

# Max's Magnificent Geometry Adventure

*Learning objective: To identify, measure, and calculate angles using the properties of  $90^\circ$ ,  $180^\circ$ , and  $360^\circ$  turns, and to calculate missing angles on a straight line and around a point.*

Max the monkey is organising a garden maze. Help him solve these geometric puzzles to ensure the paths meet at the correct angles.

*Word bank: acute · obtuse · reflex · protractor · degrees · straight line · vertically opposite · clockwise*

**1. Max has designed a corner path that is exactly  $45^\circ$ . If he decides to make the path wider by adding another  $35^\circ$  angle next to it, what will the total angle be? Is this new angle acute, obtuse, or reflex? (2 marks)**

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**2. A gate in the maze opens through a straight line. If the gate has already swung open by  $115^\circ$ , how many degrees further must it swing to reach a  $180^\circ$  flat position? Show your calculation. (2 marks)**

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**3. Max is standing at the centre of a circular flower bed. He turns  $90^\circ$  clockwise, then another  $120^\circ$  clockwise. Calculate the total degrees he has turned. What is the size of the remaining angle needed to complete a full  $360^\circ$  turn? (3 marks)**

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**4. Compare and contrast an obtuse angle and a reflex angle. Justify your answer by explaining how their measurements differ in relation to a straight line ( $180^\circ$ ). (3 marks)**

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5. Explain why the angles around a single point must always sum to  $360^\circ$ . Use the example of a clock face to support your reasoning. (3 marks)

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**Draw:** Draw a diagram showing two intersecting straight lines. Label one of the angles as  $60^\circ$ . Using your knowledge of angles on a straight line, calculate and label the other three angles formed by the intersection.



*Extension challenge: Max wants to build a triangular play area. If one angle is  $70^\circ$  and the second is  $50^\circ$ , what must the third angle be? Justify your answer by explaining the rule for the sum of angles in a triangle. What might happen to the shape of the play area if the third angle was increased by  $20^\circ$ ?*