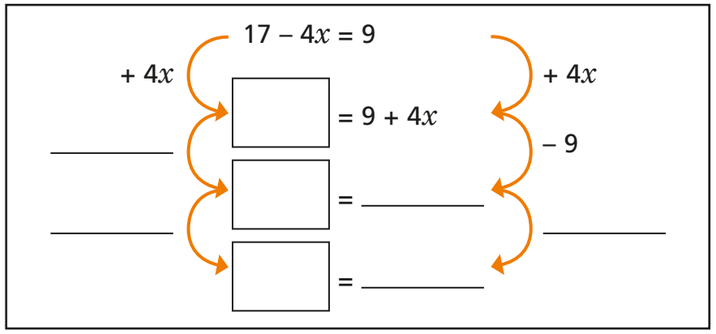
Inequalities with negative numbers

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) $100 > 10(4 - x)$

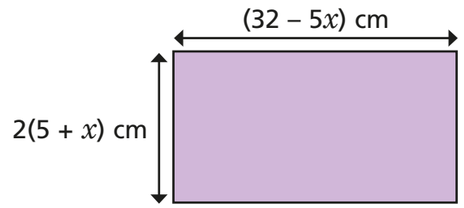
_____

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

_____

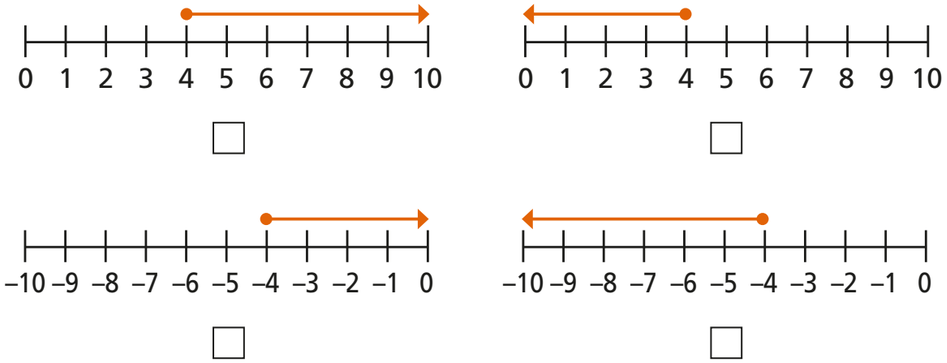
7 The perimeter of the rectangle is greater than 63 cm.

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



□

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.