HARI VIDYA BHAWAN
Worksheet - 8
Class- IX
Subject- Science
**Session- 2020-21**
Ch- 8 Motion

Date-15/04/2020

Instructions to be followed:

➢ Students do your worksheet in any notebook such as rough notebook, previous year notebook, rough sheets etc. Whichever is available at your home? No need to go outside.

➢ All the student must complete their worksheets as Periodic Test-I marks will be given to those who completes it else you will have to go through pen paper test after the school reopens

➢ See video links in every worksheet as it will help you to understand the topic.

➢ If you have any query related to worksheet, ask your queries in whatsApp group between 10:00am to 12:00 pm in the morning and 4:00 to 6:00pm in the evening.

➢ All the students must download NCERT app in order to read the chapter and also to write answer of the exercise.
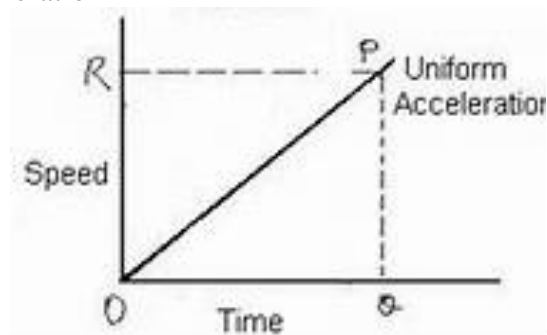
Graphical Representation of Motion

Speed -Time Graphs (Velocity–Time graphs)-

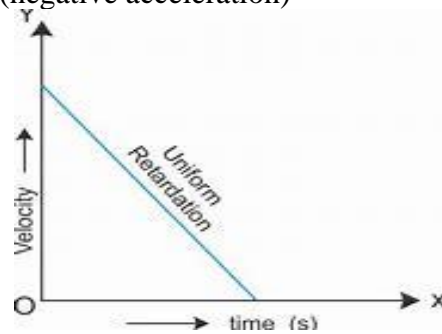**1.**Speed -Time Graphs when the speed remains constant:
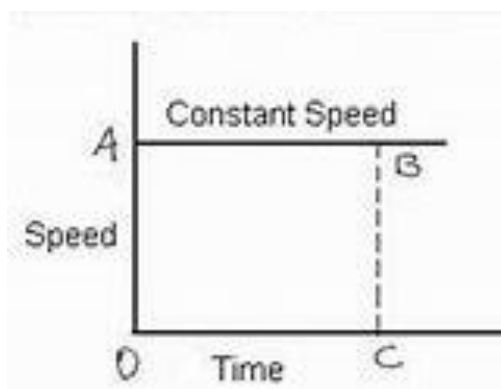
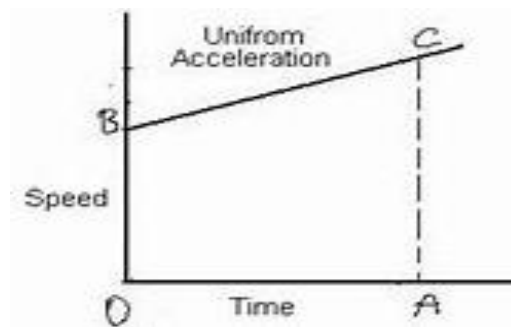**2.** Speed -Time Graphs when the speed changes at a Uniform Rate (Uniform Acceleration):

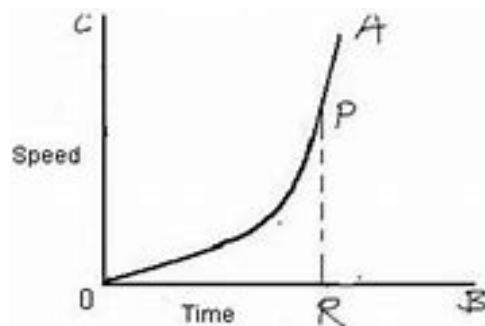(a) Uniform Acceleration-

(b) Uniform Retardation (negative acceleration)-

**3.** Speed -Time Graphs when the initial speed of the body is not zero:

4. Speed -Time Graphs when the speed changes at a Non- uniform Rate (Non-uniform Acceleration):

Example problem: Study the speed- time graph of a body given here and answer the following questions:

(a) What type of motion is represented by AB?
(b) What type of motion is represented by BC?
(c) What type of motion is represented by CD?
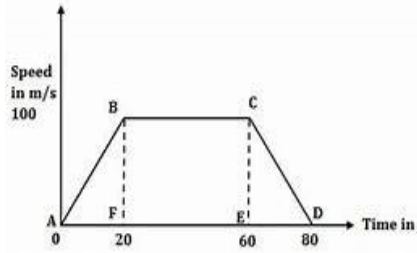
Solution:
(a) AB is sloping upwards from A to B, therefore represents uniform acceleration.
(b) BC is a straight line parallel to the time axis, represents uniform or constant speed. There is no acceleration.
(c) CD is sloping downwards from C to D, therefore represents uniform retardation (or negative acceleration).

