



Summer Vacation Homework (2025-26)

Class: XI Science

ENGLISH

- Design a poster on the topic – "Mental Health Matters."
- Cut out 5 clippings of classified Ads under the heads:- (Make a beautiful and attractive collage on half chart paper)
 - ❖ For Sale
 - ❖ To-let
 - ❖ Situation Vacant
 - ❖ Matrimonial
 - ❖ Tours & Travels
- Prepare a File for ASL on any poem from your text book.
- Interview Imagination
Write an imaginary interview between yourself and either: your future successful self, or your favourite fictional character.

MATHS

- Do NCERT Exercises of Chapter Trigonometric function in register
- Learn and write all formulae of Trigonometric function, Complex Numbers chart paper.

PHYSICS

- Do the given assignment sheets in your copy.

CHEMISTRY

- Solve the NCERT exercise of Unit-2 structure atom and Unit- 3 classification of elements in your notebook.

MUSIC

- Write and learn Raga 'BHARAVI' and Teen Taal with full introduction.

HINDI

- संचार व जनसंचार से आप क्या समझते हैं? जनसंचार के प्रमुख माध्यमों का उल्लेख करते हुये, इसके हानि व लाभ बताइये। कृपया उचित स्थान पर चित्र अवश्य लगाये।

COMPUTER SCIENCE/INFORMATICS PRACTICES

Activity 1: Python Program - Student Grade System

Objective:

Write a Python program to manage student grades. The program should:

Take the student's name and marks as input.

Calculate the grade based on the following criteria:

Grade A: Marks ≥ 90

Grade B: Marks ≥ 70 and < 90

Grade C: Marks ≥ 50 and < 70

Grade D: Marks < 50

Display the student's name, marks, and grade.

BIOLOGY

Write all questions answers of NCERT book of

- Living world
- Biological classification
- Plant kingdom
- Till plant kingdom only

PHYSICAL EDUCATION

Draw one yoga (asana) with name and write the benefits on a chart paper.

PSYCHOLOGY

Make a project file on Research methods used in psychology/stages of human development.

PAINTING

All the students you have to make all 10 paintings in your home.

- 3 paintings of nature drawing
- 3 paintings of still life
- 3 paintings of composition
- 1 folk painting(varli, madhubani, mandala)

Assignment – 1
Class 11 Physics - Units and Dimensions

Part A : Conceptual Questions.

1. Define the term "dimension" of a physical quantity.
2. What are fundamental and derived physical quantities? Give two examples of each.
3. Write the dimensional formula of force.
4. What is the dimensional formula of Planck's constant?
5. How is dimensional analysis used to check the correctness of a physical equation?
6. What are the limitations of dimensional analysis?
7. Find the dimensions of pressure.
8. Write the dimensional formula for gravitational constant (G).
9. Use dimensional analysis to derive an expression for the time period of a simple pendulum.
10. The speed v of a wave on a string depends on the tension T and the linear mass density μ . Use dimensional analysis to find the relation between them.
11. Check the dimensional consistency of the equation: $s = ut + \frac{1}{2}at^2$.
12. Derive the formula for kinetic energy using dimensional analysis.
13. Two quantities A and B have dimensions $[M^1L^2T^{-2}]$ and $[MLT^{-2}]$. Find the dimensions of A/B.
14. What is a dimensionless quantity? Give two examples.
15. If force is given by $F = ma$, what are the dimensions of a ?
16. What are the base SI units of mass, length, and time?
17. Find the dimensional formula for work and energy.
18. Define dimensional constants and give two examples.
19. Is it possible to add two quantities having different dimensions? Why or why not?
20. A quantity X is given by $X = A^2B/VC$, where A, B, and C have dimensions $[M]$, $[L/T]$, and $[ML^{-3}T^{-2}]$ respectively. Find the dimensions of X.

Part B: Numerical Questions

21. The speed of light is 3×10^8 m/s. Express it in km/h.
22. If the force is 10 N and acceleration is 2 m/s^2 , find the mass.
23. A physical quantity X is given by $X = (F \cdot d) / t$, where $F = 10 \text{ N}$, $d = 5 \text{ m}$, and $t = 2 \text{ s}$. Find the value and unit of X.
24. Convert 1 atmosphere pressure ($1 \text{ atm} = 1.013 \times 10^5 \text{ Pa}$) into dyne/cm^2 .
25. A body travels 50 m in 5 s. Find its speed in km/h using dimensional conversion.
26. The period of a pendulum is 2 s. Calculate the value of acceleration due to gravity using $T = 2\pi\sqrt{l/g}$, if the length is 1 m.
27. The universal gravitational constant G is $6.67 \times 10^{-11} \text{ Nm}^2\text{kg}^{-2}$. Express G in CGS units.
28. A velocity is given as 36 km/h. Convert it into m/s using unit analysis.
29. Derive the dimensions of energy using the equation $E = \frac{1}{2}mv^2$, where $m = 2 \text{ kg}$ and $v = 3 \text{ m/s}$.
30. Convert 10 joules of energy into erg ($1 \text{ J} = 10^7 \text{ erg}$).
31. If pressure $P = F/A$, and $F = 20 \text{ N}$, $A = 4 \text{ m}^2$, find P and check its dimensional formula.
32. The frequency of a wave is 50 Hz. What is its time period in seconds?
33. Convert 1 newton into dyne ($1 \text{ N} = 10^5 \text{ dyne}$).
34. A car covers a distance of 100 km in 2 hours. Find its average speed in m/s.
35. Calculate the dimensional formula of surface tension, given by force per unit length, and verify it using values: $F = 0.1 \text{ N}$, $L = 0.02 \text{ m}$.
36. The energy of a photon is given by $E = hv$. Find the dimensions of h if v has units of Hz.
37. A quantity $Q = mv^2/r$. If $m = 2 \text{ kg}$, $v = 4 \text{ m/s}$, $r = 2 \text{ m}$, find Q and its SI unit.
38. Determine the power when a work of 100 J is done in 25 seconds.
39. If kinetic energy is $KE = \frac{1}{2}mv^2$, find the KE of a 5 kg object moving at 10 m/s.
40. A body falls from a height of 20 m. Use dimensional analysis to estimate time taken using $h = \frac{1}{2}gt^2$, and $g = 9.8 \text{ m/s}^2$.

