Solving Inequalities
Videos 178 and 179 on www.corbettmaths.com

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Examples

Workout

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Question 1: Solve each of the inequalities below

(a) $x + 4 > 9$ (b) $x - 3 < 2$ (c) $2x \leq 14$ (d) $8x < 16$

(e) $5x \geq 15$ (f) $\dfrac{x}{3} > 4$ (g) $\dfrac{x}{5} \leq 2$ (h) $x + 6 \geq 4$

Question 2: Solve each of the inequalities below

(a) $2x + 1 \leq 9$ (b) $3x - 5 > 16$ (c) $4x + 8 < 32$ (d) $5x - 2 \geq 68$

(e) $\dfrac{x}{2} + 1 \leq 5$ (f) $\dfrac{x}{9} - 6 > 4$ (g) $\dfrac{x+3}{2} \geq 5$ (h) $\dfrac{x-5}{4} > 2$

Question 3: Solve each inequality below and represent the solution on a number line.

(a) $4x + 7 < 11$ (b) $3x - 2 \geq 10$ (c) $\dfrac{x}{2} - 3 > 0$ (d) $\dfrac{x+18}{4} \leq 5$

Question 4: Solve each of the inequalities below

(a) $5(x - 3) \geq 40$ (b) $6(x + 2) < 42$ (c) $2(5x + 1) \leq 36$

(d) $4(x - 2) < 18$ (e) $2(2x - 9) \geq 22$ (f) $3(2x + 7) \leq 9$

Question 5: Solve each of the inequalities below

(a) $4x + 3 > 2x + 11$ (b) $x + 1 \geq 3x - 18$

(c) $13x - 12 < 3x + 13$ (d) $7x - 5 \geq 3x + 11$

Question 6: Find the largest integer that satisfies each inequality below.

(a) $x + 3 < 9$ (b) $2x + 5 < 12$ (c) $7x + 10 \leq 31$

(d) $3x - 5 \leq 9$ (e) $\dfrac{x}{4} + 3 \leq 8$ (f) $4x + 14 \leq 8$

Question 7: Find the smallest integer that satisfies each inequality below.

(a) $2x - 5 \geq 12$

(b) $4x > 9$

(c) $\dfrac{x + 9}{3} \geq 7$

(d) $7x + 1 > 60$

(e) $10x - 16 \geq 76$

(f) $9x + 4 > 7x + 15$

Question 8: Solve each of the inequalities below

(a) $6 < x + 3 < 10$

(b) $4 \leq 2x \leq 7$

(c) $1 \leq 3x < 9$

(d) $4 < \dfrac{x}{5} < 6$

(e) $9 \leq 2x + 3 \leq 25$

(f) $-3 \leq \dfrac{x}{4} - 1 < 0$

Question 9: Find the integers that satisfy each of the inequalities below

(a) $5 < x < 9$

(b) $-3 < x \leq 1$

(c) $4 \leq 2x \leq 8$

(d) $16 \leq 5x + 1 < 31$

(e) $0 \leq \dfrac{x - 6}{2} < 2$

(f) $-9 < \dfrac{x}{4} - 1 < -8$

Apply

Question 1: Lauren goes shopping and has £50 to spend.
She bought a T-shirt and 3 pairs of leggings.
The T-shirt cost £23.
Each pair of leggings cost £x

(a) Form an inequality in terms of x.
(b) Solve the inequality to find the possible price of the leggings.

Question 2: Farmer Taylor is placing a fence around his field.
He has 300 metres of fencing but this is not enough.

(a) Form an inequality in terms of x.
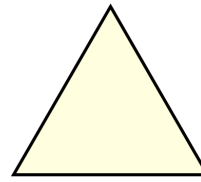(b) Solve the inequality to find the possible width of the field.
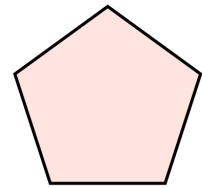
2x + 5 metres

x metres

Question 3: The perimeter of the regular pentagon is larger than the perimeter of the equilateral triangle.

(a) Form an inequality in terms of x

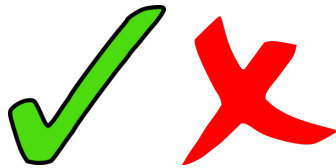(b) Solve the inequality to find the possible range of values for x.

x + 6   x + 2

Question 4: Find the range of values of x that satisfies **both**

$$3(x + 2) \le 30 \quad and \quad 4x + 3 > 21$$

Question 5: y is a prime number and also satisfies $7 < 2y - 3 \le 25$

List the possible values of y.

Answers

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