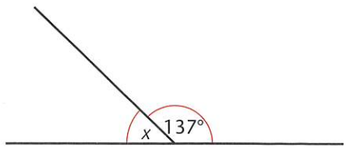
MISSING ANGLES

TARGET **To find missing angles:**
- **on a straight line**
- **at a point**
- **which are vertically opposite.**

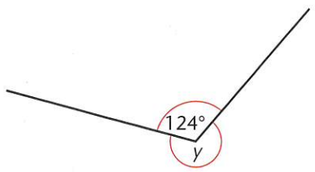
ANGLES ON A STRAIGHT LINE
The sum of the angles on a straight line is 180°.



$137° + x = 180°$

$x = 43°$

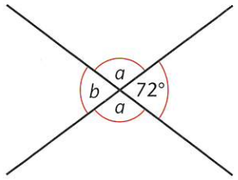
ANGLES AT A POINT
A whole turn is 360°.



$124° + y = 360°$

$y = 236°$

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



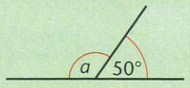
$b = 72°$ (vertically opposite)

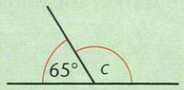
$a + 72° = 180°$

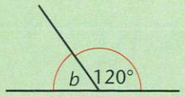
$a = 108°$

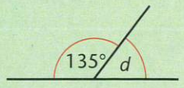
A

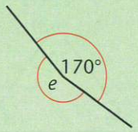
Find the angles marked with letters.

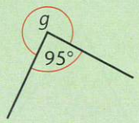
1. 

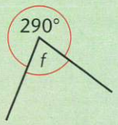
3. 

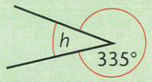
2. 

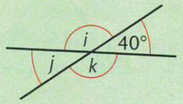
4. 

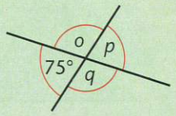
5. 

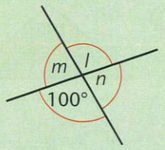
7. 

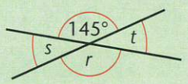
6. 

8. 

9. 

11. 

10. 

12. 

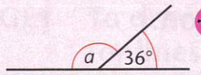
How many degrees clockwise is the turn from:

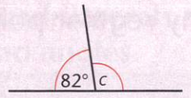
13. S to W
14. NE to SW
15. E to SE
16. NW to E
17. N to NW
18. SE to NE
19. NW to S
20. W to NE?

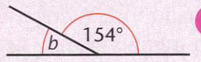
21. How many degrees is:
    a) $2\frac{1}{2}$ right angles
    b) $1\frac{1}{3}$ right angles?

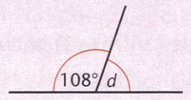
B

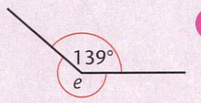
Find the angles marked with letters.

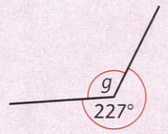
1. 

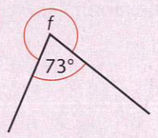
3. 

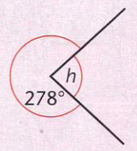
2. 

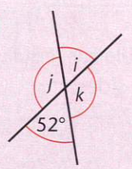
4. 

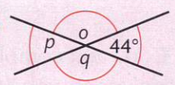
5. 

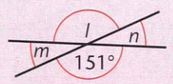
7. 

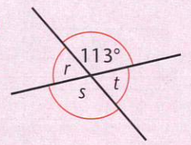
6. 

8. 

9. 

11. 

10. 

12. 

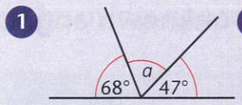
How many degrees does the hour hand turn from:

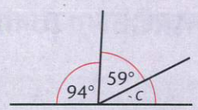
13. 11:00 to 5:00
14. 8:00 to 9:00
15. 4:00 to 1:00
16. 2:00 to 4:00
17. 7:00 to 10:00
18. 5:00 to 9:00
19. 8:00 to 6:00
20. 12:00 to 8:00?

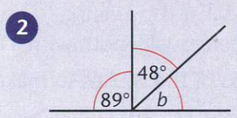
21. What angle is:
    a) $\frac{4}{5}$ of a right angle
    b) $\frac{7}{8}$ of a whole turn.

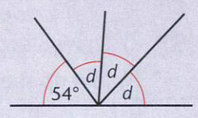
C

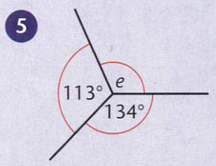
Find the angles marked with letters.

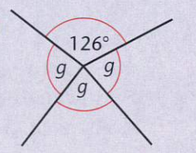
1. 

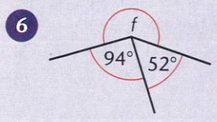
3. 

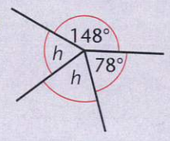
2. 

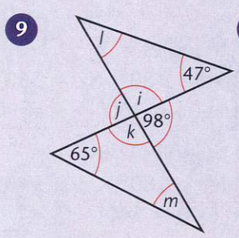
4. 

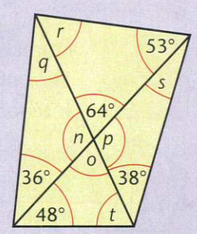
5. 

7. 

6. 

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.