MATHEMATICS Unit 5: Investigating properties of shapes	Year Group: 8 set 4-5

Key Vocabulary

Face	The side of a polygon or line segment where two faces of a solid figure meet
Edge	Flat surface of a 3d shape
Vertex	A point where the edges of a solid figure meets. (A corner)
Quadrilateral	A four sided shape
Diagonal	A line joining two non-adjacent vertices or corners of a polygon
Perpendicular	Two lines meeting at a right angle
Parallel	Lines that are equidistant – the same distance apart. Never touching.
Net	A pattern that you can cut and fold to make a model of a solid shape.
Arrowhead	An arrowhead is a quadrilateral with two pairs of adjacent sides equal in length, and one of whose interior angles is a reflex angle.

Key facts / Diagrams

Equilateral Traiangle Has three equal sides And three equal angles	**Isosceles Traiangle** Has two equal sides And two equal angles	**Scalene Triangle** Has no equal sides

Parallelogram   Square

Rectangle   Trapezoid

Rhombus   Kite

Parallelogram	▪ Opposite sides equal and parallel ▪ Opposite angles equal
Rectangle	▪ Opposite sides equal and parallel ▪ All angles equal (90∘)
Rhombus	▪ Opposite sides are parallel ▪ All sides are equal ▪ Diagonals bisect each other at right angles
Square	▪ Opposite sides equal and parallel ▪ All angles equal (90∘)
Trapezoid	▪ One pair of opposite sides are parallel
Kite	▪ Two pairs of adjacent sides are equal ▪ Diagonals bisect at right angles

Common misconceptions

- Some pupils may think that all trapezia are isosceles
- Some pupils may think that a diagonal cannot be horizontal or vertical
- Two line segments that do not touch are perpendicular if they would meet at right angles when extended. Therefore the diagonals of an arrowhead (delta) are perpendicular despite what some pupils may think
- Some pupils may think that a square is only square if 'horizontal', and even that a 'non-horizontal' square is called a diamond
- The equal angles of an isosceles triangle are not always the 'base angles' as some pupil may think

Worked examples

Using your knowledge of triangles, work out the missing angle x and y.

Answer:
- Isosceles triangle, therefore   x = 38⁰
- Sum of interior angles in a triangle = 180⁰
- 180⁰-(38⁰+38⁰)=104⁰

Net of a Tetrahedron