**Quadratics Basics** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Multiplying Binomials

1. $(x-3)(x+7)$ 2. $(2x-5)(3x+10)$

3. $(2x-5)(2x-5)$ 4. $(x-9)(x+9)$

*Why do I have to know this?*

Quadratic equations can help us maximize profits and areas. They are also useful in physics with any type of projectile such as a ball or a flare.

*Bosque School’s 8th Grade service learning group is raising funds to buy children’s books for the Head Start Pre-school. The group sells muffins at lunch for $2.75 each and has been selling an average of 117 muffins per week. The chairperson of the committee is concerned about revenue. When she looked at last year’s data, she noticed that for every increase of $0.25, the committee sold, on average, 8 fewer muffins per week. How can you help the chairperson describe the revenue? What questions might the chairperson still have?*

|  |  |  |
| --- | --- | --- |
| Price Increases | Muffins Sold | Revenue |
| -2 |  |  |
| -1 |  |  |
| 0 ($2.75) |  |  |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

Let x = price increases

Write two linear expressions that represent the data.

Factoring quadratic equations helps us calculate the roots (x-intercepts).

Remember that the zero product property allows you to find the x intercepts after you have factored.

$7×0=0 and 0×7=0$,

so $\left(x-2\right)\left(x+7\right)=0$….. $x=\left\{-7, 2\right\}$

5. $-16x^{2}+20x=0$ 6. $x^{2}-x-12=0$

7. $x^{2}-6x+8=0$ 8. $x^{2}+11x+18=0$

9. $6x^{2}+10x-4=0$ 10. $9x^{2}-30x+25=0$

9. Write a trinomial that can be easily factored.

10. Write a quadratic equation that has -3 and 4 as solutions.

11.