

East Los Angeles College

Department of Mathematics

Math 125

Test 1

Let $A = \{0, 2, 4, 6\}$ $B = \{1, 3, 5\}$ $C = \{a, b, c, 1, 2, 3, 4\}$ $D = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$

Determine the following operations with the indicated sets.

1) $A \cup C$

2) $A \cap C$

3) $B \cup D$

4) $B \cap D$

Solve and graph the following compound inequalities.

5) $2x + 1 > 11$ or $-x + 2 > 6$

6) $2x - 3 \geq -5$ and $-4x \geq -16$

Solve the following absolute value equations and write your answers in set notation.

7) $|x - 8| = 12$

8) $2|x| - 5 = 13$

9) $4|x + 2| + 12 = 20$

10) $-3|x - 7| = 15$

11) $\left|\frac{x-5}{4}\right| = 2$

12) $3|x - 7| + 8 = 11$

Solve and graph the following linear inequalities.

13) $2|x| - 6 > 12$

14) $-4|x - 3| \geq -16$

15) $3|x| - 9 < 6$

16) $6|x + 3| + 9 \leq 6$

17) $-1 \leq x + 5 \leq 4$

18) $0 < 2x - 9 < 13$

Write your solutions in interval notation

19) Problem 13

20) Problem 14

21) Problem 15

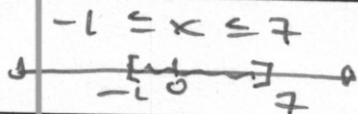
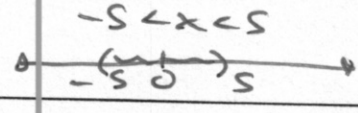
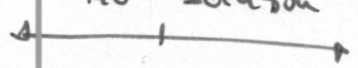
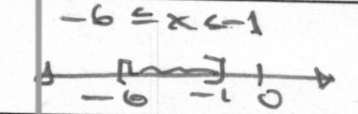
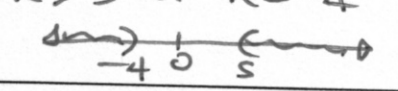
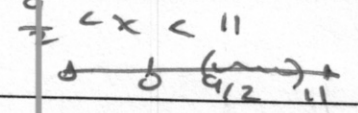
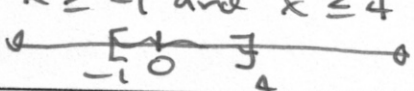
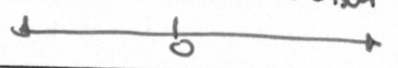
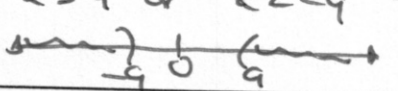
22) Problem 16

23) Problem 17

24) Problem 18

25) What is your name?

Answer Sheet

1	$\{0, 2, 4, 6, 9, b, c, 1, 2, 3\}$ ✓	14	$-1 \leq x \leq 7$ 	✓
2	$\{2, 4\}$ ✓	15	$-5 < x < 5$ 	✓
3	$\{0, 1, 2, \dots, 9\}$ ✓	16	No Solution 	✓
4	$\{1, 3, 5\}$ ✓	17	$-6 \leq x < 1$ 	✓
5	$x > 5$ or $x < -4$ ✓ 	18	$\frac{9}{2} < x < 11$ 	✓
6	$x \geq -1$ and $x \leq 4$ ✓ 	19	$(-\infty, -9) \cup (9, \infty)$ ✓	✓
7	$\{20, -4\}$ ✓	20	$[-1, 7]$ ✓	✓
8	$\{9, -9\}$ ✓	21	$(-5, 5)$ ✓	✓
9	$\{0, -4\}$ ✓	22	None ✓	✓
10	No real Solution ✓ 	23	$[-6, -1]$ ✓	✓
11	$\{13, -3\}$ ✓	24	$(\frac{9}{2}, 11)$ ✓	✓
12	$\{8, 6\}$ ✓	25	Solutions	
13	$x > 9$ or $x < -9$ ✓ 	26	4 ✓	✓

math 12S Test 1

$$(1) A \cup C = \{0, 2, 4, 6\} \cup \{a, b, c, 1, 2, 3, 4\}$$

$$= \{0, 2, 4, 6, a, b, c, 1, \cancel{2}, \cancel{3}, \cancel{4}\}$$

$$= \{0, 2, 4, 6, a, b, c, 1, 3\}$$

$$(2) A \cap C = \{2, 4\}$$

$$(3) B \cup D = \{1, 3, 5\} \cup \{0, \cancel{1}, \cancel{2}, \cancel{3}, \cancel{4}, \cancel{8}, 9\}$$

$$= \{0, 1, 2, \dots, 9\}$$

$$(4) B \cap D = \{1, 3, 5\}$$

$$(5) \begin{array}{ccc} 2x + 1 > 11 & \text{or} & -x + 2 > 6 \\ -1 & & -2 \end{array}$$

