



Class 11 Physics | Units And Measurements

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Which pair has identical dimensions?

- A. Impulse and energy
- B. Work and torque
- C. Pressure and force
- D. Power and momentum

2. The SI unit of impulse is:

- A. N s B. J/s C. $\text{kg m}^2/\text{s}^2$ D. N/s

3. How many significant figures are in 0.004060?

- A. 3 B. 6 C. 2 D. 4

4. Round 6.374 to three significant figures.

- A. 6.38 B. 6.40 C. 6.37 D. 6.3

5. The dimensions of gravitational constant G are:

- A. $\text{M}^{-1}\text{L}^2\text{T}^{-2}$ B. $\text{M}^{-1}\text{L}^3\text{T}^{-2}$ C. ML^{-3}T^2 D. ML^3T^{-2}

6. If $x=at+bt^2$, the dimensions of b are:

- A. T^{-2} B. LT^{-2} C. LT^{-1} D. L^2T^{-2}

7. Which is a dimensionless quantity?

- A. Dynamic viscosity B. Stress
- C. Surface tension D. Strain

8. For a pendulum $T=kL^a g^b$, dimensional analysis gives:

- A. $a=1/2, b=-1/2$ B. $a=-1/2, b=1/2$
- C. $a=1, b=-1$ D. $a=1/2, b=1/2$

9. The value of 3.2×2.15 , with correct significant figures, is:

- A. 6.880 B. 7 C. 6.9 D. 6.88

10. Which is an SI base unit?

- A. Kelvin B. Joule C. Newton D. Pascal

11. The dimensions of Planck's constant are:

- A. MLT^{-1} B. ML^2T^{-1} C. MT^{-1} D. ML^2T^{-2}

12. A formula is dimensionally correct. It is:

- A. Always numerically exact
- B. Independent of all constants
- C. Not necessarily physically correct
- D. Always physically correct

13. Which addition is dimensionally allowed?

- A. Force + pressure
- B. Speed + acceleration
- C. Mass + density
- D. Energy + work

14. The correctly rounded sum $12.11+0.3$ is:

- A. 12.41 B. 12.410 C. 12 D. 12.4

15. If force, length and time are base quantities, mass has dimensions:

- A. FL^{-1}T^2 B. FLT^{-2} C. FL^2T^{-1} D. F^{-1}LT^2

ANSWER KEY — check after completing all 15 questions

1.B 2.A 3.D 4.C 5.B 6.B 7.D 8.A 9.C 10.A 11.B 12.C 13.D 14.D 15.A



Class 11 Physics | Motion In A Straight Line

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A car travels 60 m east and then 20 m west. Its displacement is:

- A. 80 m west B. 40 m east
C. 80 m east D. 40 m west

2. A body moves 100 m in 5 s and 100 m in 10 s. Average speed is:

- A. 20 m/s B. 15 m/s C. 13.3 m/s D. 10 m/s

3. Slope of a position-time graph represents:

- A. Velocity B. Distance C. Acceleration D. Force

4. Area under a velocity-time graph gives:

- A. Displacement B. Acceleration
C. Speed D. Jerk

5. A body starts from rest with acceleration 3 m/s^2 . Speed after 4 s is:

- A. 24 m/s B. 12 m/s C. 6 m/s D. 48 m/s

6. A car slows uniformly from 20 m/s to rest in 5 s. Distance travelled is:

- A. 20 m B. 50 m C. 100 m D. 25 m

7. For $x=2t^2+3t$ in SI units, velocity at $t=2 \text{ s}$ is:

- A. 14 m/s B. 7 m/s C. 11 m/s D. 8 m/s

8. For $x=4t^3$ in SI units, acceleration at $t=1 \text{ s}$ is:

- A. 24 m/s^2 B. 48 m/s^2 C. 12 m/s^2 D. 4 m/s^2

9. At the highest point of a vertical throw, neglecting air resistance:

- A. Velocity is zero; acceleration is downward
B. Both velocity and acceleration are zero
C. Acceleration is upward
D. Velocity is maximum

