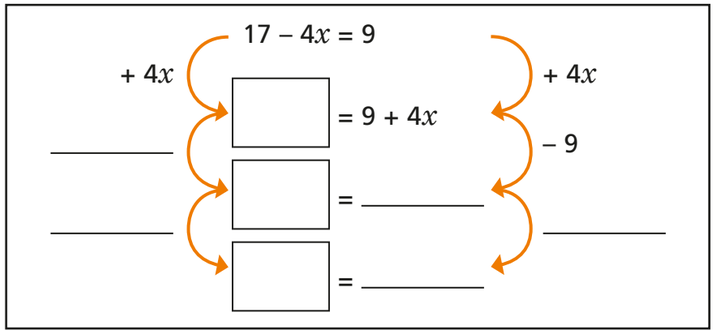
# Inequalities with negative numbers

**1** Complete the workings to solve the equation and inequality.




**2** Match the inequalities to the solutions.

| | |
|---|---|
| $5x - 8 > 56$ | $x \leq 6\frac{3}{8}$ |
| $56 - 5x < 8$ | $x > 12\frac{4}{5}$ |
| $8x - 5 \leq 56$ | $x \leq 7\frac{5}{8}$ |
| $5 \leq 56 - 8x$ | $x > 9\frac{3}{5}$ |

**3** Amir, Jack and Rosie have attempted to solve $40 - 3x \leq 10$

Find their mistakes and correct them.

**Amir**

$40 - 3x \leq 10$

$-3x \leq -30$

$x \leq 10$

**Jack**

$40 - 3x \leq 10$

$-3x \leq -30$

$x > 10$

**Rosie**

$40 - 3x \leq 10$

$40 \leq 10 + 3x$

$30 \leq 3x$

$10 \leq x$

$x \leq 10$

Whose method do you prefer? _____

Explain your choice to a partner.

**4** Solve the inequalities.

**a)** $-\frac{1}{2}x > 45$

_____

**b)** $-5x + 24 < 54$

_____

**c)** $15 \geq 30 - \frac{1}{2}x$

_____

**d)** $-49 < -7x$

_____

**e)** $-x - 5 \geq 20$

_____

**f)** $12 - \frac{x}{3} > -10$

_____

**5** Rosie solves $3(2 - x) > 15$ and $24 > 12(3 - 2x)$ using two different methods.

**a)** Complete her workings.

**Method 1**

$3(2 - x) > 15$

$6 - 3x > 15$

_____

_____

_____

**Method 2**

$24 > 12(3 - 2x)$

$2 > 3 - 2x$

_____

_____

_____

**b)** Use your preferred method to solve $24 > 5(13 - 4x)$.

_____

Compare your choice of method with a partner's.

**6** Solve the inequalities.

**a)** $3(4 - x) > 30$

_____

**b)** $2(x + 13) < 14$

_____

**c)** $100 > 10(4 - x)$

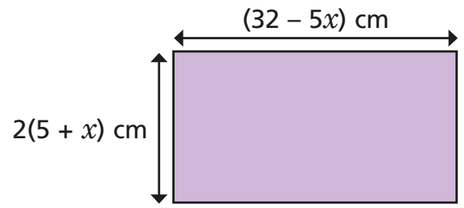
_____

**d)** $-2(x + 5) > 16$

_____

**7** The perimeter of the rectangle is greater than 63 cm.

If $x$ is an integer, what is the largest possible value of $x$?

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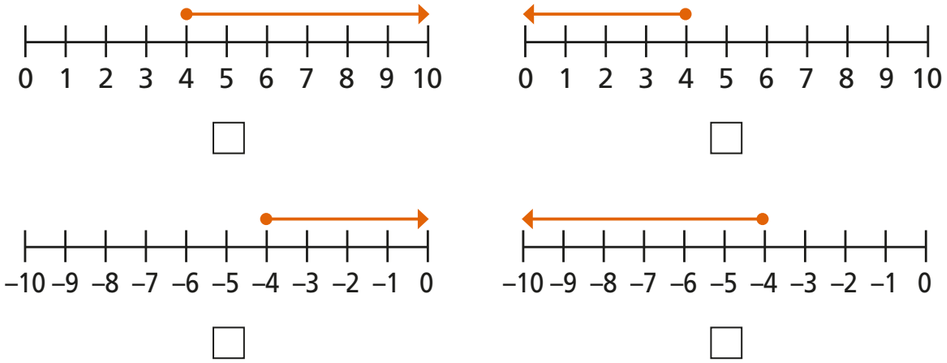
**8** Which number line represents the solution to $1 \leq 9 - 2x$? Tick your answer.




**9** Find a value of $p$ that satisfies both of the inequalities.

$p - 7 > -4$ and $2p - 7 < 5$

□

Compare answers with a partner.