

Second Level - Beyond Number Shape, Position and Movement Homework Cards



SPM2.1 I have explored how simple 3D objects can be constructed from a net of 2D shapes

3D objects at home *paper* Ask children to look around the home for 3D objects such as cupboards, books, sweet tins, food packaging. They draw some different items, then sketch what they think the net of each might be.



SPM2.1 I have explored how simple 3D objects can be constructed from a net of 2D shapes

Cube nets *cm squared paper* Ask children to draw two nets of cubes on squared paper: one which they think will work and one which they think won't work. Back in class, they swap nets with a partner and guess which is which, then check by cutting and folding.



SPM2.2 I have explored how right angles can be measured in degrees and how this links to fractions and compass points

Map it Ask children to think about a route they walk regularly (e.g. to the shop, on their way home from school). They draw the route showing the turns they make. Back in class discuss aspects of the different routes they drew. *How many of the turns are right angles? Which of these right angle turns are clockwise?*



SPM2.2 I have explored how right angles can be measured in degrees and how this links to fractions and compass points

Snake pits *cm squared paper* Ask children to draw several hazardous areas (snake pits) on squared paper. They write instructions using turns and forward movements to trace a path between these hazards from Start (bottom left) to Finish (top right). Their path can either take the person on it to a snake pit – or safely to the Finish. Back in class they swap instructions and map with a friend and try to work out whether each other's path is safe or not.



SPM2.3 I have explored how to describe and make journeys using the eight compass points

Design a compass *paper* Ask children to create a compass rose with an interesting design which clearly shows the eight compass points. Back in class they display their designs.



SPM2.3 I have explored how to describe and make journeys using the eight compass points

Bedroom paper Ask children to draw a plan of their ideal bedroom. They should think about where they want the windows and which direction they want them to face (south-facing windows will get most sun). They mark the eight compass points on their plan in the form of a compass rose.



SPM2.4 I have explored the use of coordinates to plot points, and describe positions and movements on a grid

Name coordinates *cm squared paper or APM 858* Ask children to write their name or initials on a coordinate grid (using APM 858 or squared paper). They record the coordinates for each letter. Back in class they make a display of their grids.



SPM2.4 I have explored the use of coordinates to plot points, and describe positions and movements on a grid

Map it *cm squared paper or APM 858* Ask children to think of an area they know well (e.g. the school, a play park, a garden). They map this on a grid (using APM 858 or squared paper). Then they write a statement involving coordinates (e.g. *The paddling pool is at (4, 2)*). Back in class they compare maps and statements.



SPM2.5a I have investigated how to estimate, create and measure angles - Classifying angles using knowledge of right angles

Angles in leaflets *leaflets* Ask children to collect some leaflets that have been delivered at home. They find angles in the pictures and diagrams in the leaflets and use different colours to indicate acute, obtuse and reflex angles.



SPM2.5a I have investigated how to estimate, create and measure angles - Classifying angles using knowledge of right angles

Angle game *paper* Ask children to draw two lines at random across a piece of paper and look at the angles they have made created (including angles at the edge of the paper). They score one point for an acute angle, two points for an obtuse angle and three points for a right angle. They work out their score, then repeat, aiming for a higher score.



SPM2.5b I have investigated how to estimate, create and measure angles - Estimating and measuring with degrees

Protractor top tips *poster-making materials* Ask children to think about the steps involved in using a protractor to measure angles then produce a top tips poster.



SPM2.5b I have investigated how to estimate, create and measure angles - Estimating and measuring with degrees

Design challenge *cm squared paper (optional)* Ask children to create a geometric design (e.g. for wallpaper or a plate). They estimate the size of some of the angles on their design. Back in class they measure the angles and compare these with their estimates. They discuss their results and display their designs.



SPM2.5c I have investigated how to estimate, create and measure angles - Creating and drawing angles

Practice makes perfect *paper, rulers, protractors* Ask children to practise drawing these angles without using a protractor: 45° , 90° , 135° , 225° , 270° and 315° . Back in class, they measure the angles they drew and score a point for every angle that is within 10° .



