

NEW STANDARD ACADEMY

CLASS : 9TH

Marks: 80

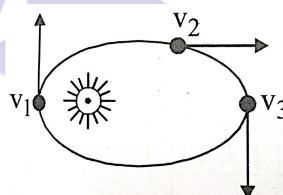
Time: 3 HRS

PHYSICS

1. A body weight is 63 N on the surface of the earth. What is the gravitational force on it due to the earth? Mass of the earth = 6×10^{24} kg and radius of the earth = 6.4×10^6 m. The distance of the body from the surface of earth is equal to half the radius of earth.
2. What are the differences between the mass of an object and its weight?
3. (a) What do you mean by acceleration due to gravity?
(b) What is the value of "g" on the surface of the earth?
(c) On what factors, does the value of "g" depend?
4. Give reason :
(i) What is meant by acceleration due to gravity?
(ii) Value of 'g' is not constant on the surface of earth.
(iii) Objects of different masses take same time to fall from a fixed height.
(iv) 'G' is known as gravitational constant ? Write its SI unit.
5. Calculate the force of gravitation between two objects of masses 50 kg and 120 kg respectively, kept at a distance of 10 m from each other. ($G=6.673 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$).
6. (a) Differentiate between 'G' and 'g'.
(b) Is the value of 'g' same everywhere on earth? Reason out.
(c) How does the gravitational force between two objects change if distance between them tripled?
7. (a) An object has mass 1 kg and weight 1.67 N on moon. Calculate its weight and mass on earth. ($g = 10 \text{ ms}^{-2}$)
(b) Calculate the force exerted by sun on earth and earth on sun if mass of sun is 2×10^{30} kg, mass of earth is 6×10^{24} kg,

average distance 1.5×10^{11} m between them

8. The velocity of a planet revolving around the sun at three different times of a year is shown in the figure. Which has more and which has less velocity



9. The gravitational force between two masses kept in air at a certain distance is x N. The same two masses are now kept in water and the distance between them are same. The gravitational force between these masses in water is y N. Then relation between x and y
10. At a certain place, value of g is 1% less than its value on the surface of Earth. If the radius of Earth is given to be 6400 km, then the place is how high or below from surface.

CHEMISTRY

1. The teacher instructed three students A, B and C respectively to prepare a 50% (mass by volume) solution of sodium hydroxide (NaOH). 'A' dissolved 50 g of NaOH in 100 mL of water. 'B' dissolved 50 g of NaOH 100 g of water. The student 'C' dissolved 50 g of NaOH in water to make 100 mL of solution. Which one of them has made the desired solution and why?
2. Calculate the mass of potassium sulphate required to prepare its 10 percent (mass percent) solution in 100g of water.
3. What volumes of ethyl alcohol and water must be mixed together to prepare 250 ml of 60 percent volume by volume solution of alcohol in water?

- Two students Ramesh and Alka were required to prepare 10 percent (mass/mass) solution of sodium chloride in water. For that, Ramesh dissolved 10 g of the salt in 100 g of water while Alka dissolved 10g of the salt in 100 g of the solution. Which out of the two prepared the correct solution?
- How much water should be mixed with 12 mL of alcohol so as to obtain 12% alcohol solution?
- Name the type of colloids in each of the following giving an example of each.

| | Dispersed Phase | Dispersing Medium |
|---|-----------------|-------------------|
| A | Liquid | Gas |
| B | Liquid | Liquid |
| C | Liquid | Solids |
- Give an example for each of following
 - Solid –liquid homogeneous mixture
 - Gas – Gas homogeneous mixture
- List any three differences between true solution and suspension.
- A solution contains 50 g of sugar in 450 g of water. Calculate the concentration in terms of mass by mass of the solution.
- Give two differences between pure substances and mixtures. Give one example of each.

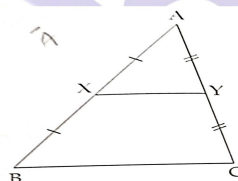
BIOLOGY

- Draw the neat & clean diagram of chloroplast & labeled it.
- What do you mean by membrane biogenesis?
- Differentiate between chromoplasts and leucoplasts.
- Differentiate between rough and smooth Endoplasmic reticulum.
- Name the cell organelles which is non membranous.
- Why do plant cells posses large sized vacuole?
- What would happen to the life of a cell if there was no Golgi apparatus?
- Can you name the two organelles we have studied that contain their own genetic material?
- Why are Lysosomes known as suicidal bag of cell?
- Which kind of plastid is more common in :
 - Roots of the plant
 - Leaves of the plant

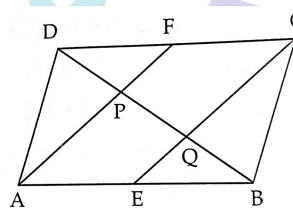
c) Flower and fruit

MATHS

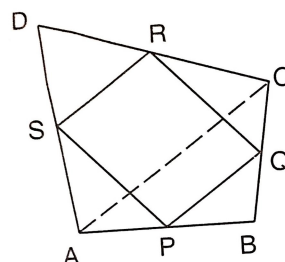
- In a quadrilateral ABCD, OA and OB are bisectors of $\angle A$ and $\angle B$ respectively. Prove that $\angle AOB = \frac{1}{2}(\angle C + \angle D)$.
- ABCD is a rectangle in which diagonal BD bisects $\angle B$. Show that ABCD is a square.
- In the adjoining figure, X and Y are mid-points of sides AB and AC respectively of $\triangle ABC$. If $BC = 6$ cm, $AB = 7.4$ cm and $AC = 6.4$ cm, then find the perimeter of trapezium XBCY.



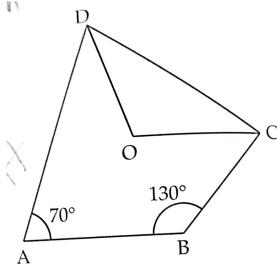
- Show that the line segments joining the mid-points of the opposite sides of a quadrilateral bisect each other
- In the adjoining figure, ABCD is a parallelogram and E, F are the mid-points of the sides AB, CD respectively. Show that the line segments AF and EC trisect the diagonal BD.



- In $\triangle ABC$, $AB = 5$ cm, $BC = 8$ cm and $CA = 7$ cm. If D and E are respectively the mid-points of AB and BC, determine the length of DE.
- In the adjoining figure, ABCD is a quadrilateral in which P, Q, R and S are mid-points of AB, BC, CD and DA respectively. AC is its diagonal. Show that
 - $SR \parallel AC$ and $SR = \frac{1}{2} AC$
 - $PQ = SR$
 - PQRS is a parallelogram.



8. In a quadrilateral, the angles are in a ratio 2:4:5:7 Find the difference between the greatest and the smallest angle
9. In the adjoining quadrilateral, $\angle A = 70^\circ$, $\angle B = 130^\circ$ and the bisectors of $\angle C$ and $\angle D$ meet at O . Find $\angle COD$



10. In a trapezium ABCD, $AB \parallel DC$. If angle $A = 83^\circ$ then find $\angle D$

