Subject	Year	Month
Mathematics	7	January

Topic:

ANGLE FACTS AND PROPERTIES OF 2D SHAPES — 5 LESSONS

Content (Intent)

Prior Learning

KEY STAGE 2

- Know that vertically opposite angles are equal
- Know that angles on a straight line add up to 180°
- Know that angles about a point add up to 360°
- Types of triangles
- Types of quadrilaterals

PREVIOUS UNIT:

- parallel, perpendicular
- notation for equal sides, parallel sides, right angles

Future Learning

Y8
Bearings (in which bearing of A from B vs. B from A might or might not have been mentioned)

Y8
Angles on Parallel lines
Angles in polygons

Objectives

Recognise and solve problems using …

- vertically opposite angles
- angles at a point, on a straight line (COVERED IN KS2)
- angles in a triangle (COVERED IN KS2)

- Know and solve problems using the properties and definitions of **triangles**
- Know and solve problems using the properties and definitions of special types of **quadrilaterals** (including diagonals)
- Line symmetry in 2D shapes

For teaching purposes

POSSIBLE QUESTIONS

- Show me an example of a trapezium. And another …
- Which quadrilaterals are special examples of other quadrilaterals? Why? Can you create a 'quadrilateral family tree'?
- What is the same and what is different: Rhombus / Parallelogram?
- Show me possible values for a and b. And another.

POSSIBLE MISCONCEPTIONS

- may think that all trapezia are isosceles or have one right angle
- may think that a diagonal cannot be horizontal or vertical
- may think that a 'non-horizontal' square is called a diamond
- The equal angles of an isosceles triangle are not always the 'base angles'
- Calculating mistakes when adding/subtracting mentally. E.g 180 – 127 = 63°.

Pedagogical notes (implementation)

Notation
Dash for equal lengths
Arc for equal angles
Right angle notation
Parallel line arrow heads

Make the connection between the SUM of the angles in a triangle and the SUM of angles on a straight line by drawing any triangle, rip off the corners of triangles and fitting them together on a straight line.
(The official proof will be discussed in Year 8, using angles on parallel lines.)

The word 'isosceles' means 'equal legs'. What do you have at the bottom of equal legs? Equal ankles!
Kite, not 'diamond' , A **square** is a rectangle with extra features.
A **rhombus** is a parallelogram with extra features

How will understanding be assessed & recorded (Impact)

End of term Assessment in February
End of Year Assessment in June / July
BAM task 5 – Geometric notation

How can parents help at home?

MathsWatch clips (Qualification KS3)
G1, G13, G14, G16, G17

Further reading/discussion

Reading / Enrichment

KM: Dotty activities:
KM: What's special about quadrilaterals?
NRICH: A chain of polyhedra
NRICH: Property chart
NRICH: Quadrilaterals game
KM: Maths to Infinity: Lines and angles
KM: Stick on the Maths: Angles
NRICH: Triangle problem
NRICH: Square problem
NRICH: Two triangle problem

Literacy

Diagonal, Perpendicular, Parallel
Vertically opposite
Triangles: Scalene, Right-angled, Isosceles, Equilateral
Quadrilaterals: Square, Rectangle, Parallelogram, (Isosceles) Trapezium, Kite, Rhombus

Numeracy Links

Careers Links

Engineer
Architect
Carpenter