SPM2.5c I have investigated how to estimate, create and measure angles - Creating and drawing angles

Angle measurer *paper* Show children how to use the corner of a sheet of paper to check whether an angle is 90° or to draw an angle that size. At home they use this to measure the angles of the faces of different objects. Challenge them to work out how to use a sheet of paper to measure angles of 45° . What about 135° ?



SPM2.6a I have further explored a variety of 2D shapes - Straight edges

An irregular robot Ask children to create a picture of a robot which is made up of a variety of irregular 2D shapes. They list the different shapes they have used. Back in class they discuss and display their robots.



SPM2.6a I have further explored a variety of 2D shapes - Straight edges

Why is it that shape? Ask children to think about where they see different 2D shapes and to think about why particular shapes are used for particular purposes. For example, a football pitch is a rectangle because ...



SPM2.6b I have further explored a variety of 2D shapes - Curved edges

Design it Ask children to use circles to create a design for a fashion item such as a tie, T-shirt or bag. Back in class children compare their designs and display them.



SPM2.6b I have further explored a variety of 2D shapes - Curved edges

Circle line designs Ask children to draw a circle. They draw a diameter and mark dots on the circumference at both ends. They draw another diameter, dividing the circle into quarters and again mark dots on the circumference. They draw lines joining each dot to the other dots. They draw two more diameters, dividing the circle into eighths, mark the dots and join them all with lines.



SPM2.7a I have further explored a variety of 3D objects - Flat faces

3D object search *computer with internet access (optional), advertisements, newspapers, magazines* Ask children to find pictures or drawings of 3D objects with flat faces in leaflets, newspapers, magazines or the internet. Likely examples include buildings, food packaging, toys. They write the names of the 3D objects. Back in class they share and discuss their pictures.



SPM2.7a I have further explored a variety of 3D objects - Flat faces

Net paper Ask children to choose an object from around the home which has a cuboid shape (e.g. a book, cereal packet, box). They draw around the faces of the object (they may need a large sheet of paper but newspaper will do) in order to create a net of a cuboid the same size. Back in school they show their net and other children guess what the original object was.



SPM2.7b I have further explored a variety of 3D objects - Curved surfaces

Imagine! *paper* Ask children to draw a fantasy building or street involving spheres, hemispheres, cylinders and cones. They may need to think about how their buildings are secured in place so they don't roll away.



SPM2.7b I have further explored a variety of 3D objects - Curved surfaces

What else could it be? *paper* Ask children to think of examples where different 3D objects with curved faces are used. Now they think of another 3D object and imagine this object replacing the curved object. Would it be possible for this to be used? What difficulties would there be if their new 3D object were used? For example, could tennis be played with a cylindrical ball instead of a spherical ball? They record their ideas in a poster.



SPM2.8 I can split, combine and tessellate 2D shapes to make new shapes, pictures and patterns

Tessellation search Ask children to look for examples of tessellations at home or in the media. They sketch any examples they find. Back in class they share their findings.



SPM2.8 I can split, combine and tessellate 2D shapes to make new shapes, pictures and patterns

Tessellate the rectangle *5 cm squared paper, cm squared paper* Ask children to draw 10 rectangles (1 square \times 2 squares) on 5 cm squared paper and cut these out. They explore how many different ways they can tessellate the rectangles and record the successful tessellations on cm squared paper.



SPM2.9 I have explored how to create shapes and patterns by reflecting and rotating lines and shapes

Shape environment changes Ask children to look at patterns which involve rotation or reflection at home or during their journey to school. Examples might include designs on crockery, designs on fences and brickwork on buildings. They record and describe the patterns.



SPM2.9 I have explored how to create shapes and patterns by reflecting and rotating lines and shapes

Wallpaper design Ask children to create a design for wallpaper which involves shapes which have been rotated or reflected. Back in class they compare and discuss their designs.



SPM2.10 I can solve problems involving shape, position and movement

Shape, position and movement – what I have learned Ask children to think about what they have learned in their work on Shape, position and movement. They record what they think are the most interesting things they have learned as well as things they would like to learn more about. Back in class they discuss their ideas.



SPM2.10 I can solve problems involving shape, position and movement

Who uses it? Ask children to find out or think about which jobs require a good knowledge and understanding of the different aspects of shape, position and movement. They make a poster to show their ideas. Back in class they discuss and compare the ideas on their posters.
