

Algebra 2 Trig H
1.3 day 2

Name:

In #1-8, solve for x.

1. $|2x+3|=5$

$$2x+3=5$$

$$2x=2$$

$$x=1$$

$$2x+3=-5$$

$$2x=-8$$

$$x=-4$$

2. $\frac{-2}{3}|x+4|-6=-2$

$$-\frac{3}{2} \cdot -\frac{3}{3}|x+4|=4 \cdot -\frac{3}{2}$$

$$|x+4|=-6$$

No solution

3. $|5-3x|>14$

$$5-3x>14$$

$$-3x>9$$

$$5-3x<-14$$

$$-3x<-19$$

$$x<-3 \text{ or } x>\frac{19}{3}$$

4. $|2-x|<7$

$$-7<2-x<7$$

$$-9<-x<5$$

$$9>x>5$$

$$5<x<9$$

5. $|6-2x|=3(2x-4)$

$$6-2x=3(2x-4)$$

$$6-2x=6x-12$$

$$18=8x$$

$$\frac{9}{4}=x$$

or

$$6-2x=-3(2x-4)$$

$$6-2x=-6x+12$$

$$-6=-4x$$

~~$$\frac{3}{2}=x$$~~

6. $|14-7x|>0$

$$14-7x=0$$

$$-7x=-14$$

$$x \neq 2$$

$$(-\infty, 2) \cup (2, \infty)$$

7. $2 \leq |2x-10| < 8$

$$2 \leq 2x-10 < 8 \text{ or } -8 \leq 2x-10 < -2$$

$$12 \leq 2x < 18$$

$$2 < 2x \leq 8$$

$$6 \leq x < 9$$

$$1 < x \leq 4$$

$$(1, 4] \cup [6, 9)$$

8. $\sqrt{(7-4x)^2} \geq 5$

$$|7-4x| \geq 5$$

$$7-4x \geq 5 \text{ or } 7-4x \leq -5$$

$$-4x \geq -2 \text{ or } -4x \leq -12$$

$$x \leq \frac{1}{2}$$

$$x \geq 3$$

$$(-\infty, \frac{1}{2}] \cup [3, \infty)$$

9. If $a < y < z < b$, Which of the following statements are true?

b. $|a-b| > |a-z|$

c. $|y-z| < |y-b|$

10. At a certain company, the average starting salary s for a new worker is \$25,000. The actual salary has an absolute deviation of at most \$1800 (This means it can go above or below that by \$1800.) Write and solve an absolute value inequality to find the range of the starting salaries.

$a = \text{actual salary}$

$$|a - 25,000| \leq 1800$$

$$-1800 < a - 25,000 < 1800$$

$$23,200 < a < 26,800$$

between \$23,200 and \$26,800

11. The radius of the gears produced at a factory must be 6 inches in length with a tolerance of 0.1 inches. The gears with radius beyond the tolerated lengths will be thrown away. Which of the following inequalities can be used to assess which gears are eligible? (r is the length of the radius)

$$|r - 6| \leq .1$$

a. $|r - 6| \leq 0.1$

b. $|r - 6| \geq 0.1$

d. $|r - 0.1| \leq 6$

d. $|r - 0.1| \geq 6$

e. None of the above.

12. What are the values of a and b , if any, where $-a|b+7| > 0$

a. $a < 0$ and b not equal to -7

b. $a < 0$ and $b = -7$

c. $a > 0$ and b not equal to 7

d. $a > 0$ and b not equal to -7

e. No Solution

13. What is the solution set for: $\frac{|2n-5|+7}{5} > 2$?

a. $n \leq 4$

b. $1 < n < 4$

c. $1 \leq n \leq 4$

d. $n < 1$ or $n > 4$

e. $n \leq 1$ or $n \geq 4$

$$|2n-5|+7 > 10$$

$$|2n-5| > 3$$

$$2n-5 > 3 \text{ or } 2n-5 < -3$$

$$n > 4 \text{ or } n < 1$$