

Instructions: answer each question, showing work, neat, sequenced, precise, and explanations justified. Respond in sentences where appropriate.

1) **What value of x makes this statement true?**

$$3x = 2x + 12$$

Why does the equation

$$9 - 2x - 9 - 16x = -14x - 7 - 4x - 11 \text{ have no solutions?}$$

2) **Solve for t :**

$$t - 3(4 - t) = -24$$

13) because if you add $18x$ to both sides of the equation and simplify, you get $-18 = -18$

Solve:

$$3) \quad 2(3r + 4) - 3(r + 1) = 11$$

14) because if you add $18x$ to both sides of the equation and simplify, you get $0 = -18$

4) **What value of x makes this statement true?**

$$3x + 4 = 9x - 8$$

15) because if you subtract $18x$ from both sides of the equation and simplify, you get $-18 = -18$

Which of these equations have infinite solutions?

$$5) \quad 2x + x + 5x - 9 = -6 + 9x - x + 3$$

16) because if you subtract $18x$ from both sides of the equation and simplify, you get $0 = -18$

$$6) \quad 10x - 6x - 4 - 1 = 7 - 12 + 2x + 2x$$

DOING EXTRAS!

$$7) \quad 7x + 5 + 4 - 9x = x + 2 - 4 + 8x$$

17) **A shipping company charges a \$5 flat fee for a package, plus a fee based on the weight of the package. The company charges \$1.50 per pound, plus an additional \$0.50 for every pound over 5 pounds.**

$$8) \quad 5x - 2x - 3 - 9 = x - 12 + 3x + 3x$$

Jakob plans on sending a package that is over 5 pounds. He has \$30 to spend on shipping. What is the maximum number of pounds that his package could be? Enter your answer as a decimal.

Which of these statements is correct?

9) The equation $3 - x + 4 = -x + 7$ has no solutions.

18) **David wants to buy a new tablet computer. He looks at a sales ad and sees that a computer store is selling a tablet computer for \$499**

which is $\frac{1}{3}$ off the regular price.

10) The equation $x - 2 = 15x + 8 - 9x$ has one solution.

Part A:
Write an equation that represents the situation. Let x = the original cost of the tablet.

11) The equation $4x + 5 + 8x = 25 + 2x$ has two solutions.

Part B:
Find the original cost of the tablet computer.

12) The equation $9 + 3x - 1 = 10 + 3x$ has an infinite number of solutions.