Algebra 5-3/5-6 Solving Equations and Inequalities

Warm-up

Dani has $100 and saves $10 per week.
Eric has $70 and saves $15 per week.
Fill in the table to the right and answer the following questions.

1. Who has more money after 3 weeks?

   Dani

2. Wh has more money after 2 months (assume 4 weeks in a month)?

   Eric

3. When will they have the same amount of money?

   6 weeks

Weeks	Dani $	Eric $
0	100	70
1	110	85
2	120	100
3	130	115
4	140	130
5	150	145
6	160	160
7	170	175
8	180	190
9	190	205

Algebra 5-3/5-6 Solving Equations & Inequalities

1. $6 - 9x = 5x - 1$
$$+9x \quad +9x$$
$$6 = 14x - 1$$
$$+1 \qquad +1$$
$$\frac{7}{14} = \frac{14x}{14} \qquad \boxed{x = \frac{1}{2}}$$

Check : $6 - 9(.5) \overset{?}{=} 5(.5) - 1$
$$1.5 = 1.5 \checkmark$$

4. $6 - 9x \geq 5x - 1$
$$+9x \quad +9x$$
$$6 \geq 14x - 1$$
$$+1 \qquad +1$$
$$\frac{7}{14} \geq \frac{14x}{14}$$
$$.5 \geq x$$
$$\boxed{x \leq .5}$$

Check
$$x = 0$$
$$6 - 9(0) \geq 5(0) - 1$$
$$6 \geq -1$$
$$yes!$$

2. $u + 19 = 3u - 1$
$$-1u \qquad -1u$$
$$19 = 2u - 1$$
$$+1 \qquad +1$$
$$\frac{20}{2} = \frac{2u}{2}$$
$$\boxed{10 = u}$$

$$10 + 19 = 3(10) - 1$$
$$29 = 29$$
$$\checkmark$$

5. $u + 19 > 3u - 1$
$$-u \qquad -u$$
$$19 > 2u - 1$$
$$+1 \qquad +1$$
$$\frac{20}{2} > \frac{2u}{2}$$
$$10 > u$$
$$u < 10$$

3. $-x = 10 + 4x$

$+/x \qquad +/x$

$0 = 10 + 5x$

$-10 \quad -10$

$\dfrac{-10}{5} = \dfrac{5x}{5}$

$\boxed{-2 = x}$

$-(-2) = 10 + 4(-2)$

$2 = 10 - 8$

$2 = 2$ ✓

6. $-x < 10 + 4x$

$+x \qquad +x$

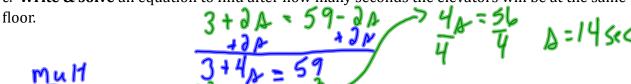$0 < 10 + 5x$

$-10 \quad -10$

$\dfrac{-10}{5} < \dfrac{5x}{5}$

$-2 < x$

$\boxed{x > -2}$

7. In a tall office building, elevator A leaves the third floor and ascends at a speed of 2 floors per second. Elevator B leaves the 59th floor at exactly the same moment and descends at a speed of 2 floors per second.

a. **Write an expression** that represents the location of elevator A.

$$3 + 2s$$

b. **Write an expression** that represents the location of elevator B.

$$59 - 2s$$

c. **Write & solve** an equation to find after how many seconds the elevators will be at the same floor.

$$3 + 2s = 59 - 2s$$
$$+2s \qquad +2s$$
$$3 + 4s = 59$$
$$-3 \qquad -3$$
$$\frac{4s}{4} = \frac{56}{4} \qquad s = 14 \text{ secs}$$

Mult

8. Three times a number is less than the sum of two times a number and five. Find the number.

$$x = \text{the } \#$$

$$3x < 2x + 5$$
$$-2x \qquad -2x$$
$$1x < 5$$

Assignment: 5-3 #'s 1, 2, 6-12 Even, 16-22 Even

5-6 #'s 4-15