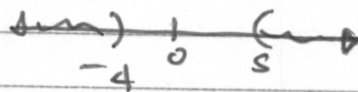
$$\frac{2x}{2} > \frac{10}{2}$$

$$(x > 5)$$

or

$$\frac{-x}{-1} > \frac{4}{-1}$$

$$(x < -4)$$



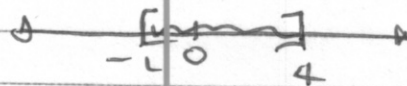
$$(6) \begin{array}{ccc} 2x - 3 \geq -5 & \text{and} & -4x \geq -16 \\ +3 & & -4 \end{array}$$

$$\frac{2x}{2} \geq \frac{-2}{2}$$

$$(x \geq -1)$$

(and)

$$(x \leq 4)$$



$$(7) |x - 8| = 12$$

$$\begin{array}{r|l} x - 8 = 12 & \\ +8 & +8 \end{array}$$

$$x = 20$$

$$\begin{array}{r|l} x - 8 = -12 & \\ +8 & +8 \end{array}$$

$$x = -4$$

$$\{20, -4\}$$

$$(8) 2|x| - 5 = 13$$

$$\begin{array}{r|l} +5 & +5 \end{array}$$

$$\frac{2|x|}{2} = \frac{18}{2}$$

$$|x| = 9$$

$$x = 9$$

$$x = -9$$

$$\{9, -9\}$$

$$(9) 4|x+2| + 12 = 20$$

$$\begin{array}{r|l} -12 & -12 \end{array}$$

$$\frac{4|x+2|}{4} = \frac{8}{4}$$

$$|x+2| = 2$$

$$\begin{array}{r|l} x+2 = 2 & \\ -2 & -2 \end{array}$$

$$x = 0$$

$$\begin{array}{r|l} x+2 = -2 & \\ -2 & -2 \end{array}$$

$$x = -4$$

$$\{0, -4\}$$

$$(10) -3|x-7| = 15$$

$$\begin{array}{r|l} -3 & -3 \end{array}$$

$$|x+7| = -5 \quad ; \text{ No real Solution}$$

↔

✗

$$(11) \quad \left| \frac{x-5}{4} \right| = 2$$

$$\frac{x-5}{4} = 2$$

$$x-5 = 4 \cdot 2$$

$$\begin{array}{r} x-5 = 8 \\ +5 \quad +5 \end{array}$$

$$x = 13$$

$$\frac{x-5}{4} = -2$$

$$x-5 = 4 \cdot (-2)$$

$$\begin{array}{r} x-5 = -8 \\ +5 \quad +5 \end{array}$$

$$x = -3$$

$$\{13, -3\}$$

$$(12) \quad 3|x-7| + 8 = 11$$

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

$$|x-7| = 1$$

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

$$x = 8$$

$$\begin{array}{r} x-7 \leq -1 \\ +7 \quad +7 \end{array}$$

$$x = 6$$

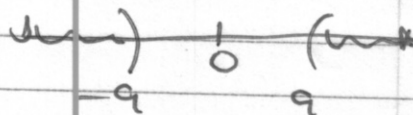
$$\{8, 6\}$$

$$(13) \quad 2|x| - 6 > 12$$

$$\frac{2|x|}{2} > \frac{18}{2}$$

$$|x| > 9$$

$$x > 9 \text{ or } x < -9$$

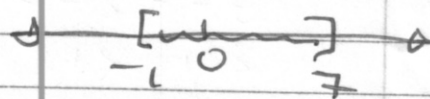


$$(14) \quad \frac{-4|x-3|}{-4} \geq \frac{-16}{-4}$$

$$|x-3| \leq 4$$

$$\begin{array}{ccc} -4 & \leq & x-3 & \leq & 4 \\ +3 & & +3 & & +3 \end{array}$$

$$-1 \leq x \leq 7$$

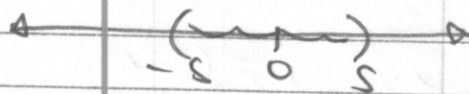


$$(15) \quad \frac{3|x| - 9}{+9 + 9} < 6$$

$$-5 < x < 5$$

$$\frac{3|x|}{3} < \frac{15}{3}$$

$$|x| < 5$$

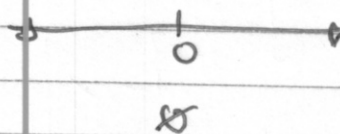


$$(16) \quad \frac{6|x+3| + 9}{-9 - 9} \leq 6$$

$$\frac{6|x+3|}{6} \leq \frac{-3}{6}$$

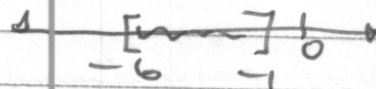
$$|x+3| \leq -\frac{1}{2}$$

No Solution



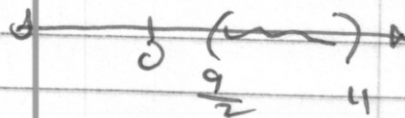
$$(17) \quad \begin{array}{ccc} -1 & \leq & x+5 & \leq & 4 \\ -5 & & -5 & & -5 \end{array}$$

$$-6 \leq x \leq -1$$



$$\textcircled{14} \quad \begin{array}{ccccccc} 0 & < & 2x & -9 & < & 13 \\ +9 & & & +9 & & +9 \end{array}$$

$$\frac{9}{2} < \frac{2x}{2} < \frac{22}{2}$$



$$\textcircled{\frac{9}{2} < x < 11}$$