Vertically opposite angles

6 questions | 13 marks

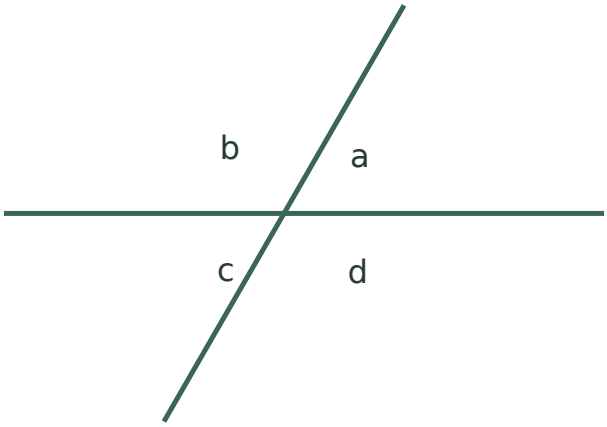
Equivalent correct methods earn the corresponding marks.

1. Two straight lines cross. One angle is 47°. Find its vertically opposite angle. [1 mark]

Vertically opposite angles are equal.

Answer: 47°.

2. Use the labelled intersection. Given $a = 130^\circ$, find the following angles. [3 marks]



Two straight lines intersect. Sketch not to scale.

(a) Find b. [1 mark]

$180 - 130 = 50$.

Answer: 50°.

(b) Find c. [1 mark]

c is vertically opposite a.

Answer: 130°.

(c) Find d. [1 mark]

d is vertically opposite b.

Answer: 50°.

3. Four equal angles meet where two straight lines cross. Find each angle and name the relationship between the lines. [2 marks]

The four angles total 360°.

$360 \div 4 = 90$. Right-angle intersections are perpendicular.

Answer: 90° each; the lines are perpendicular.

4. Vertically opposite angles are $(4x + 5)^\circ$ and $(6x - 25)^\circ$. Find x and the angle size. [3 marks]

$4x + 5 = 6x - 25$.

$30 = 2x$, so $x = 15$.

$4(15) + 5 = 65$. Check $6(15) - 25 = 65$.

Answer: $x = 15$; the angle is 65°.

5. Two angles both measure 52°. Does this fact alone prove they are vertically opposite? Explain. [2 marks]

Vertically opposite describes a position at two intersecting straight lines.

Equal size alone does not supply that arrangement.

Answer: No. Equal angles need not be at the same intersection.

6. Two straight wires cross. The smaller angle between them is 38°. Find the larger angle, giving a reason. [2 marks]

The smaller and larger adjacent angles form a straight angle.

$180^\circ - 38^\circ = 142^\circ$.

Answer: 142°.