A and G 1. Class work 26.

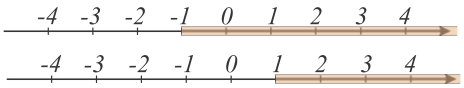
Algebra.

1. **Equalities: equations and identities**

   Inequalities.

We can add any number to both part of the inequality, the sign (< or >) will not change:

$x > -1$



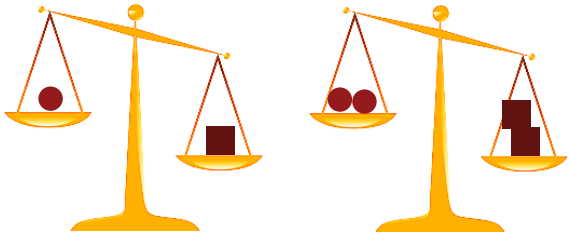
$x + 2 > -1 + 2 \Rightarrow x + 2 > 1$

$y - 3 < 5$

$y - 3 + 3 < 5 + 3$

$y < 8, \qquad y \in (-\infty, 8)$

1. $x + 3 > -5$



Now let's try to multiply or divide both part of the inequality by the positive number.

If $x > 3$, then $2x$ will be grater then 6.

$x > 3, \qquad 2x > 6$

If $x > 3$ what can we tell about $-x$?

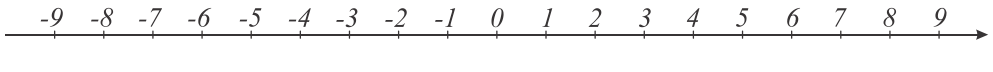
$-x \qquad 3 \cdot (-1)$

2. $x + 3 > 5x - 5$
3. $4x - 3 \neq 0$
4. $3(x - 1) < 5x + 9$

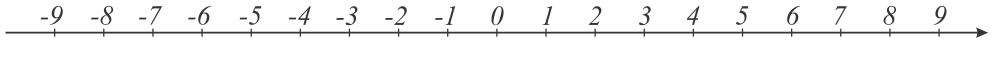
5. $2x - 1 > -x + 3$
6. $|x| > 8$

7. Show on the number line points that are satisfying the following inequalities:

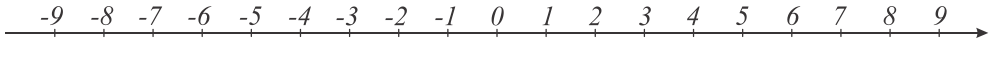
a) $|x| < 4$



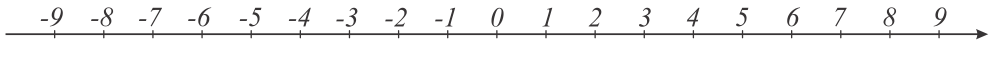
b) $|x| > 3$



c) $\left|x - \frac{1}{2}\right| > 3$



d) $\left|x - \frac{1}{2}\right| < 8$



8. $M = \{x|\ x > 5\},\ K = \{x|x < 20\}$

$M \cap K =$

$M \cup K =$

9. $M = \{x|\ x \leq 5\},\ K = \{x|x \geq 20\}$

$M \cap K =$

$M \cup K =$

10. Points *a*, 0, and *b* are marked on the number line below:

Which of the following expressions is true?

1) $a + b > 0$ or $a + b < 0$

2) $a - b > 0$ or $a - b < 0$

3) $ab > 0$ or $ab < 0$

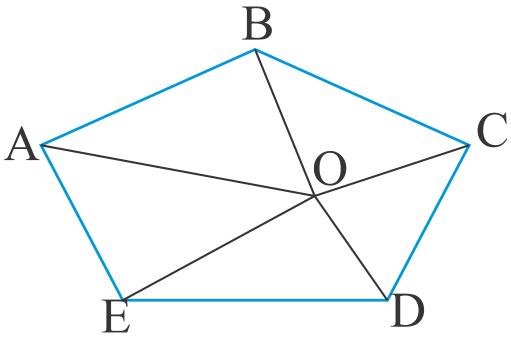
4) $\frac{b}{a} > 1$ or $\frac{b}{a} < 1$

11. Points a, b, c, 0, and 1 are marked on the number line below:

Which of the following expressions is true?

1) $ab < b \text{ or } ab > b$
2) $abc < a \text{ or } abc > a$
3) $-ac < c \text{ or } -ac > c$

12. Sum of the internal angels of any polygon is $(n - 2) \times 180$.



$$n \times 180 - 360 = (n - 2) \times 180$$

13. Compute the area of the figures below. The picture is not to scale, so do not try measuring the lengths - use the numbers given. In the last one, the area of the shade d part.