Name: _____   Date: _____

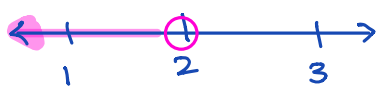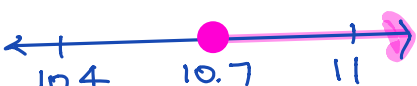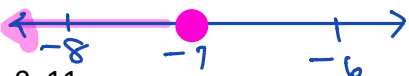| **Learning Goal 6.2**	I can solve inequalities.

Whether solving and equation or an inequality, the steps are the same

- work through BEDMAS backwards   (SAMDEB)

Presentation of the solution will be different.

- you need a complete number line with every
answer.

Example Solve the following.

Equations	**Inequalities**
$h + 3 = 5$	$h + 3 < 5$

Equations:

$h + 3 = 5$
$-3 \quad -3$
$h = 2$

Inequalities:

$h + 3 < 5$
$-3 \quad -3$
$h < 2$

$6.2 = x - 4.5$
$+4.5 \quad +4.5$
$10.7 = x$
$x = 10.7$

$6.2 \le x - 4.5$
$+4.5 \qquad +4.5$
$10.7 \le x \quad or \quad x \ge 10.7$

$2a - 5 = 2 + 3a$
$-3a \qquad -3a$
$-a - 5 = 2$
$+5 \quad +5$
$-1 \times (-a) = (7) \times -1$
$a = -7$

$2a - 5 \ge 2 + 3a$
$-3a \qquad -3a$
$-a - 5 \ge 2$
$+5 \quad +5$
$-1 \times (-a) \ge (7) \times -1 \qquad -a \ge 7$
$ +a \quad +a$
$a \le -7 \qquad 0 \ge 7 + a$
$ -7 \quad -7$
$-7 \ge a$

Assignment   p. 298 # 6 − 9, 11   Quiz Next Day!
p.305 # 1 − 5, 7 − 13, 18

Things get a little tricky when we move into multiplication and division.

$$12 > 6$$

$-36 = 12 \times (-3)\ <\ 6 \times (-3) = -18$

$-24 = 12 \times (-2)\ <\ 6 \times (-2) = -12$

$-12 = 12 \times (-1)\ <\ 6 \times (-1) = -6$

$12 = 12 \times (1)\ >\ 6 \times (1) = 6$

$24 = 12 \times (2)\ >\ 6 \times (2) = 12$

$36 = 12 \times (3)\ >\ 6 \times (3) = 18$

$$12 > 6$$

$-4 = 12 \div (-3)\ <\ 6 \div (-3) = -2$

$-6 = 12 \div (-2)\ <\ 6 \div (-2) = -3$

$-12 = 12 \div (-1)\ <\ 6 \div (-1) = -6$

$12 = 12 \div (1)\ >\ 6 \div (1) = 6$

$6 = 12 \div (2)\ >\ 6 \div (2) = 3$

$4 = 12 \div (3)\ >\ 6 \div (3) = 2$

The inequality changes direction when you multiply or divide by a negative number.

Example Solve each inequality. Graph the solution.

a.
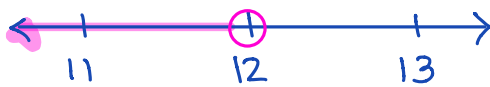$$\frac{-5s}{-5} \leq \frac{25}{-5}$$
$$s \geq -5$$
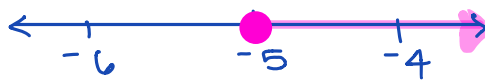
b.
$$\frac{7a}{7} < \frac{-21}{7}$$
$$a < -3$$

c.
$$-4 \times \frac{y}{-4} > -3 \times -4$$
$$y < 12$$

d.
$$3 \times \frac{k}{3} \geq -2 \times 3$$
$$k \geq -6$$
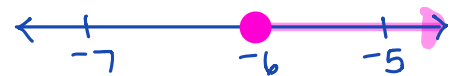
e.
$$-2.6a + 14.6 > -5.2 + 1.8a$$
$$+2.6a \qquad +2.6a$$
$$14.6 > -5.2 + 4.4a$$
$$+5.2 \qquad +5.2$$
$$\frac{19.8}{4.4} > \frac{4.4a}{4.4}$$
$$4.5 > a$$

Assignment   p. 298 # 6 − 9, 11   Quiz Next Day!
p.305 # 1 − 5, 7 − 13, 18