To derive the Equation of Motion by Graphical method:-

(i) 1st equation : v= u+at
From velocity –time graph the body has initial velocity u at point A and then its velocity changes at a uniform rate from A to B in time t (OC or AD). Suppose there is a uniform acceleration a from A to B and after t time its final velocity becomes v which is equal to BC in the graph.

Now, initial velocity of the body u = OA
And   Final velocity   v = BC

$$BC = BD + DC$$
$$v = BD + DC$$
$$v = BD + OA \qquad \{DC = OA\}$$
$$v = BD + u$$

We know that the slope of velocity-time graph is equal to acceleration, a.

Thus,   Acceleration, a = $\dfrac{\text{Change in velocity}}{\text{Time taken}}$

$$= \dfrac{BC - DC}{AD}$$

$$a = \dfrac{BD}{t} \qquad \{BC\text{-}DC = BD \text{ and } AD = t\}$$

$$BD = at$$
$$v - u = at \qquad \{BD = v\text{-}u\}$$
$$\mathbf{v = u + at}$$
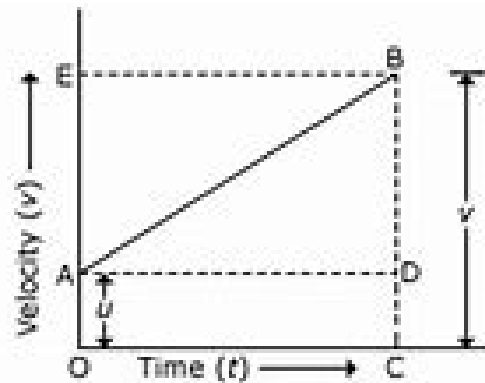
(ii) 2nd equation: s = ut+1/2at^2
Suppose the body travelled a distance s in time t. The distance travelled by the body is given by the area of the space between the velocity-time graph AB and OC, which is equal to the area of OABC.

Thus,   Distance travelled = Area of figure OABC
                                s = area of rectangle OADC + Area of triangle ABD

$$s = (OA \times OC) + (\frac{1}{2} \times AD \times BD)$$

$$s = u \times t + \frac{1}{2} \, t \times at^2$$

$$\mathbf{s = ut + \frac{1}{2} at^2}$$

(iii) 3ʳᵈ equation: $\mathbf{v^2 = u^2 + 2as}$

The distance travelled s by a body in t time is by the area of the figure OABC which is a trapezium.

So that Distance travelled, s = Area of Trapezium OABC

$$s = \frac{(Sum\ of\ parallel\ sides) \times height}{2}$$

$$s = \frac{OA + CB) \times OC}{2}$$

$$s = \frac{u + v \times t}{2}$$

$$s = \frac{(u + v) \times (v - u)}{2a} \qquad \{from\ 1^{st}\ equation\ t = v-u/a\}$$

$$2as = v^2 - u^2 \qquad \{\ v+u \times v-u = v^2 - u^2\}$$

$$\mathbf{v^2 = u^2 + 2as}$$

Note- Where u= initial velocity
V= final velocity
a= acceleration
s= displacement
t= time taken

Uniform Circular Motion-

When an object moves on a circular path, is called circular motion.

E.g. Motion of satellite around the Earth, An athlete moving on circular track, motion of tip of seconds' hand of a watch.

$$Circular\ motion,\ v = \frac{2\pi r}{t}$$

Where   v= speed
π= 22/7 (constant)
r = radius of circular path
t = time taken to complete one round of circular path.

Example: A cyclist goes around a circular track once every 2 minutes. If the radius of the circular track is 105 meters, calculate his speed. (π= 22/7)

r= 105m, t= 2min= 2× 60= 120 sec, v=?

$$v = \frac{2\pi r}{t}$$

$$v = \frac{2 \times 22 \times 105}{7 \times 120}$$

$$v = 5.5\ m/s$$

Answer the following questions:

Q.1 What can you say about the motion of an object if its speed-time graph is a straight line parallel to the time axis?

Q.2 What is the quantity which is measured by the area occupied below the velocity-time graph?

Q.3 A busstarting from rest moves with a uniform accelerationof $0.1 ms^{-2}$ for 2 minutes. Find :
  (a) the speed acquired
  (b) the distance travelled.

Q.4 A train is travelling at a speed of 90 km h^{-1}. Brakes are applied so as to produce a uniform acceleration of, -0.5 ms^{-2}. Find how far train will go before it is brought to rest.

Q.5 A trolley, while g1oing down an inclined plane, has an acceleration of $2 cm\ s^{-2.}$ What will be its velocity 3 s after the start?

Q.6 A racing car has a uniform acceleration of $4ms^{-2}$. What distance will it cover in 10 s after start?

