

PART A - Calculator Active: For #1-6, circle the correct response.

1. The set of numbers less than -5 or greater than 7 is

- A)  $-5 > x > 7$     B)  $x < -5$  or  $7 < x$     C)  $x < -5$  and  $7 < x$     D)  $-5 < x < 7$

2. The number which is not a rational number is

- A) 0.9    B)  $\pi$     C)  $-\frac{7}{3}$     D) 0

3. The solution or solutions to  $|2x + 5| = 3x + 4$  are

- A)  $x = 1$  only    B)  $x = -\frac{9}{5}$  only    C)  $x = 1$  or  $-\frac{9}{5}$     D) no solution

4. Which of the following describes the empty set (no solution)?

- A)  $-5 > x > 7$     B)  $x < -5$  or  $7 < x$     C)  $x < -5$  and  $7 < x$     D)  $-5 < x < 7$

5. Which of the following sets is equivalent to  $-5 < x < 7$ ?

- A)  $-5 > x > 7$     B)  $x < -5$  or  $7 < x$     C)  $x < -5$  and  $7 < x$     D)  $x > -5$  or  $7 > x$

6. The number that is larger than  $\sqrt{8}$  is

- A)  $2\pi$     B)  $\frac{7}{3}$     C)  $-|-3|$     D) 2.1

7. Solve the formula  $A = \frac{1}{2}h(x + y)$  for  $h$  and state any restrictions on  $x$  and  $y$ .

8. A farmer has 350 feet to enclose his cornfield, which is 6 times as long as it is wide. What are the dimensions of the field, to the nearest tenth of a foot? Include a diagram, labeled with variables, and write and solve an equation that relates to this problem. Answer the question in a complete sentence.



14. Solve  $|x - 3| = -8$  for  $x$  and explain or verify your solution.

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15. Solve the following equations for  $x$  and verify your solution(s).

a)  $-3(3x + 2) - 4(x - 2) = 5$

b)  $-5|2x - 8| + 3 = -17$

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16. Rewrite each set in simplest inequality notation, and sketch on a numberline:

a)  $x > 0$  or  $x > 5$

b)  $x \geq -3$  and  $x < 2$

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17. Solve  $4 - 5x > 29$  for  $x$  and sketch on a numberline.

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18. Solve the following absolute value inequalities and sketch on a numberline.

a)  $|x - 3| > 5$

b)  $|x + 3| \geq 5$

c)  $|3x + 12| < 6$

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19. Match each set of real numbers on the left to its equivalent set on the right. Write I, II, III or IV beside the words "matches with".

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A) $1 \geq x \geq 5$ matches with	I) $x \in (-\infty, \infty)$ (or $x \in \mathbb{R}$ )
B) $1 \leq x \leq 5$ matches with	II) no real numbers (or empty set)
C) $x \leq 1$ or $5 \leq x$ matches with	III) $x \in [1, 5]$
D) $1 \leq x$ or $x \leq 5$ matches with	IV) $x \in (-\infty, 1] \cup [5, \infty)$

20. Dana solved the inequality  $4x - 4 < 8 + 4x$  and got the statement  $0 < 12$ . Is this a true or a false statement? What does it tell Dana about the solution to the inequality?

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**BONUS:** Work backwards - write the absolute inequality that produces the following graph.



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