Name: _____

CC Algebra Homework - Function Analysis & Appropriate Domain and Ranges

1) The owner of a small computer repair business has one employee, who is paid an hourly rate of $22. The owner estimates his weekly profit using the function $P(x) = 8,600 - 22x$. In this function, x represents the number of

A) computers repaired per week
B) customers served per week
C) hours worked per week
D) days worked per week

2) The cost of airing a commercial on television is modeled by the function $C(n) = 110n + 900$, where n is the number of times the commercial is aired. Based on this model, which statement is true?
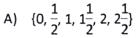
A) The commercial costs $1,010 to produce and can air an unlimited number of times.
B) The commercial costs $900 to produce and $110 each time it is aired.
C) The commercial costs $110 to produce and $900 each time it is aired.
D) The commercial costs $0 to produce and $110 per airing up to $900.

3) In 2013, the United States Postal Service charged $0.46 to mail a letter weighing up to 1 oz. and $0.20 per ounce for each additional ounce. Which function would determine the cost, in dollars, c(z), of mailing a letter weighing z ounces where z is an integer greater than 1?

A) $c(z) = 0.20(z - 1) + 0.46$
B) $c(z) = 0.46(z - 1) + 0.20$
C) $c(z) = 0.20z + 0.46$
D) $c(z) = 0.46z + 0.20$

4) A satellite television company charges a one-time installation fee and a monthly service charge. The total cost is modeled by the function $y = 40 + 90x$. Which statement represents the meaning of each part of the function?

A) y is the total cost, x is the number of months of service, $90 is the installation fee, and $40 is the service charge per month.
B) y is the total cost, x is the number of months of service, $40 is the installation fee, and $90 is the service charge per month.
C) x is the total cost, y is the number of months of service, $40 is the installation fee, and $90 is the service charge per month.
D) x is the total cost, y is the number of months of service, $90 is the installation fee, and $40 is the service charge per month.

5) A company that manufactures radios first pays a start-up cost, and then spends a certain amount of money to manufacture each radio. If the cost of manufacturing r radios is given by the function $c(r) = 5.25r + 125$, then the value 5.25 *best* represents

A) the amount spent to manufacture each radio
B) the profit earned from the sale of one radio
C) the average number of radios manufactured
D) the start-up cost

6) Officials in a town use a function, C, to analyze traffic patterns. C(n) represents the rate of traffic through an intersection where n is the number of observed vehicles in a specified time interval. What would be the *most* appropriate domain for the function?

A) $\{0, \frac{1}{2}, 1, 1\frac{1}{2}, 2, 2\frac{1}{2}\}$

B) $\{...-2, -1, 0, 1, 2, 3,...\}$

C) $\{-2, -1, 0, 1, 2, 3\}$

D) $\{0, 1, 2, 3,...\}$

7) A toy rocket is launched from the ground straight upward. The height of the rocket above the ground, in feet, is given by the equation $h(t) = -16t^2 + 64t$, where t is the time in seconds.

Determine the domain for this function in the given context.

Domain: _____

Explain your reasoning.

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1) C   2) B   3) A   4) B   5) A

6) D

7) $0 \leq t \leq 4$

SAMPLE EXPLANATION: $h(t) = -16t^2 + 64t$, So the points on the graph for the first 4 seconds are (0,0), (1,48), (2,64), (3,48), and (4,0). The domain is $0 \leq t \leq 4$ because the rocket takes off at 0 seconds and lands four seconds later.