Lesson 74

Nets and isometric drawing — flat to 3D and back

MODULE 6 · 2D AND 3D SHAPE, ANGLES, SYMMETRY SHAPE & SPACE

Isometric paper is a triangular grid (instead of squares). It lets you draw 3-D shapes that look realistic on a flat page: **vertical edges** stay vertical, and **horizontal edges** slope along the grid lines (at 30° from the horizontal).

→ A **cube** drawn on isometric paper shows three of its faces — top, left, and right — meeting at one corner.

→ Edges that are equal length on the real cube are equal length on the isometric drawing too — count grid steps to keep them matching.

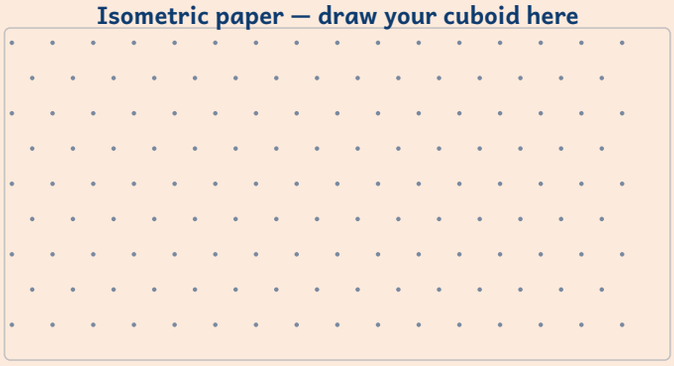
HOW TO ANSWER TODAY

- **Radius ↔ diameter.** Diameter = 2 × radius. Radius = diameter ÷ 2.
  Radius 5 cm → diameter 10 cm · Diameter 12 cm → radius 6 cm
- **Parts of a circle.** Centre = middle point. Radius = centre to edge. Diameter = edge through centre to edge. Circumference = the distance round.
  Line from centre to edge → radius · All the way round → circumference
- **C ÷ d.** Divide circumference by diameter. The answer is always close to π (about 3.14).
  Diameter 20 cm, circumference 63 cm → 63 ÷ 20 = 3.15

TRY IT ON THE LINE

Use the isometric grid below to draw a cuboid. Vertical edges stay vertical; horizontal edges slope along the 30° and 60° lines of the dot grid. Show three faces — front, right, and top — with no hidden lines.

Isometric paper — draw your cuboid here



1. Draw a **4 × 2 × 3 cm cuboid** on the grid: 4 dots wide along the front, 2 dots deep, 3 dots tall.
2. Underneath your first drawing, sketch a **3 × 3 × 3 cm cube** — every edge the same length (3 dots).
3. If space allows, add a **5 × 2 × 2 cm cuboid** (long and thin).
4. Label one length, one width, and one height on each drawing.

PRACTICE

1. At the Saturday farmers' market in Galway, Oisín measures a round wheel of cheese on the stall. The cheese has a diameter of **7 cm** and a circumference of **22 cm**. What is the circumference divided by the diameter, to **2** decimal places?

2. Tadhg is building a robot in 5th class and fixes a circular wheel to its base. He measures from the centre of the wheel to its edge and gets a radius of **5 cm**. Fill in: the diameter of the wheel is ___ cm.
   A circle has a radius of 5 cm. Fill in: the diameter is ___ cm.