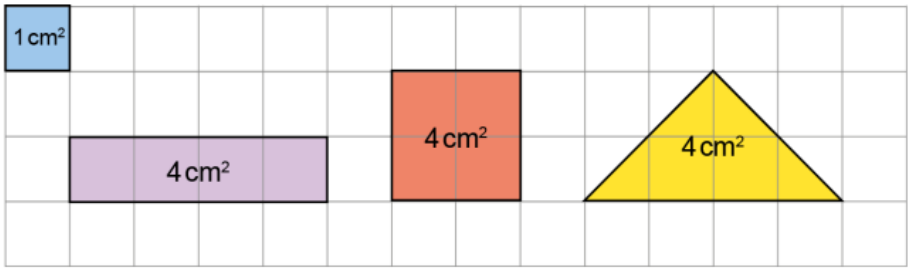
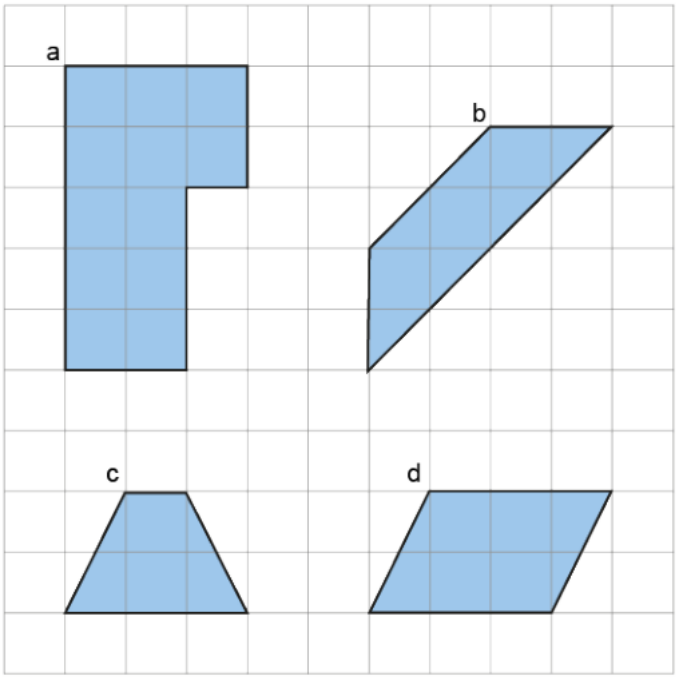
Planning Overview
Year 5 Measures – Area and Perimeter
(Time is in a separate plan / Length, Mass, Capacity & Volume are in a separate plan)

Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes

	Teaching and Learning
Recap finding perimeter of regular shapes	Recap perimeter by measuring the perimeter of some regular shapes. Do we need to measure every side? Why not? What about for a rectangle? How many sides do we need to measure to calculate the perimeter? Is there more than one way to make the calculation? For a rectangle with 4cm and 6cm sides, could recognise 4+6=10 and then double this to find total perimeter or double 4 and double 6 then recognise that 8 +12 = 20. Extend to working out the missing lengths when one side and a perimeter is given. If the perimeter of a rectangle is 40cm, what length is the other side if one side is 8cm? Children to use scaled drawings where scale is given to calculate the perimeter of the shape (e.g. 1cm =3m)
Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres	Look at rectilinear shapes on squared paper. Make sure children are confident that the little squares all have a length of 1cm. How do we calculate the perimeter? Can children draw a number of different rectilinear shapes that all have a perimeter of 24cm? Move onto looking at perimeters of shapes that are not on squared paper and may have a different scale. Children to establish missing lengths first before calculating the perimeter.  

	Extend to more complex problems. If these rectangles are all the same, what is the total perimeter in metres?  The sides of the rectangles below are 2cm and 5cm long. What is the longest perimeter you can make by connecting 5 tiles? What is the shortest?  Children could design a run for a school pet outside using practical measuring equipment such as metre sticks and tape/chalk to mark out a run with a perimeter of 24m. Can they find more than one way to do it? Choose the one they think the pet will like most and draw it onto squared paper using the scale 1cm = 1m.
Recap counting squares to calculate area	Make sure children are confident with the difference between perimeter and area and their respective measures e.g. cm and cm^2 or m and m^2. Complete fluency questions calculating perimeter and area of the same shapes on squared paper. Investigate the fact that shapes with the same perimeter don't have to have the same area. nRich Charlie has been drawing rectangles:  The first rectangle has a perimeter of 30 units and an area of 50 square units. The second rectangle has a perimeter of 24 units and an area of 20 square units. a) Charlie wondered if he could find a rectangle whose perimeter and area have the same numerical value. Can you find a rectangle that satisfies this condition?

Calculate the area of rectilinear shapes by using the formula L x W for each rectangle	Look at a rectangle on squared paper and count the squares to find the area. Now cover each square with a counter or draw a circle in it so that you have made an array. What multiplication fact can you see? We can multiply the length of a rectangle by the width to give us the area. We record the area using units squared. Fluency questions calculating area using formula L x W and perimeter using formula (L+W) x2 or 2L + 2W 5. Find the area of each of these rectangles.  Ready to Progress Apply understanding of how to find the area of a rectangle to find the area of composite rectilinear shapes. E.g. for shape below area could be calculated: (90x120) + (50x70) = 14,300cm² or (70x140) + (50x90) = 14,300cm² or even (120 x 140) – (50x50) = 14,300m² 
Calculate the area of other regular polygons (not rectilinear)	Move onto using fractions of cm squares to calculate the area of other polygons that are not rectilinear shapes.  **Figure 48: a rectangle, square and triangle with equal areas** Mathematics Guidance: Key Stages 1 and 2

	Calculate the areas of the shapes on the grid below.  Mathematics Guidance: Key Stages 1 and 2
Estimate the area of irregular shapes	Can children apply knowledge of fractions to estimate the area of shapes that are not polygons e.g. areas on a map? Give the children a map of part of the local area with a range of land uses on copied onto square paper with a scale for each square. Can you estimate the area of each time of land use e.g. lake, woodland, housing, park? Can they draw a circle with an area of roughly 20cm²? e.g. by drawing a square of 16cm² and drawing a circle around it.