Angles 2 · Angles and parallel lines

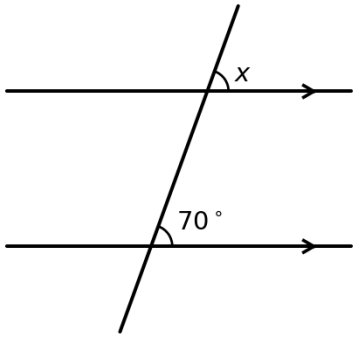
Graded Drill Set

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. **Corresponding angles** are equal · **Alternate angles** are equal · **Co-interior angles** add up to 180°. Arrows on lines show that they are parallel.

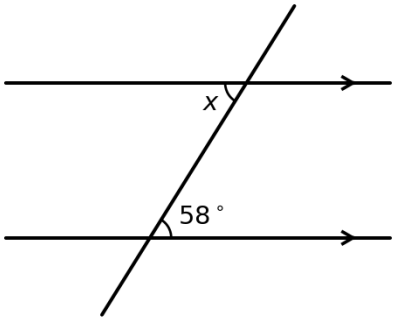
Section A · Level 1 · One step, name the angle fact

1 Find x. Name the angle fact you used.



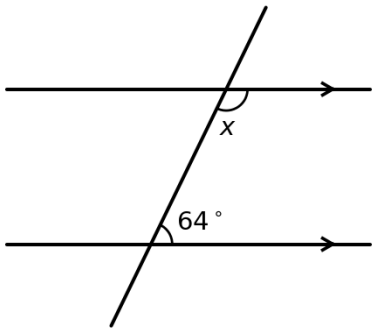
Answer: _____

2 Find x. Name the angle fact you used.



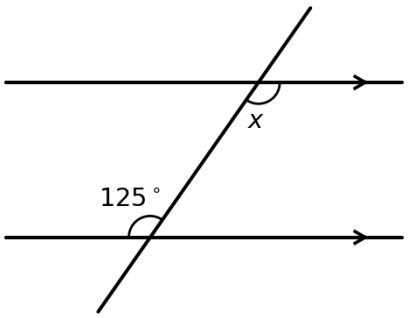
Answer: _____

3 Find x. Name the angle fact you used.



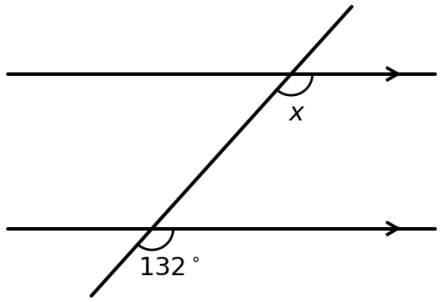
Answer: _____

4 Find x. Name the angle fact you used.



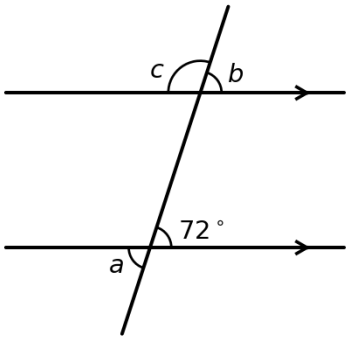
Answer: _____

5 Find x. Name the angle fact you used.



Answer: _____

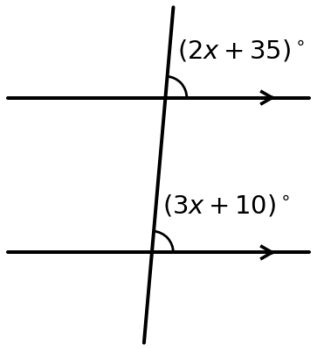
6 Find a, b and c.



Answer: _____

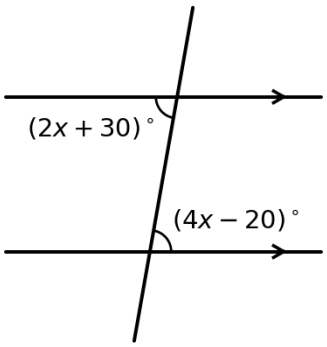
Section B · Level 2 · Form and solve an equation