10. A stone is dropped from rest. Distance fallen in 3 s ($g=10 \text{ m/s}^2$) is:

- A. 45 m B. 30 m C. 90 m D. 15 m

11. A ball is thrown upward at 20 m/s. Time to return to launch height ($g=10$) is:

- A. 2 s B. 1 s C. 4 s D. 8 s

12. A negative acceleration implies that velocity:

- A. Is always negative
B. Must be zero
C. Always decreases in magnitude
D. Decreases algebraically with time

13. A horizontal position-time graph indicates:

- A. Increasing speed
B. Rest
C. Uniform acceleration
D. Constant nonzero speed

14. With uniform acceleration, speeds at 2 s and 6 s are 8 and 20 m/s. Acceleration is:

- A. 7 m/s^2 B. 3 m/s^2 C. 5 m/s^2 D. 2 m/s^2

15. A particle returns to its starting point after 8 s. Its average velocity is:

- A. 8 m/s
B. Equal to average speed
C. 0
D. Impossible to determine

ANSWER KEY — check after completing all 15 questions

1.B 2.C 3.A 4.A 5.B 6.B 7.C 8.A 9.A 10.A 11.C 12.D 13.B 14.B 15.C

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper



Class 11 Physics | Motion In A Plane

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. The magnitude of vector $3\mathbf{i}+4\mathbf{j}$ is:

A. 5 B. 25 C. 1 D. 7

2. Two perpendicular vectors have magnitudes 6 and 8. Their resultant has magnitude:

A. 10 B. 48 C. 14 D. 2

3. A vector of magnitude 10 makes 60° with $+\mathbf{x}$. Its x-component is:

A. 5 B. 10 C. $5\sqrt{3}$ D. $10\sqrt{3}$

4. The dot product of two perpendicular nonzero vectors is:

A. -1 B. 0 C. 1 D. Product of magnitudes

5. Two equal vectors of magnitude A at 120° have resultant magnitude:

A. $\sqrt{3}A$ B. 2A C. 0 D. A

6. A projectile has initial horizontal speed 12 m/s. Ignoring air drag, its horizontal speed after 2 s is:

A. 6 m/s B. 12 m/s C. 24 m/s D. 0

7. At the highest point of an oblique projectile:

- A. Total velocity is zero
- B. Acceleration is zero
- C. Vertical velocity is zero
- D. Horizontal acceleration equals g

8. A projectile is launched at 20 m/s and 30° on level ground. Flight time ($g=10$) is:

A. 4 s B. $\sqrt{3}$ s C. 1 s D. 2 s

9. For the same launch, maximum height is:

A. 20 m B. 15 m C. 10 m D. 5 m

10. For fixed speed on level ground, maximum range occurs at:

A. 30° B. 45° C. 60° D. 90°

11. Which launch angles give equal ranges at the same speed on level ground?

- A. 25° and 55° B. 30° and 45°
- C. 25° and 65° D. 40° and 60°

12. A body moves in a circle of radius 2 m at 6 m/s. Centripetal acceleration is:

A. 12 m/s^2 B. 18 m/s^2 C. 36 m/s^2 D. 3 m/s^2

13. In uniform circular motion, acceleration is directed:

- A. Along velocity
- B. Away from the centre
- C. Opposite velocity
- D. Toward the centre

14. A wheel turns at angular speed 4 rad/s. Speed of a point 0.5 m from its axis is:

A. 8 m/s B. 2 m/s C. 4.5 m/s D. 0.125 m/s

15. A river flows east at 3 m/s; a boat moves north at 4 m/s relative to water. Ground speed is:

A. 1 m/s B. 7 m/s C. 5 m/s D. 12 m/s

ANSWER KEY — check after completing all 15 questions

1.A 2.A 3.A 4.B 5.D 6.B 7.C 8.D 9.D 10.B 11.C 12.B 13.D 14.B 15.C



Class 11 Physics | Laws Of Motion

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A 4 kg body accelerates at 3 m/s^2 . Net force is:

