

Practice and Problem Solving: C

Write an inequality for the situation and solve.

1. Miguel is buying 10 blankets for the animal shelter. If shipping each blanket costs \$1.50 and Miguel has \$75 to spend, what is the greatest amount he can spend for each blanket?

Let $b =$ cost of each blanket

$$10b + 1.50(10) \leq 75$$

$$10b + 15 \leq 75$$

$$10b \leq 60$$

$$b \leq 6$$

No more than \$6 per blanket

2. One car rental company charges \$30 per day plus \$0.25 per mile driven. A second company charges \$40 per day plus \$0.10 per mile driven. How many miles must you drive for a one-day rental at the second company to be less expensive than the same rental at the first company? Write an inequality to solve.

Let $m =$ # of miles

$$A = 30 + 0.25m$$

$$B = 40 + 0.10m$$

$$30 + 0.25m > 40 + 0.10m$$

$$.15m > 10$$

$$m > 66.67$$

At least 66.67 miles

Solve each inequality and graph the solution on a number line.

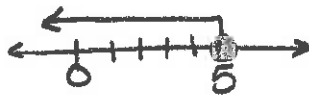
3. $-10(9 - 2x) - x \leq 2x - 5$

$$-90 + 20x - x \leq 2x - 5$$

$$-90 + 19x \leq 2x - 5$$

$$17x \leq 85$$

$$x \leq 5$$

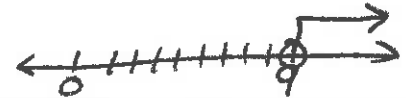


4. $8\left(1 - \frac{k}{2}\right) > -5k + 17$

$$8 - 4k > -5k + 17$$

$$8 + k > 17$$

$$k > 9$$



5. $3a - 47 \leq \frac{1}{2}a - 7 < \frac{2}{3}a - 9$
 $3a - 47 \leq \frac{1}{2}a - 7$ and $(\frac{1}{2}a - 7) < (\frac{2}{3}a - 9)$
 $6a - 94 \leq a - 14$ $3a - 42 < 4a - 54$

$$5a \leq 80$$

$$12 < a$$

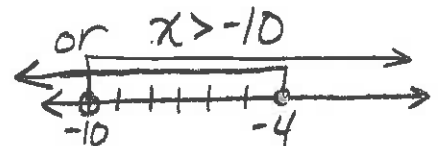
$$a \leq 16 \quad 12 < a \leq 16$$



6. $4x + 5 \leq -11$ or $2x + 5 > x - 5$

$$4x \leq -16$$

$$x \leq -4$$



All Real Numbers

7. $2 > 2x - 14 > -14$

$$2 > 2x - 14 \quad \text{and} \quad 2x - 14 > -14$$

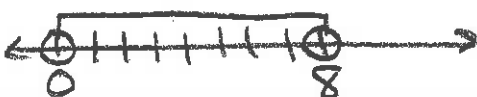
$$16 > 2x$$

$$2x > 0$$

$$8 > x$$

$$x > 0$$

$$0 < x < 8$$

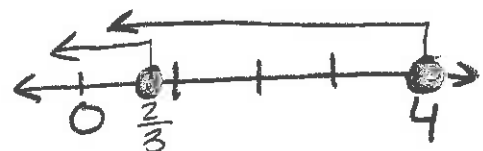


8. $3x + 11 \leq 13$ or $-3x \geq -12$

$$3x \leq 2$$

$$x \leq 4$$

$$x \leq \frac{2}{3}$$



$x \leq 4$

9. $+3g+12 \leq 6+g \leq 3g-18$

$$3g+12 \leq 6+g \text{ and } 6+g \leq 3g-18$$

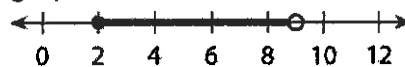
$$2g \leq -6 \qquad 24 \leq 2g$$

$$g \leq -3 \qquad 12 \leq g$$

Not possible

No Solution

10. Write the compound inequality shown by the graph:



$$2 \leq x < 9$$

Translate the following into an algebraic expression, solve, and graph the solution

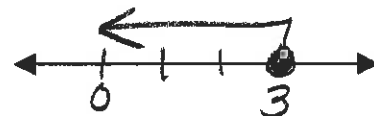
11. Twice the difference of 10 and x is at least 14.

$$2(10-x) \geq 14$$

$$20-2x \geq 14$$

$$-2x \geq -6$$

$$x \leq 3$$



11. $x \leq 3$

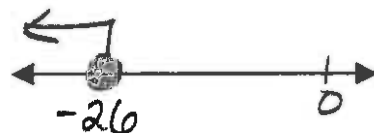
12. Twice the sum of x and 8 is at most -36.

$$2(x+8) \leq -36$$

$$2x+16 \leq -36$$

$$2x \leq -52$$

$$x \leq -26$$



12. $x \leq -26$

13. Four more than the product of 3 and x is less than 40.

$$4+3x < 40$$

$$3x < 36$$

$$x < 12$$



13. $x < 12$

14. A blank CD can hold 70 minutes of music. So far you have burned 25 minutes of music onto the CD. You estimate that each song lasts 4 minutes.

What is the largest number of additional songs that you can burn onto the CD?

Let $x = \#$ of songs

$$25+4x \leq 70$$

$$4x \leq 45$$

$$x \leq 11.25$$

14. 11 songs