Identifying and comparing angles by size

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Educational context

In Geometry 1 children considered right angles in relation to the perpendicular sides of shapes. In this activity group they further develop their understanding of angles, revisiting the connection between angles as amounts of turn and as the parts and properties of shapes.

In the first activity children make and observe 'journeys' around the perimeter of rectilinear shapes marked on squared grids. This involves a series of clockwise and anticlockwise quarter turns, reinforcing the link between right angles and fractions of a whole turn.

Programmable robots, if available, are a powerful way of illustrating these ideas and can help children make a valuable shift in perspective, from looking at polygons as static objects to thinking about them as the result of particular series of straight-line movements and turns.

Children then compare angles which are less than, equal to, or more than a right angle, developing the idea of angles as a relation between intersecting lines and further emphasizing the link between the static and dynamic aspects of angle. They learn the symbols used to mark angles, including the right angle symbol, and compare the sizes of angles using geo strips, in preparation for work in later years involving measurement of angles.

Children move on to consider angles in shapes and the relationship between angles and the comparative lengths of sides by making and drawing a variety of polygons. They are introduced to the terms 'regular' and 'irregular' as a way of classifying polygons according to their angles and sides.

Throughout these activities, encourage children to investigate how angles and shapes can be made and changed, and to talk about what they do and see. Use 'Why … ?' and 'What if … ?' questions to prompt them to reason logically and so to generalize from the particular examples they encounter.

Learning opportunities

- To understand an angle in terms of an amount of turn and as an amount of space which create the angle, and to quantify its size in terms of right angles and fractions of a full turn.
- To compare angles and recognize when they are smaller than, equal to, or greater than a right angle.
- To order angles by size.
- To identify the angles in a polygon and compare their sizes, recognizing this as a property of the polygon.
- To begin to recognize whether a polygon is regular or irregular.

Words and terms for use in conversation

turn, turn through, angle, right, left, clockwise, anticlockwise, quarter turn, half turn, three-quarter turn, full turn, right angle, symbol, polygon, regular, irregular, parallel, perpendicular, triangle, square, oblong, rectangle, pentagon, hexagon, heptagon, octagon, dodecagon, direction, less than, greater than, smaller, larger, size, amount, compare, order, check

Assessment opportunities

Look and listen for children who:
- Use the words and terms for use in conversation effectively.
- Recognize and visualize an amount of turn in terms of the fraction of a full turn and the number of right angles turned through.
- Make and identify angles less than, equal to, or more than a right angle, including in shapes and in different orientations.
- Identify regular and irregular instances of the same type of polygon, e.g. a hexagon.
- Order angles by size.

📖 Explorer Progress Book 3, pp. 4–5

After completing work on this activity group, give small focus groups of children their Explorer Progress Books and ask them to work through the challenges on the pages. As children complete the pages, assess what progress they are making with the central ideas from the activity group. Refer to the assessment opportunities for assistance.

🏠 Explore More Copymaster 2: Making Angles

After completing work on Activity 2, give children Explore More Copymaster 2: Making Angles to take home.