Unit 1 Worksheet 9: Horizontal Motion with Acceleration

Example Problems

1. **A boy is making a race car for the cub scouts. He places the car on a 4 m inclined ramp and lets it go. How fast did the car accelerate if it took 5.3 s to make it to the bottom?**

    Givens:

    Equation:

    Show Work:

    Answer:

2. **Monica is walking to the hair dresser's at 1.3 m/s when she glances at her watch and realizes that she is going to be late for her appointment. Monica gradually quickens her pace at a rate of 0.09 m/s². What is Monica's speed after 10 s?**

    Givens:

    Equation:

    Show Work:

    Answer:

3. IF A JAGUAR CAN ACCELERATE AT 1.73 M/S², WHAT IS THE SPEED OF THE CAT AFTER IT TRAVELS 15 M IF IT STARTED FROM REST? IF THE JAGUAR'S TOP SPEED IS 40 M/S, DID IT ACCELERATE FOR THE WHOLE 15 M?

Givens:

Equation:

Show Work:

Answer:

1. A CAR STARTS FROM REST AND ACCELERATES AT 0.3 M/S². WHAT IS THE SPEED OF THE CAR AFTER IT HAS TRAVELED 25 M?

2. A CAR ACCELERATES UNIFORMLY FROM REST TO A VELOCITY OF 40 MI/HR IN 12 S. (A) FIND THE CHANGE IN POSITION OF THE CAR DURING THE TIME AND (B) THE CONSTANT ACCELERATION OF THE CAR.

3. A CAR, INITIALLY TRAVELING AT 20 M/S, ACCELERATES AT A UNIFORM RATE OF 4 M/S² FOR A DISPLACEMENT OF 50 M. HOW MUCH TIME IS REQUIRED TO HAVE THIS CHANGE IN POSITION?

4. AN ELECTRON MOVING IN A STRAIGHT LINE HAS AN INITIAL VELOCITY OF 3.0 X 10⁵ M/S. IF IT UNDERGOES AN ACCELERATION OF 8.0 X 10¹⁴ M/S², (A) HOW LONG WILL IT TAKE TO REACH A VELOCITY OF 5.4 X 10⁵ M/S AND (B) HOW FAR WILL IT HAVE TRAVELED IN THIS TIME PERIOD?

5. A RACING CAR REACHES A VELOCITY OF 40 M/S. AT THIS INSTANT, IT BEGINS A UNIFORM ACCELERATION USING A PARACHUTE AND A BRAKING SYSTEM THAT CAUSES THE CAR TO COME TO A REST IN 5 S. (A) DETERMINE THE ACCELERATION OF THE CAR. (B) HOW FAR DOES THE CAR TRAVEL AFTER THE ACCELERATION STARTS?