PYP 001
Quiz # 2 (A)

Name: **ID :**

1. A ball is thrown straight upward with an initial speed of 35 m/s. Find its maximum height.

        Ans. time to maximum height is 3.5 s. d = 61.25 m

2. A rock falls freely from rest for 4 seconds. What is its average velocity during this time?

        Ans. initial v=0, final v=40 m/s. Average v=20 m/s.

3. A ball is thrown straight upward from ground with an initial speed of 40 m/s. The ball will be in air for about how many seconds.

        Ans. 4 s (up) + 4 s (down) = 8 s.

4. A truck travels on a straight road for 60 km at 40 km/h. It then continues in the same direction for another 40 km at 80 km/h. What is the average speed of the car?

        Ans. first trip: d= 60 Km, t=d/v=60/40 = 3/2 h

          Second trip: d= 40 Km, t=d/v=40/80=1/2 h

          Average speed = total distance/total time = (60+40)/(3/2+1/2)=100/2=50 m/s

5. A truck on a straight road starts from rest and accelerates at 2.0 m/s^2 until it reaches a speed of 20 m/s. Then the truck travels for 20 s at a constant speed 20 m/s until the brakes are applied, stopping the car in a uniform manner in an additional 5.0 s. What is the average speed of the truck during the motion?

        Ans. first trip:
$$v = v_0 + at \Rightarrow t = (v - v_0)/a = 10 \text{ s}$$
$$d = \bar{v}t = 10 \times 10 = 100m$$
                Second trip: $t = 20$ s and $d = \bar{v}t = 20 \times 20 = 400$ m

                Last trip: $t = 5$ s, and $\bar{v} = 10$ m/s, and $d = \bar{v}t = 50$ m.

                Average speed $= d/t = (100 + 400 + 50)/(10 + 20 + 5) = 15.7$ m/s

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1. A car travels on a straight road for 40 km at 30 km/h. It then continues in the same direction for another 20 km at 60 km/h. What is the average velocity of the car?

　　　　Ans. 36 m/s

2. A ball is thrown straight up in the air with an initial speed of 30 m/s. What is the change in its velocity during 1 second interval before it reaches its maximum height?

　　　　Ans. change is speed in 1 second = acceleration = 10 m/s/s

3. A rock falls freely from rest. What is the distance traveled by the rock between the t=2 s and t=3 s?

　　　　Ans.　At t=2, $d = \frac{1}{2} \times 10 \times (2)^2 = 20$ m/s

　　　　　　　At t=3, $d = \frac{1}{2} \times 10 \times (3)^2 = 45$ m/s

　　　　　　　So the distance traveled is 45-20 = 25 m.

4. A ball is thrown straight up in the air. What is its velocity 3 seconds before it reaches its maximum height?

　　　　Ans. the velocity is 30 m/s upward.

5. A car on a straight road starts from rest and accelerates at 3.0 m/s^2 until it reaches a speed of 30 m/s. Then the car travels for 50 s at a constant speed 30 m/s until the brakes are applied, stopping the car in a uniform manner in an additional 5.0 s. What is the average speed of the car during the motion?

　　　　　　　Ans. Follow steps in solution of quiz (A)