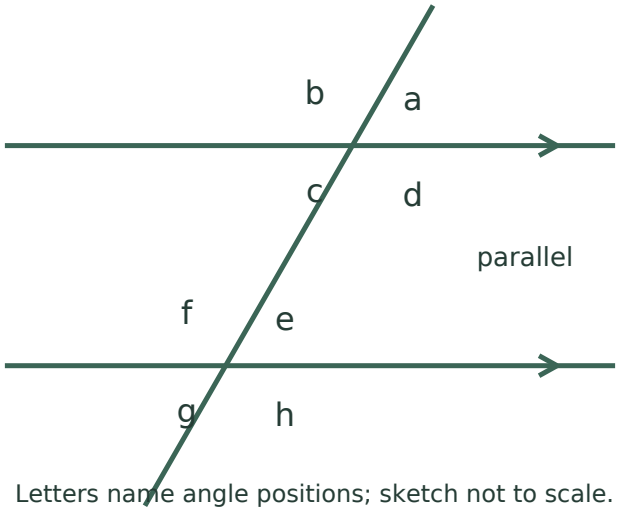
# Parallel lines and transversals

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

**1.** The horizontal lines in the diagram are parallel and $a = 73^\circ$. [3 marks]




Letters name angle positions; sketch not to scale.

**(a)** Find e and name the angle rule. [1 mark]

$e = a = 73^\circ$.

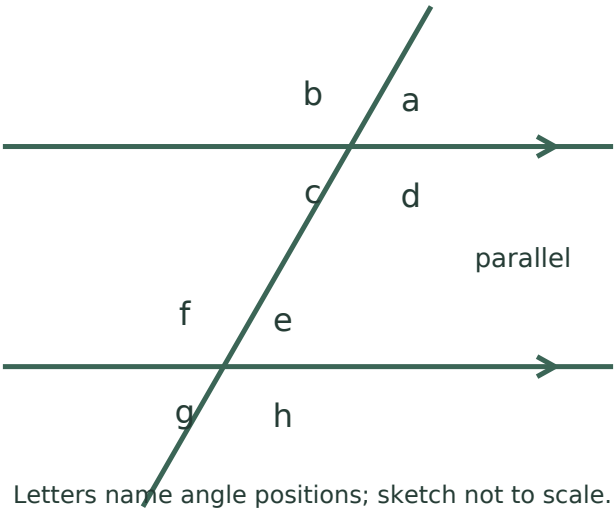
**Answer:** $73^\circ$, corresponding angles.

**(b)** Find h and give a reason. [2 marks]

$h = 180^\circ - e = 107^\circ$.

**Answer:** $107^\circ$.

**2.** The horizontal lines are parallel and $d = 113^\circ$. Find f and name the angle relationship. [2 marks]



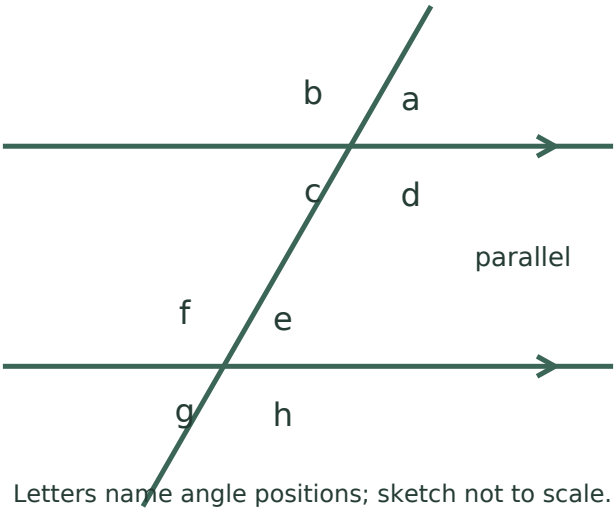

Letters name angle positions; sketch not to scale.

d and f lie inside the lines on opposite sides of the transversal.

Alternate interior angles are equal.

**Answer:** $f = 113^\circ$, alternate interior angles.

**3.** The horizontal lines are parallel and $c = 65^\circ$. Find f. [2 marks]



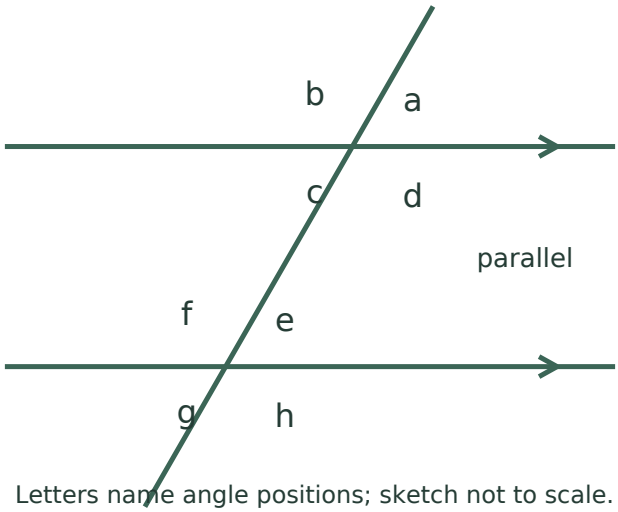

Letters name angle positions; sketch not to scale.

c and f are co-interior.

$f = 180^\circ - 65^\circ = 115^\circ$.

**Answer:** $f = 115^\circ$.

**4.** Corresponding angles b and f are $(2x + 12)^\circ$ and $(4x - 24)^\circ$. The lines are parallel. Find x and their common size. [3 marks]




Letters name angle positions; sketch not to scale.

$2x + 12 = 4x - 24$.

$36 = 2x$, so $x = 18$.

$2(18) + 12 = 48$.

**Answer:** $x = 18$; both angles are $48^\circ$.

**5.** Two lines cut by a transversal have co-interior angles of $108^\circ$ and $72^\circ$. What can you conclude? Explain. [2 marks]

$108 + 72 = 180$.

Co-interior angles totalling 180 degrees establish parallelism.

**Answer:** The lines are parallel.

**6.** Two corresponding angles are exactly $88^\circ$ and $89^\circ$. Are the lines parallel? Explain. [2 marks]

Corresponding angles must be equal when lines are parallel.

$88 \neq 89$, so the given exact angles do not establish parallel lines; they show the lines are not parallel.

**Answer:** No.