Angles 1 · Angles at a point, on a straight line and vertically opposite

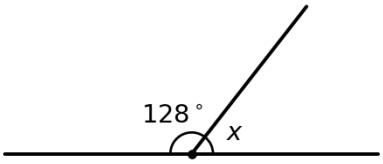
Graded Drill Set

Name: _____ Class: _____ Date: _____

Work through Levels 1 to 3 in order. Angles are in degrees. Diagrams are drawn accurately, but always **calculate**, never measure. In Level 3, write a reason for every step. Answers are at the back.

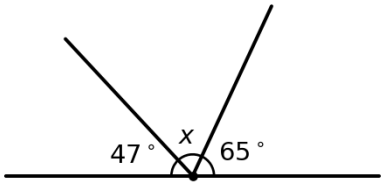
Section A · Level 1 · One step

1 Find x.



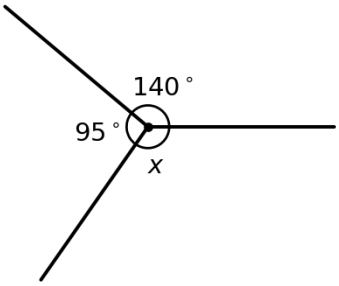
Answer: _____

2 Find x.



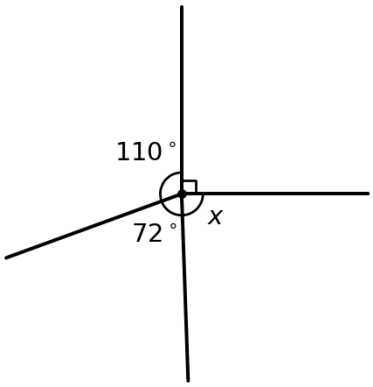
Answer: _____

3 Find x.



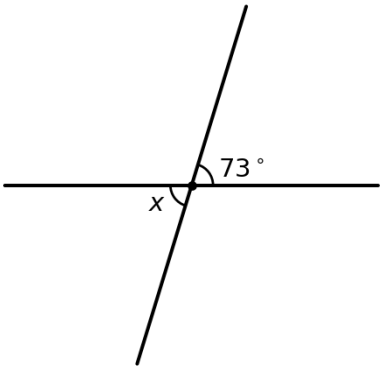
Answer: _____

4 Find x.



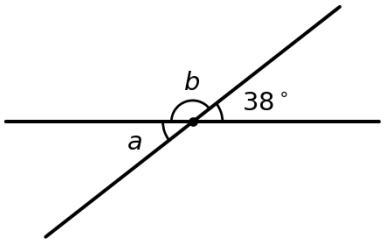
Answer: _____

5 Two straight lines cross. Find x.



Answer: _____

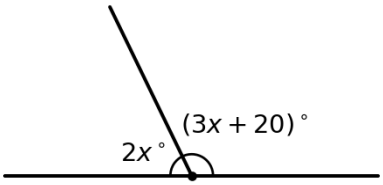
6 Two straight lines cross. Find a and b.



Answer: _____

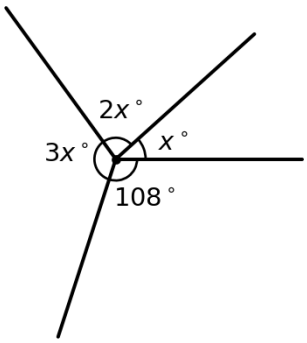
Section B · Level 2 · Form and solve an equation