A. 7 N B. 12 N C. 1.33 N D. 24 N

2. A constant 5 N force acts for 4 s. Impulse is:

A. 1.25 N s B. 10 N s C. 20 N s D. 9 N s

3. Action and reaction forces act on:

A. Different bodies
B. Only interacting charged bodies
C. Only stationary bodies
D. The same body

4. A passenger falls forward when a bus stops suddenly due to:

A. Loss of mass
B. Inertia of motion
C. An increased gravitational force
D. A forward force from the brakes

5. A 2 kg block on a smooth horizontal surface is pulled by 10 N. Acceleration is:

A. 20 m/s^2 B. 5 m/s^2 C. 0.2 m/s^2 D. 8 m/s^2

6. A 5 kg mass hangs at rest from a light string. Tension ($g=10$) is:

A. 50 N B. 100 N C. 5 N D. 0

7. A 60 kg person accelerates upward at 2 m/s^2 in a lift. Apparent weight ($g=10$) is:

A. 600 N B. 720 N C. 120 N D. 480 N

8. A body in a freely falling lift has apparent weight:

A. Zero B. $mg/2$ C. $2mg$ D. mg

9. A block has normal reaction 100 N and $\mu_s=0.4$. Maximum static friction is:

A. 250 N B. 40 N C. 4 N D. 100 N

10. A 10 N horizontal pull fails to move a block whose limiting friction is 20 N. Actual friction is:

A. 10 N B. 20 N C. 0 D. 30 N

11. Two 2 kg and 3 kg blocks move together on a smooth surface under 15 N. Acceleration is:

A. 7.5 m/s^2 B. 3 m/s^2 C. 15 m/s^2 D. 5 m/s^2

12. A 2 kg body changes velocity from 3 to 7 m/s in the same direction. Momentum change is:

A. 8 kg m/s B. 14 kg m/s
C. 4 kg m/s D. 20 kg m/s

13. A frictionless banked road of radius r and angle θ has safe speed:

A. $\sqrt{rg \tan \theta}$ B. $rg \tan \theta$ C. $\sqrt{rg \cot \theta}$ D. $\sqrt{g/r}$

14. A body is held at rest on a smooth incline of angle θ by a force parallel to the plane. Normal reaction is:

A. $mg \sin \theta$ B. $mg \tan \theta$ C. $mg/\cos \theta$ D. $mg \cos \theta$

15. A ball of mass 0.2 kg moves in a circle at 5 m/s with radius 0.5 m. Net radial force is:

A. 10 N B. 5 N C. 2 N D. 20 N

ANSWER KEY — check after completing all 15 questions

1.B 2.C 3.A 4.B 5.B 6.A 7.B 8.A 9.B 10.A 11.B 12.A 13.A 14.D 15.A



Class 11 Physics | Work, Energy And Power

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A 10 N force acts at 60° to a 4 m displacement. Work done is:

