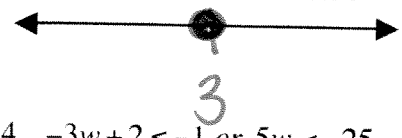
Advanced Algebra
Chapter 1 Review

Name KEY
Period 1

NO CALCULATOR ALLOWED!
Solve each inequality or equation. Graph the solutions on a number line.

1. $4(-3r+1) = -10(r-4) - 14r$

$-12r+4 = -10r+40-14r$
$-12r+4 = -24r+40$
$+24r \quad +24r$
$\frac{12r}{12} = \frac{36}{12}$ $\boxed{r=3}$

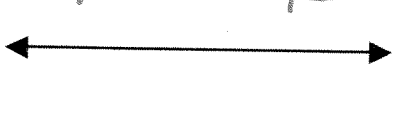


2. $-(x+2) - 2x = -2(x+1)$

$-x-2-2x = -2x-2$
$-3x-2 = -2x-2$
$+2x \quad +2x$
$-x-2 = -2$
$-x = 0$ $\boxed{x=0}$

3. $-37 \geq -2(5+2y)$

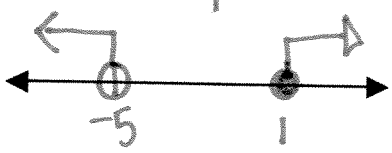
$-37 \geq -10 + -4y$
$+10 \quad +10$
$\frac{-27}{-4} \geq \frac{-4y}{-4}$
$y \leq$



4. $-3w+2 \leq -1$ *or* $5w < -25$

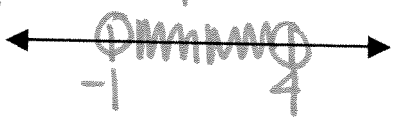
$-3w+2 \leq -1$
$\frac{-3w}{-3} \leq \frac{-3}{-3}$
$w \geq 1$

$\frac{5w}{5} < \frac{-25}{5}$
$w < -5$



5. $15 > 4x-1 > -5$

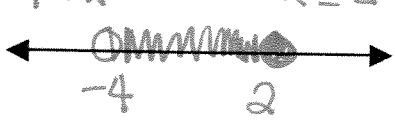
$15 > 4x-1$ | $4x-1 > -5$
$+1 \quad +1$ | $+1 \quad +1$
$16 > 4x$ | $4x > -4$
$\frac{16}{4} > \frac{4x}{4}$ | $x > -1$
$4 > x$



$-1 < x < 4$

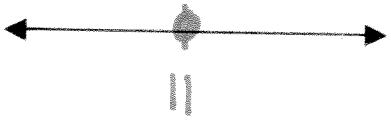
6. $-16 < 3x-4 \leq 2$

$-16 < 3x-4$ | $3x-4 \leq 2$
$+4 \quad +4$ | $+4$
$\frac{-12}{3} < \frac{3x}{3}$ | $\frac{3x}{3} \leq \frac{6}{3}$
$-4 < x$ | $x \leq 2$



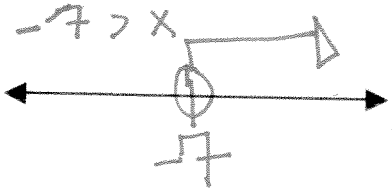
7. $5+2x \geq 27$ or $x-3 < 8$

$-5 \quad -5$ | $+3 \quad +3$
$2x \geq 22$ | $x < 11$
$x \geq 11$



8. $5-5x > 4(3-x)$

$5-5x > 12-4x$
$+5x \quad +5x$
$5 > 12+x$
$-12 \quad -12$
$-7 > x$



9. $7-3|5x-4| = -2$

$-3|5x-4| = -9$
$|5x-4| = 3$

$5x-4 = 3$ | $5x-4 = -3$
$+4 \quad +4$ | $+4 \quad +4$
$\frac{5x}{5} = \frac{7}{5}$ | $5x = 1$

