

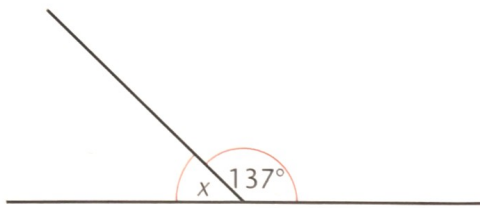
MISSING ANGLES

TARGET To find missing angles:

- on a straight line
- at a point
- which are vertically opposite.

ANGLES ON A STRAIGHT LINE

The sum of the angles on a straight line is 180° .

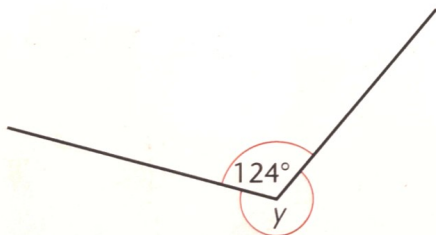


$$137^\circ + x = 180^\circ$$

$$x = 43^\circ$$

ANGLES AT A POINT

A whole turn is 360° .

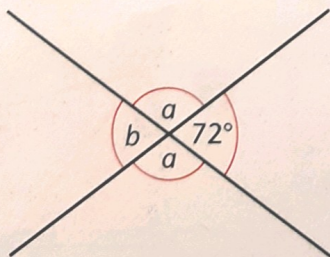


$$124^\circ + y = 360^\circ$$

$$y = 236^\circ$$

VERTICALLY OPPOSITE ANGLES

Where two straight lines cross each other opposite angles are equal.



$$b = 72^\circ \text{ (vertically opposite)}$$

$$a + 72^\circ = 180^\circ$$

$$a = 108^\circ$$

A

Find the angles marked with letters.

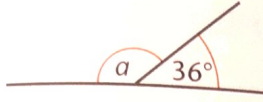
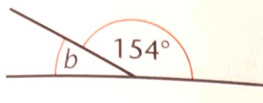
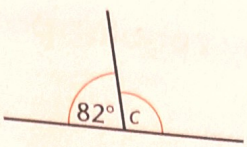
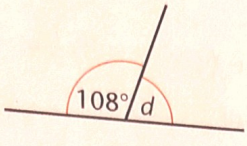
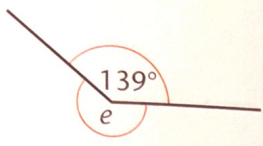
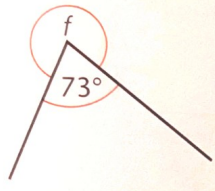
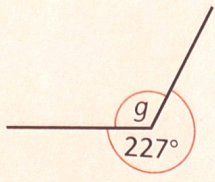
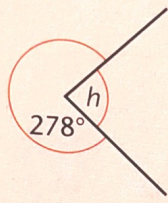
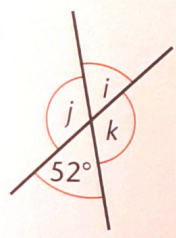
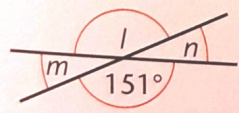
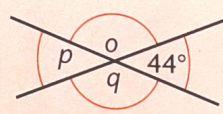
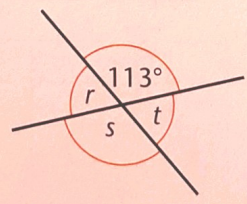
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How many degrees clockwise is the turn from:

- S to W
- N to NW
- NE to SW
- SE to NE
- E to SE
- NW to S
- NW to E
- W to NE?
- How many degrees is:
 - $2\frac{1}{2}$ right angles
 - $1\frac{1}{3}$ right angles?

B

Find the angles marked with letters.

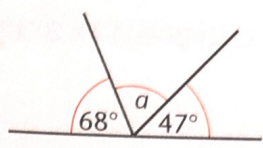
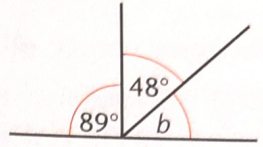
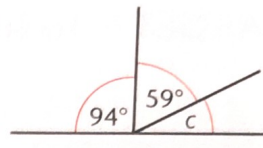
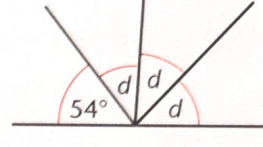
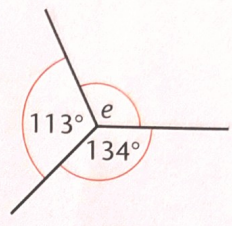
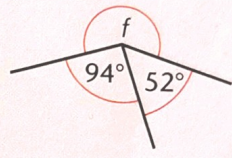
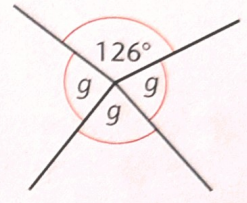
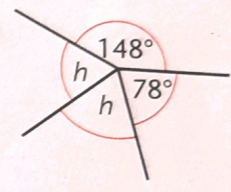
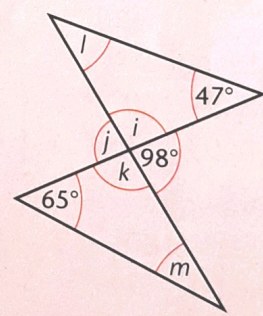
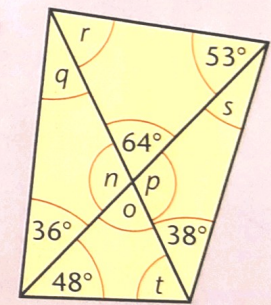
- 1 
- 2 
- 3 
- 4 
- 5 
- 6 
- 7 
- 8 
- 9 
- 10 
- 11 
- 12 

How many degrees does the hour hand turn from:

- 13 11:00 to 5:00
- 14 8:00 to 9:00
- 15 4:00 to 1:00
- 16 2:00 to 4:00
- 17 7:00 to 10:00
- 18 5:00 to 9:00
- 19 8:00 to 6:00
- 20 12:00 to 8:00?
- 21 What angle is:
 - a) $\frac{4}{5}$ of a right angle
 - b) $\frac{7}{8}$ of a whole turn.

C

Find the angles marked with letters.

- 1 
- 2 
- 3 
- 4 
- 5 
- 6 
- 7 
- 8 
- 9 
- 10 

How many degrees does the minute hand turn in:

- 11 30 minutes
- 12 1 minute
- 13 50 minutes
- 14 40 minutes
- 15 46 minutes
- 16 55 minutes
- 17 12 minutes
- 18 25 minutes?
- 19 What angle is:
 - a) $\frac{3}{5}$ of a right angle
 - b) $\frac{11}{12}$ of a whole turn.