M-UA.464: Math

Practice Exam

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Total: 100 points

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1. A rectangular garden measures 12 meters in length and 8 meters in width. If a gardener wants to build a walkway of uniform width around the garden, increasing the total area to 168 square meters, what should the width of the walkway be?

2. Solve the following system of equations: 2x + y = 7 and x - 3y = -2. Show your work and clearly state the values of x and y.

3. A right-angled triangle has a hypotenuse of length 13 cm and one leg of length 5 cm. Calculate the length of the other leg and the area of the triangle.

4. A car travels 120 miles in 2 hours and 30 minutes. What is its average speed in miles per hour?

5. If a company's profit is modeled by the equation $P(x) = -x^2 + 10x - 16$, where x is the number of units sold, how many units must be sold to maximize profit, and what is the maximum profit?

6. A bag contains 5 red marbles, 3 blue marbles, and 2 green marbles. If two marbles are drawn without replacement, what is the probability that both marbles are red?

7. Calculate the volume of a sphere with a radius of 7 cm. Use the formula V = (4/3)< +2â W6R À "H 3.14159.

8. Simplify the following algebraic expression: 3(x + 2y) - 2(x - y) + 4x.

9. What is the equation of a line that passes through the points (2, 5) and (4, 11)? Express your answer in the slope-intercept form (y = mx + b).

10. A farmer has a rectangular field with dimensions 50 meters by 100 meters. He wants to divide the field into four equal-sized square plots. What will be the side length of each square plot?