

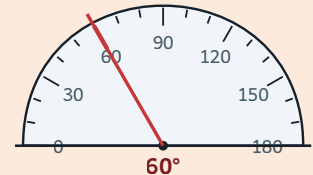
Lesson 76 SHAPE & SPACE

Measuring angles with a protractor

WHAT THIS LESSON TEACHES

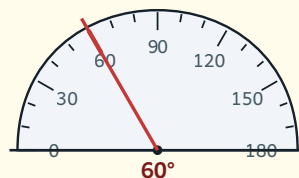
Place the protractor's **centre** on the vertex and its **0° line** along one arm of the angle. Read where the other arm crosses the scale. Use the scale that runs from your 0° line — choose the inner or outer scale carefully.

- If the 0° line runs left-to-right and the arm goes up-right, read from the **inner scale** (0° at the right).
- If the angle looks **acute** ($< 90^\circ$), your reading should be **less than 90°** — double-check the scale.



MODEL THIS ON THE BOARD

READING A 60° ANGLE ON THE PROTRACTOR



- 1 Line up the **centre cross** of the protractor on the **vertex** of the angle.
- 2 Set the **0° baseline** along one of the angle's arms.
- 3 Read the scale that **starts at 0** on that arm — follow it round to where the second arm crosses the scale. Here it crosses at **60°**.

ANSWER KEY

W1: 45° is acute

W2: 48°

Q1: 158° is obtuse

Q2: 57°

a) **Always** — True for every triangle in flat geometry — the rip-the-corners proof shows why.

b) **Sometimes** — True for obtuse triangles only. An equilateral has none; a right-angled has none.

c) **Always** — Three equal sides → three equal angles, totalling 180° , so 60° each.

d) **Always** — Yes — $90^\circ + 45^\circ + 45^\circ$. The two short sides are equal.

e) **Never** — Two 90° angles already total 180° , leaving 0° for the third — not a triangle.

f) **Always** — $180^\circ - 65^\circ - 80^\circ = 35^\circ$.

EXTENSION SHEET · STRETCH ANSWERS

S1: 84°

S2: 85° is acute

S3: 84°

S4: 84° is acute

S5: 126° is obtuse