

2nd Kinematic

Solve the following problems.

Example: $d = 200$, $v_o = 10$, $a = ?$, $t = 5$

$$d = v_o * t + \frac{1}{2} * a * t^2 \quad \rightarrow \quad 200 = 10 * 5 + \frac{1}{2} a * 5^2 \quad \rightarrow \quad 200 = 50 + \frac{1}{2} a * 25 \quad \rightarrow \quad 200 = 50 + 12.5a$$

$$150 = 12.5a \quad \rightarrow \quad 12 = a$$

1. $d = 400$, $v_o = 0$, $a = 4$, $t = ?$

3. $d = 700$, $v_o = ?$, $a = 2$, $t = 5$

2. $d = 300$, $v_o = 5$, $a = ?$, $t = 10$

4. $d = ?$, $v_o = 15$, $a = -4$, $t = 12$

Solve the following problems.

5. A race car starts from rest and accelerates for 15 seconds. What was its acceleration if it goes 675 meters in this time period?

6. A ball is thrown up into the air at 20m/s. If the ball is accelerated at -9.8 m/s^2 , How high is the ball after 1 seconds? How about after 2 seconds? How about after 2.08 seconds? How about after 3.082 seconds? What do you notice? What does d represent?

7. How long does it take a train to travel 1 km if it starts from rest and accelerates at 4 m/s²?

8. What is the initial velocity of a person that travels 10 m in 3 seconds accelerating at 0.25 m/s^2 ?