

Practice

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1 Inequalities

Solve each algebraic inequality. Then graph each solution set on a number line.

$$5 - \frac{3}{4} > 3\left(\frac{1}{6} - 1\right) - 2 \quad (1)$$

$$0.2(y + 3) \leq 0.1 + 0.3(1.5y - 1) \quad (2)$$

$$x - 12 \leq -1 \cdot (-7) \tag{3}$$

$$-7(k - 1) + 11 > 7k + 12 \tag{4}$$

$$12 - (-1) \leq \frac{b}{4} \tag{5}$$

$$-8 < 7(-11 - p) \tag{6}$$

$$-10 \cdot 12 < 5 + t \tag{7}$$

$$-3 > 0 - u \tag{8}$$

$$3(a + 4) + 6a \leq 12 \quad (9)$$

$$9(a - 11) + 3a \leq -4 \quad (10)$$

$$\frac{3k}{-12} \leq 10 \quad (11)$$

$$\frac{4z}{7} \leq \frac{5z + 3}{7} \quad (12)$$

$$7a - 2 < -12 - 7(a + 4) \quad (13)$$

$$-7(g + 1) + 11 > 2g - 1 \quad (14)$$

$$3(v + 9) + 9 > 2v - 12 \quad (15)$$

$$-5(c - 5) - 1 > -7c - 12 \quad (16)$$

$$-5 > w + 7 \quad (17)$$

$$\frac{2t}{-11} \leq 4 \quad (18)$$

$$\frac{w + 11}{-1} \leq 4 \quad (19)$$

$$1 - (-6) < -8 - c \quad (20)$$

2 Inequality Word Problems

Q 1. At midnight, the temperature in a city was 5 degrees Celsius. The temperature was dropping at a steady rate of 2 degrees Celsius per hour.

a. Write an inequality that represents t , the number of hours past midnight, when the temperature was colder than -4 degrees Celsius. Explain or show your reasoning.

Inequality:

Reasoning:

b. On the number line, show all the values of t that make your inequality true.

Q 2. Diego's family car holds 4 galleons of fuel. Each day the car uses 0.6 gallons of fuel. A warning light comes on when the remaining fuel is 1.5 gallons or less.

a. Starting from a full tank, can Diego's family drive the car for 25 days without the warning light coming on? Explain or show your reasoning.

b. Starting from a full tank, can Diego's family drive the car for 14 days without the warning light coming on? Explain or show your reasoning.

c. Diego says the expression $14 - 0.6t$ helps him understand this situation. In this situation, what does this expression represent, and what does the variable t stand for?

d. Write and solve an equation to determine the number of days Diego's father can drive the car without the warning light coming on. Show all steps of your work.

e. Write and solve an inequality that represents this situation. Show every step of your work.

Q 3. Represent each of the following as an algebraic inequality:

a. The product of x and y is less than or equal to 4: _____

Q 4. The sum of twice a number and 5 is at most 15. What are the possible values for the number?

Q 5. Adrian works in New York City and makes \$42 per hour. She works in an office and must get her suit dry cleaned everyday for \$75. If she wants to make more than \$260 a day, at least how many hours must she work?

Q 6. Your brother has \$2,000 saved for a vacation. His airplane ticket is \$637. Write and solve an inequality to find out how much he can spend for everything else.