

Angle-related problem-solving

CURRICULUM ALIGNMENT

SHA.SHP.4b investigate and construct angles in the context of shape; and solve angle-related problems.

INTERACTIVES Angle Tool · challenge, display, explore

WHAT THIS LESSON TEACHES

Angles on a straight line add up to 180° . Triangles also total 180° . Vertically opposite angles are equal.

→ If one angle on a line is 125° , the other must be $180^\circ - 125^\circ = 55^\circ$.

→ A triangle with angles 50° and 60° has a third angle of $180^\circ - 50^\circ - 60^\circ = 70^\circ$.

MODEL THIS ON THE BOARD

SOLVING A CHAINED FIGURE STEP BY STEP

- 1 Find the triangle's third angle first: $180^\circ - 65^\circ - 40^\circ = 75^\circ$ (triangle angles).
- 2 Use that 75° to find the angle beside it on the straight line: $180^\circ - 75^\circ = 105^\circ$ (straight line).
- 3 The vertically opposite angle to 105° is also 105° .

ANSWER KEY

b) 50°

c) 130°

Q1: 85°

Q2: 135°

Q3: 80°

Q4: 45°

a) **Always** : This is always true by definition of a straight angle.

b) **Never** : Each angle needs the ones before it, so work through them in order.

c) **Always** : This is always true at the intersection point.

d) **Sometimes** : True when a triangle sits on a straight line; false when one fact is enough.

EXTENSION SHEET · STRETCH ANSWERS

S1: 200°

S2: 68°

S3: 66°

S4: 232° is reflex

S5: 21° is acute