Linear Equations and Inequalities

Algebra · 6 questions · step-by-step answers at the end

Name: Date: Score: / 6

USEFUL EQUATIONS

$ax + b = c \Rightarrow x = (c - b)/a$ $a < x \leq b$ $-x < a \Rightarrow x > -a$

perimeter, angle or cost facts ⇒ equation

Questions

Show your working in the space under each question.

1. EASY Solve $x/4 - 3 = 2$.

2. EASY Solve $7 - 2x = 15$.

3. MEDIUM Solve $4x + 3 > 19$.

4. MEDIUM A rectangle is 3 cm longer than it is wide and has perimeter 38 cm. Find its dimensions.

5. HARD List the integers that satisfy $-3 < 2x + 1 \leq 9$.

6. HARD Solve $5 - 3x \leq 2(x + 10)$.

Step-by-step answers

Linear Equations and Inequalities

1. Add 3: $x/4 = 5$. Multiply by 4: **$x = 20$**.
2. Subtract 7: $-2x = 8$. Divide by -2: **$x = -4$**.
3. $4x > 16$, so **$x > 4$**.
4. Width w, length $w + 3$. $2(w + w + 3) = 38$, so $4w + 6 = 38$ and $w = 8$. **8 cm by 11 cm**.
5. Subtract 1: $-4 < 2x \leq 8$. Divide by 2: $-2 < x \leq 4$. Integers: **$-1, 0, 1, 2, 3, 4$**.
6. $5 - 3x \leq 2x + 20$. Subtract $2x$ and 5: $-5x \leq 15$. Divide by -5 and reverse the sign: **$x \geq -3$**.