

## 1.2 Algebraic Expressions

1)  $3a - 5c - 4$ ;  $a = 5$  and  $c = -2$

$$3(5) - 5(-2) - 4$$

$$\underline{15 + 10 - 4}$$

$$25 - 4 = 21$$

2)  $-5(x - 2y) - 8$ ;  $x = 3$  and  $y = -4$

$$-5(\underline{3 - 2(-4)}) - 8$$

$$-5(3 + 8) - 8$$

$$-5(11) - 8$$

$$-55 - 8 = -63$$

Combine Like Terms

3)  $\underline{3x} - \underline{5} + \underline{2} - \underline{1}x + \underline{y}$

$2x - 3 + y$

4)  $4x^2 - 2x(7 - 6x) + 9$

$4x^2 - 14x + 12x^2 + 9$

$16x^2 - 14x + 9$

### 1.3 Solving Equations

1)  $4a - 6 = 18 + a$

$-a$		$-a$
$3a - 6$	$ $	$18$
$+a$		$+6$
<hr/>		
$\frac{4a}{4} = \frac{24}{4}$		

$a = 8$

2)  $3(4n - 10) = 12$

$12n - 30 = 12$   
 $+30 \quad +30$

$\frac{12n}{12} = \frac{42}{12}$

$n = \frac{42}{12} = \frac{7}{2}$

3)  $3(x - 4) = 4x - 7 - 6x$

$\cancel{3x} - 12 = \cancel{4x} - 7 - \cancel{6x}$   
 $+2x \quad +2x$

$5x - 12 = -7$   
 $+12 \quad +12$

$\frac{5x}{5} = \frac{5}{5} \quad x = 1$

$$4) \frac{2}{3}x - \frac{2}{5} = 2 \cdot \frac{5}{5}$$

$$+ \frac{2}{5} \quad + \frac{2}{5}$$

$$\frac{2}{3}x = \frac{10}{5} + \frac{2}{5}$$

$$\frac{2}{3}x = \frac{12}{5}$$

$$\frac{2}{3} \quad \frac{2}{3}$$

$$x = \frac{12}{5} \div \frac{2}{3}$$

$$x = \frac{12}{5} \cdot \frac{3}{2} = \frac{36}{10} = \frac{18}{5}$$

$$5) (7.2 + 1.5x = -8.6 + 2.3x) \cdot 10$$

$$72 + 15x - 23x = -86 + 23x - 23x$$

$$72 - 8x = -86$$

$$-72 \quad -72$$

$$-8x = -158$$

$$-8 \quad -8$$

$$x = \frac{158}{8} = \frac{79}{4}$$

$$\begin{array}{r} 79 \\ \sqrt{158} \\ -14 \\ \hline 18 \end{array}$$

### 1.4 Solving Inequalities

> Greater than } Open circles ○  
< Less than }

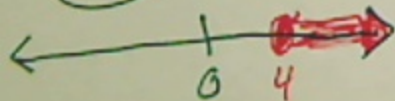
≥ Greater than or = to } Closed circles ●  
≤ Less than or = to }

Golden Rule: If  $\times / -$  BOTH sides by a negative,  
Then the sign switches/flips

$$1) 3x - 5 \geq 7$$

$$\frac{3x}{3} \geq \frac{12}{3}$$

$$x \geq 4$$

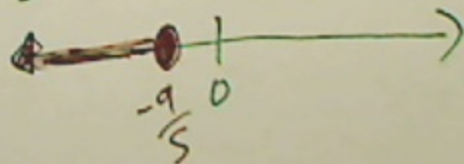


$$2) 2x - 8 \geq 7x + 1$$

$$\begin{array}{r} -7x \quad -7x \\ \hline -5x - 8 \geq 1 \\ +8 \quad +8 \end{array}$$

$$\frac{-5x}{-5} \geq \frac{9}{-5}$$

$$x \leq -\frac{9}{5}$$



### 1.5 Absolute Value Equations and Inequalities

$$|x|=5 \quad x=5 \text{ or } -5$$

Absolute Value: Distance from zero.

1)  $|x+5|=2$

$$x+5=2 \quad x+5=-2$$
$$\begin{array}{r} -5 \\ -5 \end{array} \quad \begin{array}{r} -5 \\ -5 \end{array}$$

$$x=-3$$

$$x=-7$$

2)  $|2x-4|-3=11$

$$|2x-4|=14$$
$$\begin{array}{r} +3 \\ +3 \end{array}$$

$$\begin{array}{r} 2x-4=14 \\ +4 \quad +4 \\ \hline 2x=18 \\ \frac{2x}{2}=\frac{18}{2} \end{array}$$

$$x=9$$

$$\begin{array}{r} 2x-4=-14 \\ +4 \quad +4 \\ \hline 2x=-10 \\ \frac{2x}{2}=\frac{-10}{2} \end{array}$$

$$x=-5$$

3)  $3|7-x|=-18$

$$\frac{3|7-x|}{3}=\frac{-18}{3}$$

$$|7-x|=-6$$

No Solution

4)  $|2x-9| \geq 1$

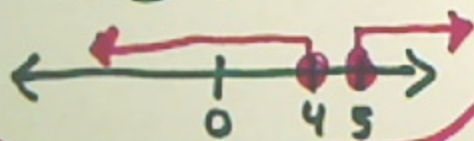
$$\begin{array}{r} 2x-9 \geq 1 \\ +9 \quad +9 \end{array}$$

$$\frac{2x \geq 10}{2 \quad 2}$$

$$\begin{array}{r} 2x-9 \leq -1 \\ +9 \quad +9 \end{array}$$

$$\frac{2x \leq 8}{2 \quad 2}$$

$$x \geq 5 \text{ or } x \leq 4$$



> Greater

< Less than

5)  $2|2-3x|+6 < 24$

$$\begin{array}{r} -6 \quad -6 \\ \hline 2|2-3x| < 18 \\ \hline 2 \quad 2 \end{array}$$

$$|2-3x| < 9$$

$$\begin{array}{r} 2-3x < 9 \\ -2 \quad -2 \end{array}$$

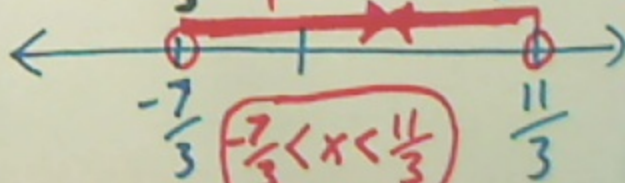
$$\begin{array}{r} -3x < 7 \\ -3 \quad -3 \end{array}$$

$$x > -\frac{7}{3}$$

$$\begin{array}{r} 2-3x > -9 \\ -2 \quad -2 \end{array}$$

$$\begin{array}{r} -3x > -11 \\ -3 \quad -3 \end{array}$$

$$x < \frac{11}{3}$$



## 1.6 Probability

$$P(\text{event}) = \frac{\text{want}}{\text{have}}$$

5 red, 6 yellow, 9 green

1) P(red)

$$\frac{5}{20} = \left(\frac{1}{4}\right)$$

2) P(not green)

$$\left(\frac{11}{20}\right)$$
$$1 - \frac{9}{20}$$

3) P(green or yellow)

$$\frac{9+6}{20} = \frac{15}{20} = \left(\frac{3}{4}\right)$$

Rolling a die.

4) P(even)

$$\frac{3}{6} = \left(\frac{1}{2}\right)$$

5) P(7)

$$\frac{0}{6} = \boxed{0}$$

6) P(less than 3)

$$\frac{2}{6} = \left(\frac{1}{3}\right)$$