

SAT Math Challenge

The speed of a subway train is represented by the equation $v = t^2 + 2t$ for all situations where $0 \leq t \leq 7$, where v is the rate of speed in km per hour, and t is the time in seconds from the moment the train starts moving. In km per hour, how much faster is the subway train moving after 7 seconds than it was moving after 3 seconds?

- A: 4
- B: 9
- C: 15
- D: 48

Question 9 Explanation:

For this word problem, we are asked for the difference between the train's speed after 7 seconds, and the train's speed after 3 seconds.

First evaluate the function at $t = 7$. From this value, evaluate the function at $t = 3$, and then find the difference between the two:

$$v(7) = (7)^2 + 2(7) = 63$$

$$v(3) = (3)^2 + 2(3) = 15$$

$$v(7) - v(3) = 63 - 15 = 48, \text{ which is answer choice (D).}$$