7 Find x. Then find the size of each marked angle.



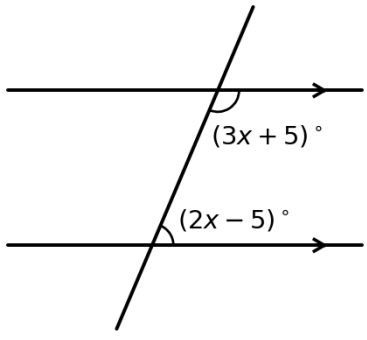
Answer: _____

8 Find x. Then find the size of each marked angle.



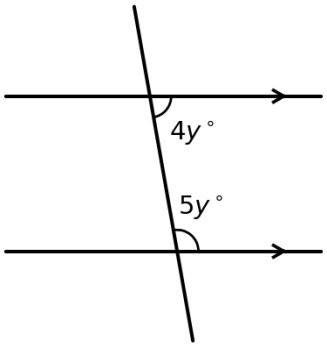
Answer: _____

9 Find x. Then find the size of each marked angle.



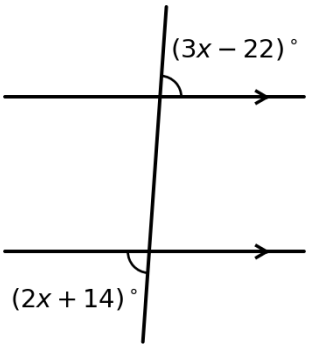
Answer: _____

10 Find y. Then find the size of each marked angle.



Answer: _____

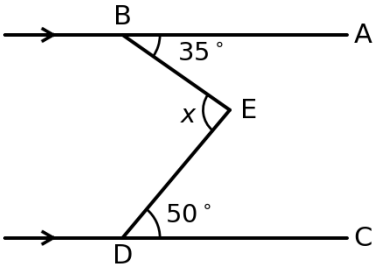
11 Find x. (You will need two angle facts.)



Answer: _____

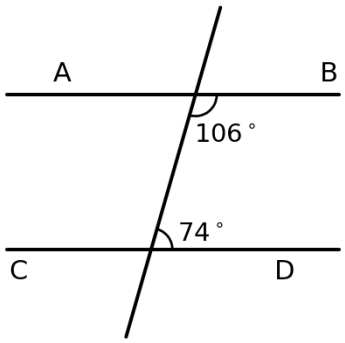
Section C · Level 3 · Multi-step, give reasons

12 AB is parallel to DC. Find x.
Hint: draw a line through E parallel to AB.



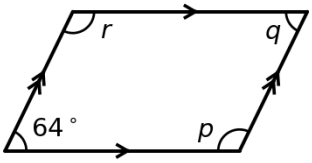
Answer: _____

13 Is AB parallel to CD? Give a reason for your answer.



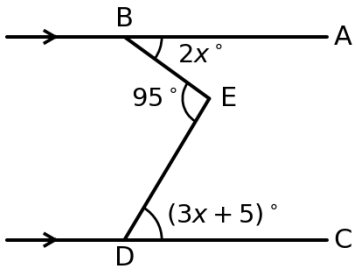
Answer: _____

14 The diagram shows a parallelogram. Find p, q and r, giving a reason for each.



Answer: _____

15 AB is parallel to DC. Find x.



Answer: _____

Answers

1 $x = 70°$ (corresponding angles are equal)

2 $x = 58°$ (alternate angles are equal)

3 $x = 116°$ (co-interior angles add up to 180°)

4 $x = 125°$ (alternate angles are equal)

5 $x = 132°$ (corresponding angles are equal)

6 $a = 72°$ (vertically opposite); $b = 72°$ (corresponding); $c = 108°$ (angles on a straight line)

7 $3x + 10 = 2x + 35$, so $x = 25$; each angle $= 85°$

8 $4x - 20 = 2x + 30$, so $x = 25$; each angle $= 80°$

9 $(2x - 5) + (3x + 5) = 180$, so $x = 36$; angles are $67°$ and $113°$

10 $5y + 4y = 180$, so $y = 20$; angles are $100°$ and $80°$

11 $2x + 14 = 3x - 22$ (vertically opposite, then corresponding), so $x = 36$; each angle $= 86°$

12 $x = 35 + 50 = 85°$ (alternate angles, using the line through E parallel to AB)

13 Yes. $74 + 106 = 180$, and co-interior angles add up to 180° only when the lines are parallel.

14 $p = 116°$, $q = 64°$, $r = 116°$ (each pair of neighbouring angles is co-interior, so adds up to 180°)

15 $2x + (3x + 5) = 95$, so $5x = 90$ and $x = 18$