Q.7 A stone is thrown in vertically upward direction with a velocity of $5m\ s^{-1}$. If the acceleration of the stone during its motion is $10\ m\ s^{-2}$ in the downward direction, what will be the height attained by the stone and how much time will it take to reach there?

Q.8 An athlete completes one round of a circular track of diameter 200m in 40 s. What will be the distance covered and the displacement at the end of 2 minutes 20 s?

Q.9 Joseph jogs from one end A to the other end of B of a straight 300 m road in 2 minutes 30 seconds and then turns around and jogs 100 m back to point C in another 1 minute. What are Joseph's average speeds and velocities in jogging?
  (a) From A to B?
  (b) From A to C?

Q.10 Abdul while driving to school, computes the average speed for his trip to be 20 km h^{-1}. On his return trip along the same route, there is less traffic and the average speed 30 km h^{-1}. What is the average speed for Abdul's trip?

Q.11 A motorboat starting from rest on a lake accelerates in a straight line at a constant rate of $3.0\ m\ s^{-2}$ for 8.0 s. How far does the boat travel during this time?

Q. 12 A driver of a car travelling at 52 kmh^{-1} applies the brakes and accelerates uniformly in the opposite direction. The car stops in 5 s. Another driver going at 34 kmh^{-1} in another car applies his brakes slowly and stops in 10 s. On the same graph paper, plot the speed versus time graphs for the two cars. Which of the two cars travelled after the brakes were applied?

Q.13 A ball is gently dropped from a height of 20 m. If its velocity increases uniformly at the rate of $10m\ s^{-2}$, with what velocity will it strike the ground? After what time will it strike the ground?

Q.15 An artificial satellite is moving in a circular orbit of radius 42250 km. Calculate its speed if it takes 24 hours to revolve around the earth.

NOTE:

➢ **Above questions are given from NCERT blue box questions and exercise (page no 100, 109, 110, 112 & 113). For solution check the NCERT solution app.**

➢ **Click over the link to understand speed time graph:**
https://youtu.be/IajBmAJz7TQ

➢ **Click over the link to understand the derivation of equations of motion:**
https://youtu.be/A0OcCWUIGIk

HARI VIDYA BHAWAN
Subject: English
Class-X
Work sheet-8
Chapter-1 A Triumph Of Surgery (Foot Print Without Feet)

DATE:- 15/04/2020,

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Questions for practice:-Learn and write.

Q 1. Why is Mrs. Pumphrey worried about Tricki?

Q 2. What does she do to help him? Is she wise in this?

Q 3. Is the narrator as rich as Tricki's mistress?

Q 4. How does narrator treat the dog?

Q 5. Why is he tempted to keep Tricki on as permanent guest?

Q 6. Why does Mrs. Pumphrey think the dog's recovery is a triumph of surgery?

Q 7. What kind of a person do you think the narrator, a veterinary surgeon, is? Would you say he is tactful as well as of common sence?

Q 8. Do you think Tricki was happy to go home? What do you think will happen now?

Link :- **https://youtu.be/UmNBUIkiZGs**

GRAMMAR WRITING (SECTION-B)

Q1. Write a story in 100-150 words beginning with "Neeru" was getting late for work she grabbed her bag from the chair and rushed towards the door when……….."

Link:- **https://youtu.be/Xf9HNkfqtkI**

Hari Vidya Bhawan
Worksheet-8
Class-X
Subject- Information Technology

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L-3   Information and communication technology skills-II

Question and answers

Q.1 Why is sorting necessary?

Q.2 If you want to see only specific row in a worksheet, which feature should you apply?

Q.3 Write steps to unprotect the excel worksheet.

Q.4 Write the steps to protect a workbook for modifying using password to open the password to modify.

Q.5 Suppose a file is created MS.-Excel with difference formatting techniques and later it is saved as CSV file. What happened when a CSV file is again opened in MS. Excel?

Q.6 What are the benefits of using Power Point?

Q.7 Why business and professional firms used presentation?

Q.8 Write steps to save your Power Point presentation.

Q.9 Define the Placeholder.

Q.10 What type of text formatting can you do with Font group command?

Q.11 Write the text selection method for word, sentence and whole paragraph.

Q.12 Differentiate between increase font size and decrease font size commands.

Q.13 Name three technical terms regarding text effects.

> **Note:- do all these questions of chapter-3 from your ix class book , notebook or x class book because these all questions are same as questions we have done in ix class notebook. So you have to do all these questions own-self and you all can help each other to complete these questions with sharing answers if anybody need answers of any question.**

OR

> **Watch this link video for the answers of following questions**

https://www.youtube.com/watch?v=eQqR104nvZ8 (protect /unprotect worksheet)
https://www.youtube.com/watch?v=O28-xL5YGkE (sort/filter)
https://www.youtube.com/watch?v=S5SGjRYrEdw (benefits of PPT)