A. 0 B. 20 J C. 10 J D. 40 J

2. Work done by the centripetal force in uniform circular motion is:

A. Positive
B. Zero
C. Equal to kinetic energy
D. Negative

3. Kinetic energy of a 2 kg body moving at 3 m/s is:

A. 6 J B. 9 J C. 18 J D. 3 J

4. If speed doubles at fixed mass, kinetic energy becomes:

A. Unchanged B. Half C. Four times D. Twice

5. A net work of 30 J acts on a body initially having 20 J kinetic energy. Final kinetic energy is:

A. 25 J B. 600 J C. 10 J D. 50 J

6. A spring of $k=200$ N/m is compressed by 0.1 m. Stored energy is:

A. 10 J B. 1 J C. 2 J D. 20 J

7. A pump raises 20 kg of water by 5 m in 2 s. Useful power ($g=10$) is:

A. 1000 W B. 200 W C. 50 W D. 500 W

8. A motor supplies force 100 N along motion at 3 m/s. Power is:

A. 33.3 W B. 103 W C. 900 W D. 300 W

9. Which force is conservative?

A. Viscous drag B. Kinetic friction
C. Air resistance D. Gravitational force

10. A ball falls through 5 m from rest. Speed just before impact ($g=10$; no drag) is:

A. 50 m/s B. 20 m/s C. 5 m/s D. 10 m/s

11. In a perfectly elastic collision of an isolated system, which are conserved?

A. Momentum and kinetic energy
B. Only kinetic energy
C. Only potential energy
D. Only speed of each body

12. Two equal masses collide head-on and stick. Initial velocities are +6 and 0 m/s. Common velocity is:

A. 6 m/s B. 0 C. 12 m/s D. 3 m/s

13. For $U(x)=3x^2$ in SI units, force at $x=2$ m is:

A. -3 N B. 12 N C. -6 N D. -12 N

14. A force rises linearly from 0 to 10 N over 4 m. Work done is:

A. 20 J B. 80 J C. 10 J D. 40 J

15. A 1 kg body has momentum 4 kg m/s. Kinetic energy is:

A. 2 J B. 8 J C. 16 J D. 4 J

ANSWER KEY — check after completing all 15 questions

1.B 2.B 3.B 4.C 5.D 6.B 7.D 8.D 9.D 10.D 11.A 12.D 13.D 14.A 15.B

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper



Class 11 Physics | System Of Particles And Rotational Motion

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Masses 2 kg and 3 kg are at $x=0$ and $x=10$ m. Centre of mass is at:

A. 4 m B. 5 m C. 6 m D. 8 m

2. With zero net external force, the centre of mass has:

A. Constant velocity
B. Circular motion necessarily
C. Constant nonzero acceleration
D. Zero velocity necessarily

3. A 10 N force acts perpendicular to a 0.3 m lever arm. Torque is:

A. 3 N m B. 10.3 N m C. 0.03 N m D. 30 N m

4. The SI unit of angular momentum is:

A. kg m/s B. J/s C. N/m D. kg m²/s

5. A rotating body has $I=2$ kg m² and $\omega=3$ rad/s. Kinetic energy is:

A. 18 J B. 3 J C. 9 J D. 6 J

6. A torque of 12 N m acts on $I=4$ kg m². Angular acceleration is:

A. 8 rad/s² B. 48 rad/s²
C. 0.33 rad/s² D. 3 rad/s²

7. A uniform ring about its central axis perpendicular to its plane has I equal to:

A. $MR^2/4$ B. MR^2 C. $2MR^2/5$ D. $MR^2/2$

8. A uniform disc about its central axis perpendicular to its plane has I equal to:

A. $2MR^2$ B. $MR^2/2$ C. MR^2 D. $MR^2/12$

9. A skater reduces moment of inertia to half with no external torque. Angular speed:

A. Doubles B. Remains unchanged
C. Halves D. Quadruples

10. Angular momentum is conserved when net external:

A. Energy is zero B. Force is nonzero
C. Torque is zero D. Power is constant

11. A body has $I=0.18$ kg m² and mass 2 kg. Radius of gyration is:

A. 0.09 m B. 0.36 m C. 0.3 m D. 0.6 m

12. A force acts along a line through the pivot. Its torque about the pivot is:

A. Maximum
B. Zero
C. Equal to force
D. Equal to angular momentum

13. For equilibrium of a rigid body, which must vanish?

A. Only net torque
B. Net force and net torque
C. Only net force
D. All individual forces

14. A wheel starts from rest at constant $\alpha=2$ rad/s². Angle turned in 3 s is:

A. 18 rad B. 3 rad C. 6 rad D. 9 rad

15. A particle has $r=2i$ m and $p=3j$ kg m/s. Angular momentum is:

A. 6k kg m²/s B. 0 C. -6k kg m²/s D. 5k kg m²/s

ANSWER KEY — check after completing all 15 questions

1.C 2.A 3.A 4.D 5.C 6.D 7.B 8.B 9.A 10.C 11.C 12.B 13.B 14.D 15.A

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper



Class 11 Physics | Gravitation

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. The gravitational force between two masses is F . Doubling their separation makes it:

