

# Max's Geometric Garden: Mastering Angles

*Learning objective: To calculate missing angles on a straight line, around a point, and within triangles, and to identify vertically opposite angles.*

Read each question carefully. Use your knowledge of angle properties to calculate the missing values. Show your working out clearly.

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

**1. Max is designing a triangular flowerbed. Two of the angles measure  $45^\circ$  and  $65^\circ$ . Calculate the size of the third angle. How did you work this out? (2 marks)**

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**2. On a straight line, an angle is measured at  $132^\circ$ . What is the size of the missing angle next to it on the same straight line? (2 marks)**

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**3. Two straight lines intersect to form an 'X' shape. If one angle is  $55^\circ$ , what is the size of the vertically opposite angle? Explain your reasoning. (2 marks)**

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**4. Max finds a point where four angles meet around a full turn. Three of the angles are  $90^\circ$ ,  $80^\circ$ , and  $110^\circ$ . What is the size of the fourth angle? (2 marks)**

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**5. An isosceles triangle has one angle measuring  $40^\circ$ . What are the two possible sizes for the other two angles? (Hint: There are two different ways this triangle could look). (3 marks)**

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**Draw:** Draw a set of intersecting lines and label one angle as  $70^\circ$ . Use your knowledge of vertically opposite angles and straight lines to calculate and label the other three angles in the diagram.



*Extension challenge: Max wants to build a regular hexagon-shaped pond. Research or calculate the size of one interior angle of a regular hexagon. If he splits the hexagon into triangles from one corner, how many triangles can he create?*