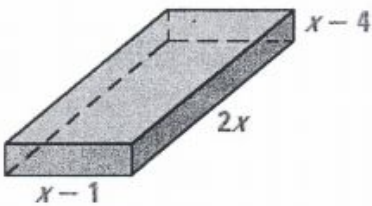
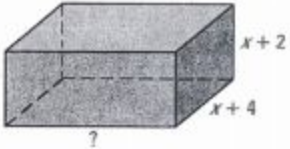
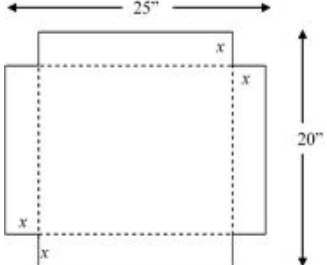
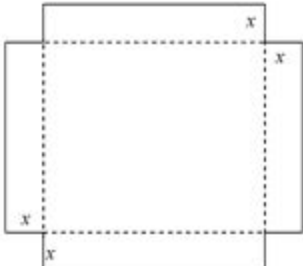


A2F - Volumes SM3	Name
1. Find the length, width, and height of the rectangular Prism. Volume = 40 	2. ARCHAEOLOGY At the ruins of Caesarea, archaeologists discovered a huge hydraulic concrete block with a volume of 945 cubic meters. The block's dimensions are x meters high by $12x - 15$ meters long by $12x - 21$ meters wide. What is the height of the block? 
3. Find the equation for the missing side using your x-intercepts. $P(x) = x^3 + 14x^2 + 56x + 64$ 	4. If you are making an open top box by cutting squares x by x out of the corners of a board 25"x20", what would be the size of x to make a box with a maximum volume. 
5. SWIMMING POOL You are designing a rectangular swimming pool that is to be set into the ground. The width of the pool is 5 feet more than the depth, and the length is 35 feet more than the depth. The pool holds 2000 cubic feet of water. What are the dimensions of the pool?	6. The length is 3 more than the width and the height is 2 less than the width and the volume is 756 cm^3. Find the measurements of the sides: Length: Width: Height:
7. If you are making an open top box by cutting squares x by x out of the corners of a board 12"x 40", what would be the size of x to make a box with a maximum volume. 	8. If the length of a polynomial is 3 more than twice the width, and the height is 6 less than the width, find the Expanded Cubic Polynomial that represents this situation. What would the volume be if the width was 5 cm?

9. Use a graphing calculator to find the integer zero(s), and then use the Quadratic Formula to find all the remaining roots.

$$f(x) = x^4 - x^3 - 16x^2 - 4x - 80$$

How many *total* solutions does $f(x)$ have? _____

How many *real* solutions does $f(x)$ have? _____

How many *imaginary* solutions does $f(x)$ have? _____

Roots:

Equation in Factored Form:

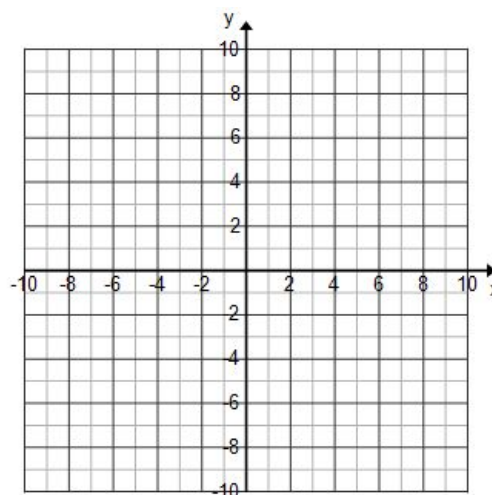
$$y = (x \quad)(x \quad)(x \quad)(x \quad)$$

10. Graph and label the following on the graph below:

a. $f(x) = -x^3 + 6$

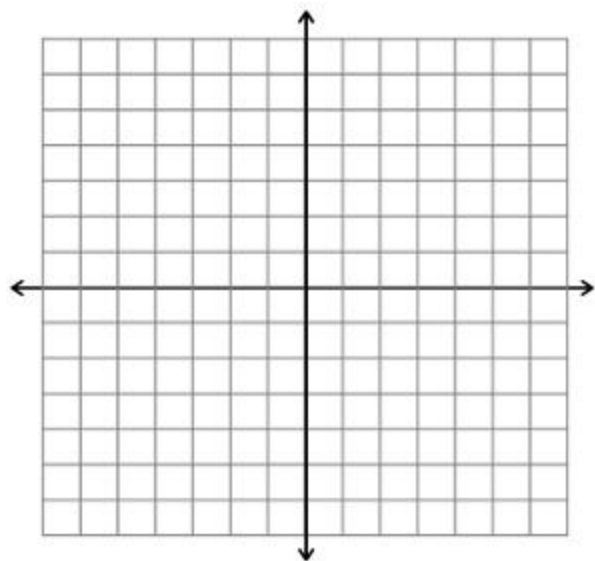
b. $f(x) = (x + 5)^3$

c. $f(x) = (x - 2)^3 - 1$



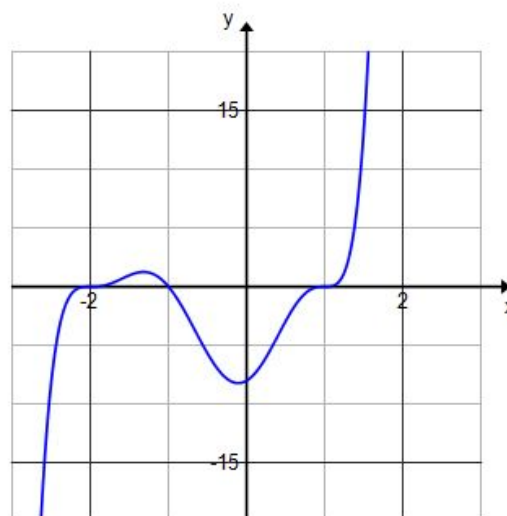
12. Graph the following. Make sure you label your x and y-intercepts.

$$f(x) = -(x + 4)^2(x - 5)^3$$



13. What is the degree of this polynomial?
Is the leading coefficient positive or negative?

If the scale factor is 1, then write the polynomial for this graph.



14-15 Match the equations to the graphs without using a calculator:

- A. $f(x) = -x^3 - 3x^2 + 28x + 60$
- B. $f(x) = -x^4 - 5x^3 + 22x^2 + 116x + 120$
- C. $f(x) = x^3 + 3x^2 - 28x - 60$
- D. $f(x) = x^4 + 5x^3 - 22x^2 - 116x - 120$
- E. $f(x) = -x^4 + 4x^3 + 20x^2 - 60$
- F. $f(x) = -x^3 - 2x^2 + 25x + 120$

