You may refer to your Formula Sheet or General Scoring Guidelines at any time while responding to this test. You may use your calculator.

1. Ms. Pourcho’s art class paints a mural on a wall in the cafeteria. The width of the mural is six feet wider than the height of the mural, as shown in the diagram below.

h

h + 6

1. Write a polynomial expression, in expanded form, that represents the area of the mural.
2. The class adds a border that is 0.5 feet wide around all sides of the mural. Write a polynomial expression, in simplified form, that represents the total area of the mural and its border.
3. Ms. Perkins, the principal, is so happy with the first mural that she asks the art class to paint another mural on the wall outside the gym. The mural is the same size as the first mural, but the border is painted to be a different size. The total area of the new mural and border is given by the polynomial h2 + 10h + 16, where h is the height of the mural.

Determine the width of the new border. Show all your work. Explain how you did each step.

1. My son likes to play with building blocks that he stacks on top of each other. The diagram below shows one of these building blocks and also a stack of 4 building blocks.



The height of one building block is 1.5 inches. The height of a stack of 4 building blocks is 5.25 inches.

1. Write an equation using x and y to find the height of a stack of building blocks based on any number of building blocks.

Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Describe what the *x* and *y* variables represent.

*x*-variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*y*-variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What is the height, in inches, of a stack of 10 building blocks?

Height: \_\_\_\_\_\_\_\_\_\_\_\_ inches

1. Tyler’s family is baking pies.

When they have baked 4 pies, Tyler begins recording the total number of pies baked every hour in the table below.

**Pies Baked**

|  |  |
| --- | --- |
| Time in Hours | Pies Baked |
| 0 | 4 |
| 1 | 6 |
| 2 | 8 |
| 3 | 10 |

The pattern continues.

1. Write an equation to find the number of pies baked (p) after a given number of hours (h).
2. Tyler also kept track of the remaining flour. The equation shown below can be used to find the amount of flour remaining, in cups, (f) after the number of pies baked (p).

f = 40 – 2 ½ p

Use the equation to find the missing values for cups of flour remaining in the table below.

|  |  |
| --- | --- |
| Pies Baked (p) | Cups of Flour Remaining (f) |
| 4 |  |
| 6 |  |
| 8 |  |

1. Draw the graph of the line formed by the points in the table from part B.



1. Explain why the slope of the line drawn in **Part C** must be negative.
2. A group of friends goes bowling. The score of each friend for the first game is listed below.

153 174 102 165 87 189

1. What is the median score of the friends?
2. What is the mean score of the friends?

Two more friends join the group during the game. The addition of their scores to the group has no effect on the mean score, but the median score decreases by 7 points.

1. What are the scores of the two additional friends?