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Algebra 1 PTech

Quadratic Applications

Day 2 Notes

When dealing with quadratic applications, we are taking a ‘nasty word problem’ and simplifying it into an algebraic equation to help reach a solution. Yesterday we came up with some simple steps to help us in doing this. Let’s use this procedure to solve each of the following applications.

Example 1:

 Noj is 5 years older than Jacob. The product of their ages is 84. How old is Noj?

|  |  |  |
| --- | --- | --- |
| **Step** | **Procedure** | **Example** |
| 1 | Should you write a let statement? |  |
| 2 | Write your equation |  |
| 3 | Distribute & combine like terms (if necessary) |  |
| 4 | Get the equation equal to zero |  |
| 5 | Factor |  |
| 6 | Zero Product Law (Find the zeros) |  |
| 7 | Read back through the problem to check what the context is asking for. Do you need to reject one of the zeros? |  |

Example 2:

 A rectangle has an area of 24 square units. The width is 5 units less than the length. What is the length, in units, of the rectangle?

Example 3:

 Find two consecutive numbers whose product is 306.

Example 4:

 What is the length of one side of the square whose perimeter has the same numerical value as its area?

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_

Algebra 1 PTech

Quadratic Applications

Day 2 CW

1. Find three consecutive positive even integers such that the product of the second and third integers is twenty more than ten times the first integer.

2. The length of a rectangle is 3 inches more than its width. The area of the rectangle is 40 square inches. What is the length, in inches, of the rectangle?

 3. Find three consecutive odd integers such that the product of the first and the second exceeds the third by 8.

 4. A contractor needs 54 square feet of brick to construct a rectangular walkway. The length of the walkway is 15 feet more than the width. Write an equation that could be used to determine the dimensions of the walkway. Solve this equation to find the length and width, in feet, of the walkway.

5. Three brothers have ages that are consecutive even integers. The product of the first and third boys’ ages is 20 more than twice the second boy’s age. Find the age of *each* of the three boys.

 6. Jack is building a rectangular dog pen that he wishes to enclose. The width of the pen is 2 yards less than the length. If the area of the dog pen is 15 square yards, how many yards of fencing would he need to completely enclose the pen?

7. The area of the rectangular playground enclosure at South School is 500 square meters. The length of the playground is 5 meters longer than the width. Find the dimensions of the playground, in meters.

8. Javon’s homework is to determine the dimensions of his rectangular backyard. He knows that the length is 10 feet more than the width, and the total area is 144 square feet. Write an equation that Javon could use to solve this problem. Then find the dimensions, in feet, of his backyard.

:::::BONUS:::::

9. A rectangular piece of cardboard is to be formed into an uncovered box. The piece of cardboard is 2 centimeters longer than it is wide. A square that measures 3 centimeters on a side is cut from each corner. When the sides are turned up to form the box, its volume is 765 cubic centimeters. Find the dimensions, in centimeters, of the original piece of cardboard.