Assignment – 2
Class : XI Physics (Vector)

Part A: Conceptual Questions

1. Define a vector quantity and give two examples.
2. What is the difference between scalar and vector quantities?
3. Define unit vector and write its significance.
4. What is the triangle law of vector addition?
5. Explain the parallelogram law of vector addition.
6. State the polygon law of vector addition.
7. How is the direction of a vector represented geometrically?
8. What is meant by the resolution of a vector?
9. Write the formula for resolving a vector in a plane.
10. What is a null vector?
11. What is meant by equal vectors?
12. Define the dot (scalar) product of two vectors.
13. Define the cross (vector) product of two vectors.
14. Give one physical example of dot product.
15. Give one physical example of cross product.
16. What is the condition for two vectors to be perpendicular?
17. What is the condition for two vectors to be parallel?
18. Can two vectors of unequal magnitude add up to give zero? Explain.
19. What is the angle between two perpendicular vectors?
20. How do you represent a vector in component form?

Part B: Numerical Questions

21. Find the magnitude of a vector with components $3\mathbf{i} + 4\mathbf{j}$.
22. Two vectors $A = 5\mathbf{i} + 2\mathbf{j}$ and $B = 3\mathbf{i} - \mathbf{j}$. Find $A + B$.
23. Find the angle between vectors $A = 2\mathbf{i} + 2\mathbf{j}$ and $B = 2\mathbf{i} - 2\mathbf{j}$.
24. Calculate the unit vector in the direction of $A = 6\mathbf{i} - 8\mathbf{j}$.
25. If $A = 3\mathbf{i} + 4\mathbf{j}$ and $B = \mathbf{i} - \mathbf{j}$, find the dot product $A \cdot B$.
26. If $A = 2\mathbf{i} + 3\mathbf{j} + \mathbf{k}$ and $B = \mathbf{i} + 4\mathbf{j} - \mathbf{k}$, find the cross product $A \times B$.
27. A vector of magnitude 10 makes an angle of 60° with the x-axis. Find its x and y components.
28. Find the resultant of two vectors of magnitude 10 and 20 making an angle of 60° between them.
29. Resolve a vector of 100 N making 30° with the horizontal into horizontal and vertical components.
30. Find the angle between two vectors of equal magnitude if their resultant is equal to one of the vectors.
31. Calculate the scalar projection of $A = 4\mathbf{i} + 3\mathbf{j}$ on $B = \mathbf{i} + \mathbf{j}$.
32. Two vectors have magnitudes 5 and 12 units and the angle between them is 90° . Find their resultant.
33. Find the vector difference $A - B$ if $A = 7\mathbf{i} + 2\mathbf{j}$ and $B = 3\mathbf{i} + 4\mathbf{j}$.
34. Find the work done when a force $F = 10\mathbf{i} + 5\mathbf{j}$ acts over a displacement $s = 2\mathbf{i} + 3\mathbf{j}$.
35. Calculate the area of a parallelogram formed by vectors $A = \mathbf{i} + 2\mathbf{j}$ and $B = 2\mathbf{i} + 3\mathbf{j}$ using cross product.
36. Find the component of vector $A = 3\mathbf{i} + 4\mathbf{j}$ along the x-axis.
37. Determine if the vectors $A = 2\mathbf{i} - 3\mathbf{j}$ and $B = -4\mathbf{i} + 6\mathbf{j}$ are parallel.
38. Find a unit vector perpendicular to both $A = \mathbf{i} + \mathbf{j} + \mathbf{k}$ and $B = \mathbf{i} - \mathbf{j} + \mathbf{k}$.
39. If vector $A = 4\mathbf{i} - 3\mathbf{j}$, find the magnitude and direction (angle with x-axis).
40. Calculate the angle between vectors $A = 2\mathbf{i} + \mathbf{j}$ and $B = \mathbf{i} + 2\mathbf{j}$ using dot product.