#16 HW Algebra 2 Worksheet Name: _____

Section 2.7 - Linear Regression & Absolute Value Per: ___

The problems on this worksheet come from your book, p.146-148 #5,6,12, and 14.

5. **Chemistry.** Use your graphing calculator to make a scatter plot for this data set using the atomic number as the independent variable. Identify the correlation and find the equation of the line of best fit.

Selected Chemical Elements														
Atomic #	89	13	95	51	18	33	85	56	97	4	83	104	5	35
Atomic Mass	227	27	243	122	40	75	210	137	247	9	209	264	11	80

Correlation Coefficient: r=.99 Equation: y=2.59x - 6.3

6. **Biology.** Hummingbird wing beat rates are much higher than those in other birds. Estimates for various species are given in the table.

Hummingbird Wing Beats							
Mass (g)	3.1	2.0	3.2	4.0	3.7	1.9	4.5
Wing Beats (per second)	60	85	50	45	55	90	40

A) Use your graphing calculator to make a scatter plot for this data set using mass as the independent variable. Identify the correlation and find the equation of the line of best fit.

Correlation Coefficient: r=-.96 Equation: y=-19.14x+121.97

B) Predict the wing beat rates for a Giant Hummingbird with a mass of 19 g. How accurate do you think your prediction is? -241.69. According to r value accurate

According to reality not accurate. can't have negative beats per second

12. **Aviation.** Use your graphing calculator to make a scatter plot for the lengths and wingspans in the American Airlines fleet. Identify the correlation and find the equation of the line of best fit.

Lengths and Wingspans of Planes in the American Airlines Fleet						
Length (ft)	130	148	155	178	180	209
Wingspan (ft)	113	108	124	147	156	200

Correlation Coefficient: r=.95 Equation: y=1.17x-54.16

Predict the wingspan for New Jumbo Jet with a length of 225 ft. How accurate do you think your prediction is? 209.09 Ft pretty accurate r value close to 1

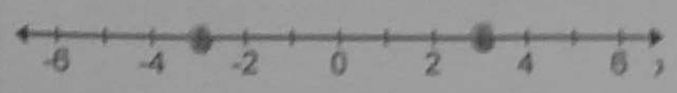
Solve each and graph. SHOW ALL WORK!!

1. $|-3x|=9$

$-3x=9$ $\quad -3x=-9$

$\frac{-3x}{-3}=\frac{9}{-3}$ $\quad \frac{-3x}{-3}=\frac{-9}{-3}$

$x=-3$ $\quad x=3$

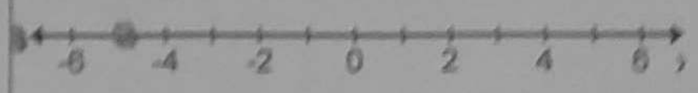


2. $|x+7|=2$

$x+7=2$ $\quad x+7=-2$

$-7\ -7$ $\quad -7\ -7$

$x=-5$ $\quad x=-9$



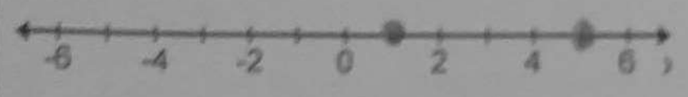
3. $|3x-9|=6$

$3x-9=6$ $\quad 3x-9=-6$

$+9\ +9$ $\quad +9\ +9$

$3x=15$ $\quad 3x=3$

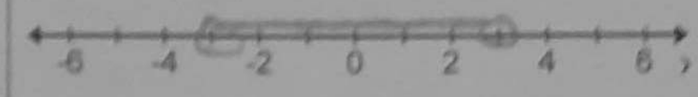
$x=5$ $\quad x=1$



4. $|-2x|<6$

$\frac{-2x}{-2}<\frac{6}{-2}$ $\quad \frac{-2x}{-2}>\frac{-6}{-2}$

$x>-3$ and $x<3$



5. $x+2<8$ *and* $4x+12>8$

$-2\ -2$ $\quad -12\ -12$

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

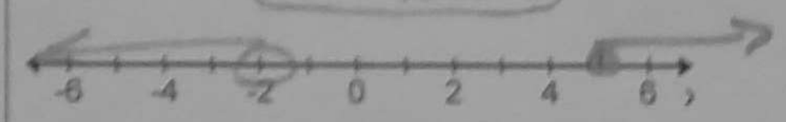
$x<6$ and $x>-1$

6. $3x\geq 15$ *or* $-x+10>12$

$\frac{3x}{3}\geq\frac{15}{3}$ $\quad -10\ -10$

$\frac{-1x}{-1}>\frac{2}{-1}$

$x\geq 5$ or $x<-2$

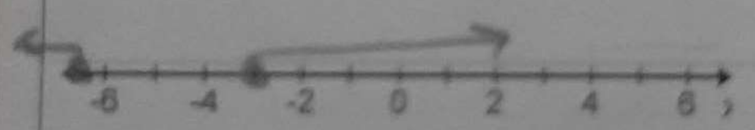


7. $|x+5|\geq 2$

$x+5\geq 2$ $\quad x+5\leq -2$

$-5\ -5$ $\quad -5\ -5$

$x\geq -3$ or $x\leq -7$



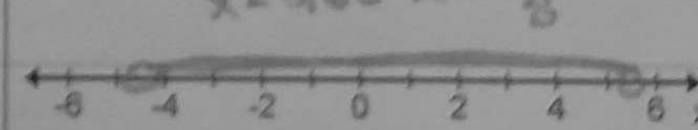
8. $|8x-4|<41$

$8x-4<41$ $\quad 8x-4>-41$

$+4\ +4$ $\quad +4\ +4$

$8x<45$ $\quad 8x>-37$

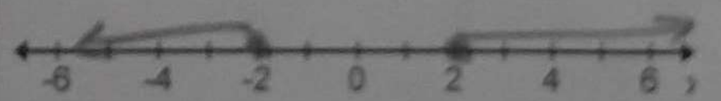
$x<5.63$ $\quad x<\frac{45}{8}$ $\quad x>-4.63$



9. $|-0.5x|\geq 1$

$\frac{-.5x}{-.5}\geq\frac{1}{-.5}$ $\quad \frac{-.5x}{-.5}\leq\frac{-1}{-.5}$

$x\leq -2$ $\quad x\geq 2$



10. $|x+4|\leq -6$

$x+4\leq 6$ $\quad x+4\geq -6$

$-4\ -4$ $\quad -4\ -4$

$x\leq 2$ $\quad x\geq -10$