Name _____ Date _____ Class _____

TEKS 2A.1.B

LESSON 9-6

Algebra Lab

Modeling Real-World Data

Use with Lesson 9-6

Materials: paper, ruler, and pencil

In this lab you will examine the Periodic Table of Elements to determine if there is a relationship between the atomic number of an element and its atomic weight. Use only the first 25 elements for this lab.

Activity

Below is the Periodic Table of Elements. The letter(s) in the center of each cell give the symbol for that element. The number above the symbol is the atomic number. The number below the symbol is the atomic weight of the element. Examine the Periodic Table and record the atomic weight under the atomic number in the table at the bottom of this page. Round the atomic weight to the nearest integer.

PERIODIC CHART OF THE ELEMENTS

IA	IIA	IIIB	IVB	VB	VIB	VIIB	VIII			IB	IIB	IIIA	IVA	VA	VIA	VIIA	INERT GASES
1 H 1.00797																1 H 1.00797	2 He 4.0026
3 Li 6.939	4 Be 9.0122											5 B 10.811	6 C 12.0112	7 N 14.0067	8 O 15.9994	9 F 18.9984	10 Ne 20.183
11 Na 22.9898	12 Mg 24.312											13 Al 26.9815	14 Si 28.086	15 P 30.9738	16 S 32.064	17 Cl 35.453	18 Ar 39.948
19 K 39.102	20 Ca 40.08	21 Sc 44.956	22 Ti 47.90	23 V 50.942	24 Cr 51.996	25 Mn 54.9380	26 Fe 55.847	27 Co 58.9332	28 Ni 58.71	29 Cu 63.54	30 Zn 65.37	31 Ga 69.72	32 Ge 72.59	33 As 74.9216	34 Se 78.96	35 Br 79.909	36 Kr 83.80
37 Rb 85.47	38 Sr 87.62	39 Y 88.905	40 Zr 91.22	41 Nb 92.906	42 Mo 95.94	43 Tc (99)	44 Ru 101.07	45 Rh 102.905	46 Pd 106.4	47 Ag 107.870	48 Cd 112.40	49 In 114.82	50 Sn 118.69	51 Sb 121.75	52 Te 127.60	53 I 126.904	54 Xe 131.30
55 Cs 132.905	56 Ba 137.34	*57 La 138.91	72 Hf 178.49	73 Ta 180.948	74 W 183.85	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.09	79 Au 196.967	80 Hg 200.59	81 Tl 204.37	82 Pb 207.19	83 Bi 208.980	84 Po (210)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	†89 Ac (227)	104 Rf (261)	105 Db (262)	106 Sg (266)	107 Bh (262)	108 Hs (265)	109 Mt (266)	110 ? (271)	111 ? (272)	112 ? (277)						

Numbers in parenthesis are mass numbers of most stable or most common isotope.

Atomic weights corrected to conform to the 1963 values of the Commission on Atomic Weights.

The group designations used here are the former Chemical Abstract Service numbers.

*Lanthanide Series

58 Ce 140.12	59 Pr 140.907	60 Nd 144.24	61 Pm (147)	62 Sm 150.35	63 Eu 151.96	64 Gd 157.25	65 Tb 158.924	66 Dy 162.50	67 Ho 164.930	68 Er 167.26	69 Tm 168.934	70 Yb 173.04	71 Lu 174.97

†Actinide Series

90 Th 232.038	91 Pa (231)	92 U 238.03	93 Np (237)	94 Pu (242)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (249)	99 Es (254)	100 Fm (253)	101 Md (256)	102 No (256)	103 Lr (257)

#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
AW																									

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Name _____ Date _____ Class _____

LESSON 9-6

Algebra Lab

Modeling Real-World Data continued

Plot the points on the graph below. Label the horizontal axis as atomic number and the vertical axis as atomic weight. Count each square as 1 unit on the horizontal axis and 2 units on the vertical axis.