7 Find x. Then find the size of the larger angle.



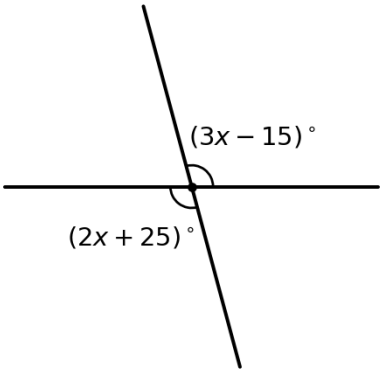
Answer: _____

8 Find x.



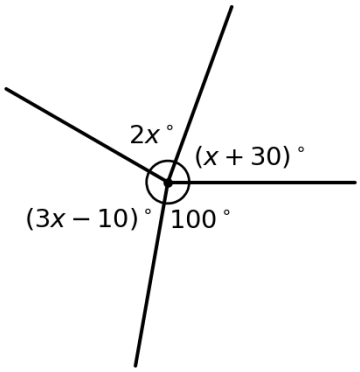
Answer: _____

9 Two straight lines cross. Find x and the size of each marked angle.



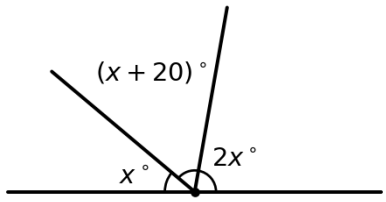
Answer: _____

10 Find x. Then find the size of the largest angle.



Answer: _____

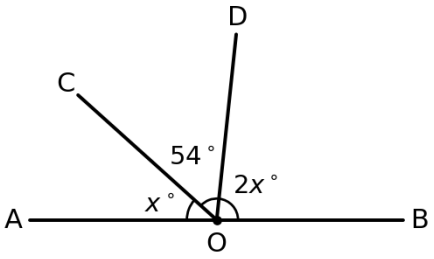
11 Three angles lie on a straight line. Find x.



Answer: _____

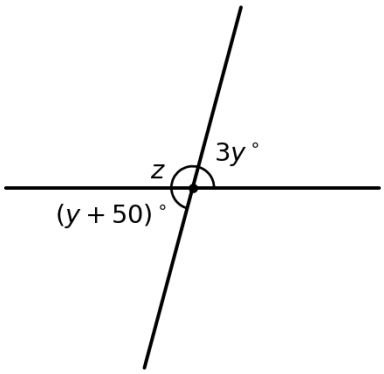
Section C · Level 3 · Multi-step, give reasons

12 AOB is a straight line. Find x and the size of angle DOB.



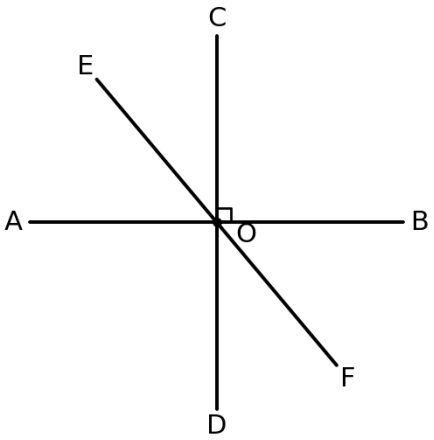
Answer: _____

13 Two straight lines cross. Find y and z, giving a reason for each step.



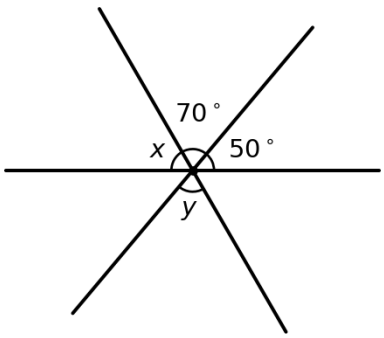
Answer: _____

14 AB and CD are straight lines that meet at right angles at O. EF is a straight line through O.
Angle AOE = $(2x - 10)°$ and angle EOC = $(x + 10)°$.
(a) Find x.
(b) Find angle DOF, giving a reason.



Answer: _____

15 Three straight lines meet at a point. Find x and y, giving reasons.



Answer: _____

Answers

1	$x = 52°$
2	$x = 68°$
3	$x = 125°$
4	$x = 88°$
5	$x = 73°$
6	$a = 38°$, $b = 142°$
7	$x = 32$; larger angle = 116°
8	$x = 42$
9	$x = 40$; each angle = 105°
10	$x = 40$; largest angle = 110°
11	$x = 40$
12	$x = 42$; angle DOB = 84°
13	$y = 25$ (vertically opposite angles are equal: $3y = y + 50$); $z = 105°$ (angles on a straight line add to 180°)
14	(a) $x = 30$ (angle AOC = 90°, so $3x = 90$) (b) angle DOF = 40° (vertically opposite angle EOC = 30 + 10 = 40°)
15	$x = 60°$ (angles on a straight line: $50 + 70 + x = 180$); $y = 70°$ (vertically opposite the 70° angle)