



## Angles in triangles and parallel lines

**GRADE 8 MATH**

Name \_\_\_\_\_

Date \_\_\_\_\_

Give a reason with every angle. Where a question says explain, the reason IS the answer.

**WORKED EXAMPLE**

Alternate equal, corresponding equal, co-interior add to 180. Triangle angles sum to 180. Exterior angle = sum of the two opposite interior angles. Two equal angles  $\Rightarrow$  similar, not congruent.

1. Name the three pairs of angles made when parallel lines are cut by a transversal, and say what is true of each.

**FLUENCY**

Show your thinking

**Answer**

2. A transversal makes  $40^\circ$  with two parallel lines. Give the alternate, corresponding and co-interior angles.

**APPLICATION**

Show your thinking

**Answer**

3. A triangle has angles  $35^\circ$  and  $85^\circ$ . Find the third angle.

FLUENCY

Show your thinking

Answer

4. Find the exterior angle at each vertex of a triangle with angles  $50^\circ$ ,  $60^\circ$  and  $70^\circ$ . What do the three exterior angles add to?

APPLICATION

Show your thinking

Answer

5. Explain, using a line drawn parallel to one side, why a triangle's angles add to  $180^\circ$ .

REASONING

Show your thinking

Answer

6. Explain why the exterior angle equals the sum of the two opposite interior angles, without treating it as a separate rule.

REASONING

Show your thinking

Answer

7. Why are two equal angles enough to show two triangles are similar? Why is a third not needed?

REASONING

Show your thinking

Answer

8. A transversal is perpendicular to two parallel lines. What are the alternate, corresponding and co-interior angles? Why is this case misleading?

REASONING

Show your thinking

Answer

9. A triangle has angles  $60^\circ$ ,  $60^\circ$  and  $60^\circ$ . Another has the same. Must they be congruent?

REASONING

Show your thinking

Answer