Try This

1. Does there appear to be a relationship between the atomic number and atomic weight for the twenty five elements that you graphed? _____
2. Is it possible to connect the data points with a straight line? _____
3. Draw the line on the graph. What is the slope of the line? _____
4. What does the slope represent? _____

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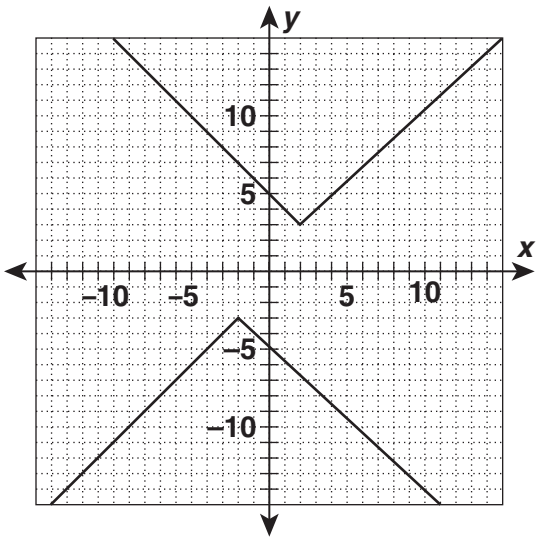
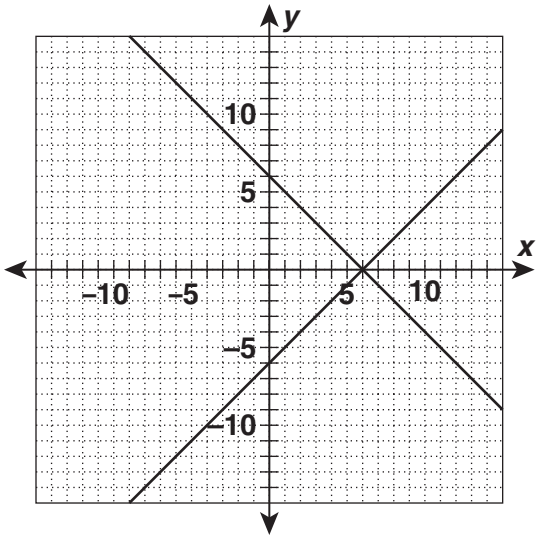
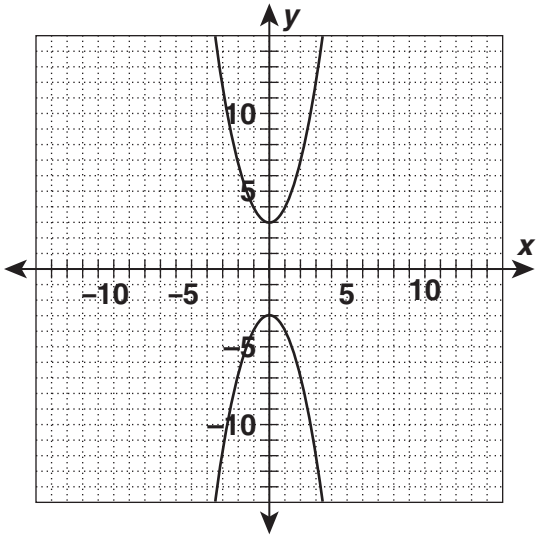
3.



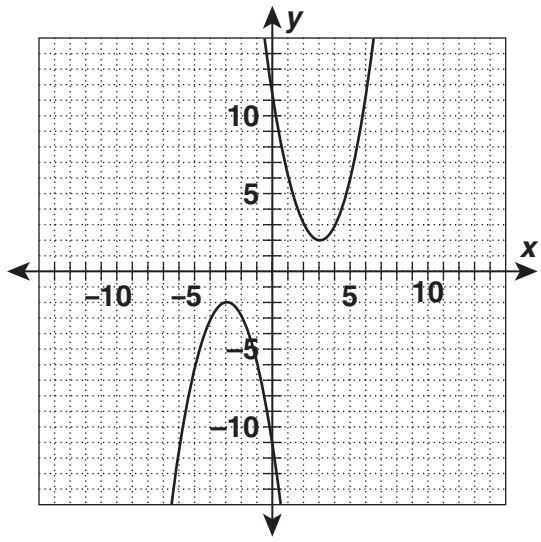
4.



5.



6.



LAB 9–6

Try This

1. Yes—it appears there is a pos. correllation in general
2. Yes—from the points I plotted—No
3. Approximately 2
4. It represents the rate of change in the atomic weight; for each increase of 1 in the atomic number, the atomic weight increases by 2.

TECH LAB 9-6

Try This

1. III
2. time; seconds; distance of object from CBR 2™ motion detector; feet or meters
3. Check students' drawings. (should be half of a parabola, concave up)
4. quadratic
5. Check students' answers.

Activity 2

1. Check students' drawings. (should be parabolic with increasing curvature)

2-3. Check students' drawings.

4. 0° is flat (ball can't roll); 90° is the same as a free-falling (dropping) ball

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