

Pentagons, hexagons and octagons

CURRICULUM ALIGNMENT

SHA.SHP.3a

investigate and analyse the properties of 3-D and 2-D shapes and identify classes of shapes based on these properties.

INTERACTIVES 2D Shape Inspector · challenge, display, explore

WHAT THIS LESSON TEACHES

A pentagon is a flat shape with five straight sides and five corners. A hexagon has six straight sides and an octagon has eight straight sides.

→ A simple house drawing has five straight sides so it is a pentagon.

→ The cells in a honeycomb are hexagons.

MODEL THIS ON THE BOARD

COUNTING THE STOP-SIGN SIDES

- 1 Look at the flat stop-sign shape from the road.
- 2 Tap each straight side one by one all the way round.
- 3 Count **1 2 3 4 5 6 7 8**.
- 4 Eight sides means the shape is an octagon.

DISCUSSION STARTER

REFLECT How does a shape's name help you remember how many sides it has?

ANSWER KEY

a)

Five sides, numbered 1 to 5. The last number written is the side count.

b) Six sides, numbered 1 to 6.

c) Eight sides, numbered 1 to 8.

Q1: 5

Q2: 6

Q3: hexagon

a) Always : By the rule a pentagon always has exactly five straight sides.

b) Never : A hexagon always has six sides, never eight.

c) Never : The side count stays the same no matter how the shape is turned.

d) Always : Every stop sign has eight equal straight sides so it is always an octagon.

EXTENSION SHEET · STRETCH ANSWERS

S1: 2 pentagons, by 2 (10 sides against 8)

S2: an octagon

S3: Yes. 3 hexagons need 18 sticks, so 2 are left over.

S4: Yes. Any shape with 6 straight sides is a hexagon, whatever it looks like.

S5:

Neither. A hexagon has 6 sides and an octagon has 8.

Investigation: How many sides can you find? — open-ended; scan pupils' working for valid solution paths rather than a single answer.