Solving Literal Inequalities

Name: _____

1) Solve for x when $c > 0$

$$cx - d < t$$

2) Solve for x when $c < 0$

$$cx - d < t$$

3) Solve for x when $c > b$

$$cx > bx + t$$

4) Solve for x when $c, b \in$ Natural Numbers

$$cx > -bx + t$$

5) Solve for k

when $p > 0$

$$m \leq \frac{-(k+8)}{2p} \leq n$$

6) Solve for x

When $a < b$

$$5 < \frac{ax - bx}{a^2 b^3} < 10$$

Solving Literal Inequalities

Name: _____

1) Solve for x when $c > 0$

$$cx - d < t$$
$$+d \quad +d$$
$$\frac{cx}{c} < \frac{t+d}{c}$$
$$\boxed{x < \frac{t+d}{c}}$$

2) Solve for x when $c < 0$

$$cx - d < t$$
$$+d \quad +d$$
$$\frac{cx}{c} < \frac{t+d}{c}$$
$$\boxed{x > \frac{t+d}{c}}$$

3) Solve for x when $c > b$

$$cx > bx + t$$
$$-bx \quad -bx$$
$$cx - bx > t$$
$$\frac{x(c-b)}{(c-b)} > \frac{t}{(c-b)}$$
$$\boxed{x > \frac{t}{c-b}}$$

4) Solve for x when $c, b \in$ Natural Numbers

$$cx > -bx + t$$
$$+bx$$
$$cx + bx > t$$
$$\frac{x(c+b)}{(c+b)} > \frac{t}{(c+b)}$$
$$\boxed{x > \frac{t}{c+b}}$$

5) Solve for k

When $p > 0$

$$2p \cdot m \leq \frac{-(k+8)}{2p} \leq n \cdot 2p$$

$$\cdot 2p \qquad\qquad \cdot 2p$$

$$\frac{2pm}{-1} \leq \frac{-1(k+8)}{-1} \leq \frac{2pn}{-1}$$

$$-2pm \geq k+8 \geq -2pn$$

$$-8 \qquad -8 \qquad -8$$

$$-2pm-8 \geq k \geq -2pn-8$$

6) Solve for x

When $a < b$ both a and b are positive

$$a^2b^3 \cdot 5 < \frac{ax-bx}{a^2b^3} < 10 \cdot a^2b^3$$

$$\cdot a^2b^3 \qquad\qquad \cdot a^2b^3$$

$$5a^2b^3 < ax-bx < 10a^2b^3$$

$$\frac{5a^2b^3}{a-b} < \frac{x(a-b)}{a-b} < \frac{10a^2b^3}{a-b}$$

$$\frac{5a^2b^3}{a-b} > x > \frac{10a^2b^3}{a-b}$$