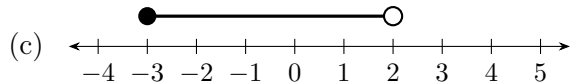
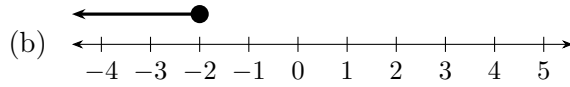
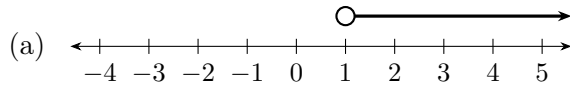


Reading and drawing inequalities on number lines

- 1 Write down the inequality shown on each number line.



- 2 Show each inequality on a number line.

(a) $x \geq 4$ (b) $-1 < x \leq 5$

- 3 List the integers that satisfy

(a) $-1 < x \leq 5$ (b) $-5 < x < -1$

- 4 The temperature inside a fridge, $t^\circ\text{C}$, must be at least 1°C and less than 5°C . Write this as an inequality, and show it on a number line.

Solving inequalities

- 5 Solve (a) $x + 7 > 12$ (b) $4x \leq 28$
(c) $2x - 3 < 11$ (d) $\frac{x}{5} + 2 \geq 4$

- 6 Solve $3(x - 2) > 12$, and show your answer on a number line.

Solving inequalities with the unknown on both sides

- 7 Solve (a) $5x + 2 > 3x + 10$
(b) $8x - 1 \leq 5x + 11$
(c) $2(x + 4) < x + 13$

Solving double inequalities

- 8 Solve each inequality, and list the integers that satisfy it.

(a) $5 < x + 3 \leq 9$ (b) $-6 \leq 3x < 9$

(c) $1 < 2x - 5 < 9$

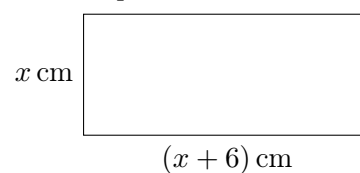
- 9 n is an integer, and $-7 < 4n + 1 \leq 13$. Find the smallest and the largest possible values of n .

Constructing inequalities

- 10 Three times a number, minus 4, is more than 20. Write an inequality for the number n , and solve it.

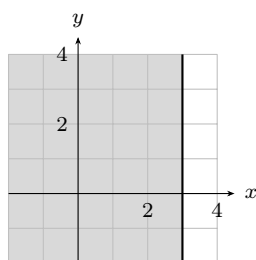
- 11 A taxi charges £3, plus £2 for each mile. Ella has £19. Write an inequality for the number of miles m , and find the greatest whole number of miles Ella can travel.

- 12 The perimeter of this rectangle is at least 40 cm. Write an inequality, and find the smallest possible value of x .

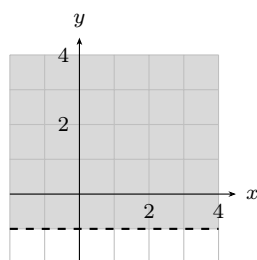


Inequalities on graphs

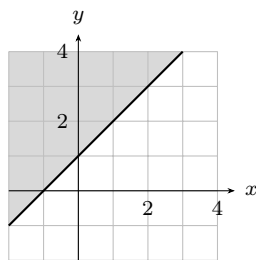
- 13** Write down the inequality shown by each shaded region.



(a)

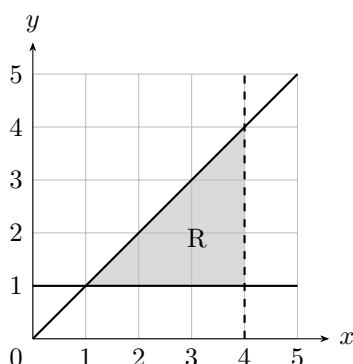


(b)



(c)

- 14** Write down the three inequalities that describe the shaded region R.



- 15** Draw a set of axes, with x and y from -1 to 5 . Shade the region where $x \geq 0$, $y \geq 1$ and $x + y \leq 4$. How many points with whole-number coordinates are in the region, including its edges?

Dividing by a negative number

- 16** Solve (a) $-2x > 8$ (b) $-5x \leq -15$
(c) $7 - 3x < 1$

- 17** Jo solves $10 - 2x > 4$ and gets $x > 3$. Test $x = 4$ in $10 - 2x > 4$, and explain Jo's mistake.

Problem solving

- 18** Find all the integers that satisfy both $3x - 1 > 5$ and $2x + 3 \leq 15$.
- 19** Write a double inequality whose integer solutions are exactly -2 , -1 , 0 and 1 .
- 20** Phone plan A costs £10 a month, plus 5p for each minute of calls. Plan B costs £18 a month, plus 1p for each minute. For how many minutes of calls in a month is plan B cheaper?