

NAME _____

Honors Precalculus

Applications of Functions Demonstrations

Bacteria Count

- The number of bacteria in a refrigerated food is given by the function:

$$N(T) = 20T^2 - 80T + 500, \quad 2 \leq T \leq 14$$

Where T is the temperature of the food °C.

- When the food is removed from refrigeration, the temperature is given by:

$$T(t) = 4t + 2, \quad 0 \leq t \leq 3$$

Where t is the time in hours.

Find

- (a) the composite $(N \circ T)(t)$; its meaning.
- (b) How long will it take the bacteria count to reach 2000?
- (c) The number of bacteria after 2 hours.

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Applications of Functions Demonstrations

Bicycle Helmets

- Helmet production as a function of time (t) in hours:

$$P(t) = 75t - 2t^2$$

- Cost of producing helmets as a function of number produced (n):

$$C(n) = 7n + 1000$$

- Write a function that gives the cost in terms of number of hours of operation. $(C \circ P)(t)$
- Find the cost of the bicycle helmets produced on a day the factory was in operation for 12 hours.
- Find how long the factory was in operation on a day its costs were \$4000.