10. $11+|-3x+5| = 7$

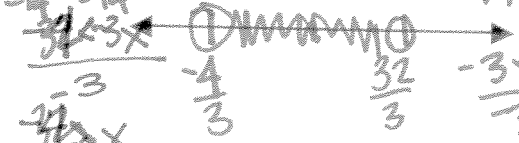
$-11 \quad -11$
$|-3x+5| = -4$

NO SOLUTION

11. $|14-3x|-2 < 16$

$+2 \quad +2$
$|14-3x| < 18$

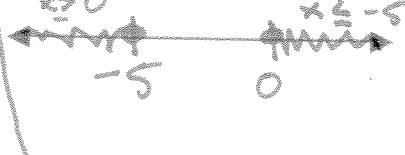
$-18 < 14-3x < 18$
$-18 < 14-3x$ | $14-3x < 18$
$-14 \quad -14$ | $-14 \quad -14$
$\frac{-32}{-3} > \frac{-3x}{-3}$ | $\frac{-3x}{3} < \frac{4}{3}$
$\frac{32}{3} > x$ | $x > \frac{-4}{3}$



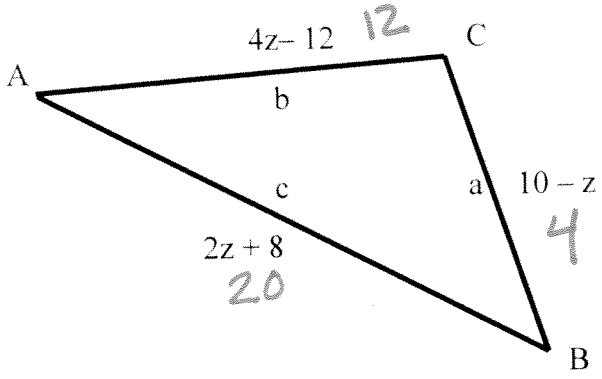
12. $-2|4x+10| \leq -20$

$|4x+10| \geq 10$

$4x+10 \geq 10$ | $4x+10 \leq -10$
$-10 \quad -10$ | $-10 \quad -10$
$4x \geq 0$ | $4x \leq -20$
$x \geq 0$ | $x \leq -5$



13. Give an expression that represents the perimeter of the triangle.
If the perimeter is 36cm, what is the length of each side?



13. _____

$4z-12+10-z+2z+8=36$

$5z+6=36$

$\frac{5z}{5}=\frac{30}{5}$

$z=6$

CALCULATOR ALLOWED!

14. Joey makes $5 per hour mowing lawns and Maria make $7 per hour babysitting the neighbors children. Together they would like to buy an ipod that costs $129. If Maria babysits for 9 hours, what is the least number of full hours Joey would have to work so they can buy the iPod together?

$5j+7(9)\geq 129$ → $5j+63\geq 129$ → $5j\geq 66$ → $j\geq 13.2$

14

15. Find the lesser of two consecutive integers whose sum is greater than 16.

$n+n+1>16$ → $n+n>15$ → $2n>15$ → $n>7.5$

8, 9

16. A potato chip bag should weigh 12.5 ounces. If it weighs more than .5 above or below this amount it is rejected for sale. Write an absolute value inequality that would represent the tolerance levels for the potato chip bag. $12<x<13$

_____

17. A store clerk earns $350 per week plus 10% of her weekly sales.

a. Write an equation or inequality to represent what amount of sales are necessary for her to earn at least $500. $350+.10S\geq 500$ → $-350 \quad -350$

b. What are the sales necessary for her to earn at least $500 in one week?

$.10S\geq 150$ → $S\geq 1500$

18. Solve the formula for the circumference of a circle $C=2\pi r$ for r. ~~Then find r if $C=41$.~~

$\frac{C}{2\pi}=\frac{2\pi r}{2\pi}$ → $\frac{C}{2\pi}=r$

19. Solve the formula for the volume of a cone $V=\frac{1}{3}\pi r^2 h$ for h. ~~Then find h if $V=24$ and $r=3$.~~

$V=\frac{1}{3}\pi r^2 h$ → $3V=\pi r^2 h$ → $\frac{3V}{\pi r^2}=h$

20. Solve the formula for the area of a trapezoid $A=\frac{1}{2}h(b_1+b_2)$ for b_2. ~~Then find b_2 if $A=29$, $h=7$ and $b_1=3$.~~

$2A=h(b_1+b_2)$ → $\frac{2A}{h}=b_1+b_2$ → $\frac{2A}{h}-b_1=b_2$