Name_____ Class _____ Date _____

5-8 Practice *Form K*

Polynomial Models in the Real

Find a polynomial function that best models each set of values.

8. Let $x = 0$.

Life Expectancy

Exact Age	Male (years)
5	70.5
10	65.6
15	60.6
20	55.9

SOURCE: 2004 U.S. Social Security

9. Let x = the number of years since 1950.

World Silver

Year	Production (metric tons)
1950	6323
1955	9967
1960	7505
1965	8007

SOURCE: *The World Almanac & Book of Facts 2002*

Find a cubic and a quartic model for each set of values. Then determine which model best represents the values.

10.

x	−2	−1	0	1	2
y	−6	−2	2	7	−2

11.

x	−2	−1	0	1	2
y	5	3	−5	−8	5

12.

x	−2	−1	0	1	2
y	−10	−8	3	4	−3

13.

x	−2	−1	0	1	2
y	4	−2	−1	0	2

Use your models from Exercises 8 and 9 to make predictions.

14. Estimate the life expectancy for a 40 year-old male.

15. Estimate world silver production for 2000.

1. The volume of the rectangular prism below is given by the function: $f(x) = -2x^3 - 3x^2 + 50x + 75$. If the length is $(2x + 3)$, what expressions represent the width and height?

I. (x-5),(x-5) II.(x+5),(x-5) III.(x+5),(-x+5) IV.(-x+5),(-x+5)

a. What is a realistic domain for the function?

b. Keeping in mind the realistic domain, what is the maximum volume of the rectangular prism?

2. You know that the length of a room is 4 feet longer than three times Steph's height in feet and the width of the room is 3 feet longer than two times her height. Write an expression for the width and the length of the room in terms of your height. Then find the area.

3. You have a wall with an area of $8x^2 - 4x + 7$. The wall has a hole in it with an area of $4x^2 - 6x - 3$. What is the area of the remaining wall?

a. $4x^2 + 2x + 4$ b. $4x^2 - 10x + 4$ c. $4x^2 + 2x + 10$ d. $4x^2 - 10x + 10$

4. You know that a skyscraper that is a rectangular prism has a volume of $3x^3 - 2x^2 - 19x - 6$. The height is (3x+1). Find an expression for the length and the width.

5. In 2014, Foot Locker is expected to have a profit of $x^3 + 3x^2 - x - 3$, and Payless is expected to make a profit of $x^2 - 1$. How many times larger is the expected profit of Foot Locker than the expected profit of Payless?

6. The polynomial $2x^3 + 9x^2 + 4x - 15$ represents the volume in cubic feet of a rectangular holding tank at a fish hatchery. The depth of the tank is (x-1) feet. Find an expression for the length and the width.