A. $F/2$ B. $2F$ C. $4F$ D. $F/4$

2. The value of g at height equal to Earth's radius is:

A. $g_0/8$ B. $2g_0$ C. $g_0/2$ D. $g_0/4$

3. At Earth's centre, assuming spherical symmetry, g is:

A. g_0 B. Zero C. Infinite D. $2g_0$

4. Gravitational potential energy of masses M and m separated by r , zero at infinity, is:

A. GMm/r^2 B. GMm/r C. $-GMm/r^2$ D. $-GMm/r$

5. Escape speed from a planet depends on the projectile's:

A. Neither mass nor launch direction for fixed location and no drag
B. Density only
C. Mass only
D. Volume only

6. A planet has twice Earth's mass and twice Earth's radius. Surface g is:

A. $g_0/4$ B. $2g_0$ C. $g_0/2$ D. g_0

7. Orbital speed in a circular orbit of radius r is:

A. GM/r^2 B. $2\pi r$ C. $\sqrt{GM/r}$ D. $\sqrt{2GM/r}$

8. If orbital radius becomes four times, circular orbital speed becomes:

A. Half B. One-fourth C. Double D. Four times

9. For circular orbits, T^2 is proportional to:

A. r B. r^2 C. $1/r$ D. r^3

10. A satellite's orbital radius becomes four times. Its period becomes:

A. Two times B. Eight times
C. Four times D. Sixteen times

11. A satellite in orbit appears weightless because it is:

A. In continuous free fall
B. At zero potential
C. Outside all gravitational fields
D. Of zero mass

12. For a circular orbit, total mechanical energy is:

A. $-GMm/(2r)$ B. 0 C. $-GMm/r$ D. $GMm/(2r)$

13. Escape speed is how many times circular speed at the same radius?

A. $\sqrt{2}$ B. 4 C. 2 D. $1/\sqrt{2}$

14. For a uniform-density Earth, g at depth $R/2$ is:

A. $g_0/2$ B. $g_0/4$ C. $2g_0$ D. 0

15. Kepler's equal-area law follows from conservation of:

A. Kinetic energy alone
B. Angular momentum
C. Linear momentum of the planet alone
D. Linear speed

ANSWER KEY — check after completing all 15 questions

1.D 2.D 3.B 4.D 5.A 6.C 7.C 8.A 9.D 10.B 11.A 12.A 13.A 14.A 15.B



Class 11 Physics | Mechanical Properties Of Solids

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A wire of cross-section $2 \times 10^{-6} \text{ m}^2$ carries 20 N tension. Stress is:

- A. 10^8 Pa B. $4 \times 10^{-5} \text{ Pa}$ C. 10^6 Pa D. 10^7 Pa

2. A 2 m wire extends by 1 mm. Strain is:

- A. 2×10^3 B. 2×10^{-3} C. 5×10^{-3} D. 5×10^{-4}

3. Young's modulus is the ratio of:

- A. Strain to stress
B. Force to length
C. Longitudinal stress to longitudinal strain
D. Pressure to volume

4. SI unit of Young's modulus is:

- A. N B. Pa C. m D. J

5. Within the proportional limit, Hooke's law states:

- A. Stress is inversely proportional to strain
B. Stress equals force
C. Strain is always zero
D. Stress is proportional to strain

6. For equal stress, a material with greater Young's modulus has:

- A. Greater strain B. Equal strain always
C. Zero stress D. Smaller strain

7. A wire's length doubles at fixed material, area and load. Extension becomes:

- A. Four times B. Twice C. Half D. Unchanged

8. A wire's radius doubles at fixed length, load and material. Extension becomes:

- A. Half B. One-fourth C. Twice D. Four times

9. A wire stores elastic energy under gradually applied force F and extension x . Energy is:

- A. $2Fx$ B. $Fx/2$ C. Fx D. F/x

10. Bulk modulus measures resistance to:

- A. Only shape change at constant volume
B. Volume change
C. Temperature change
D. Electric current

11. A material's bulk modulus is $2 \times 10^9 \text{ Pa}$. Pressure 10^6 Pa causes fractional volume decrease:

- A. 2×10^3 B. 5×10^{-3} C. 2×10^{-3} D. 5×10^{-4}

12. Shear modulus relates tangential stress to:

- A. Volume strain B. Longitudinal force
C. Temperature D. Shear strain

13. For a given small longitudinal strain, elastic energy per unit volume is:

- A. $2Y(\text{strain})^2$ B. $Y/(\text{strain})^2$
C. $Y(\text{strain})^2/2$ D. $Y(\text{strain})$

14. Steel is more elastic than rubber in the modulus sense because steel has:

- A. Larger breaking strain
B. Smaller restoring force at equal strain
C. Larger Young's modulus
D. Lower density

15. Two identical wires in parallel share the same total load. Extension compared with one wire is:

- A. Twice B. Four times C. Half D. Unchanged

ANSWER KEY — check after completing all 15 questions

1.D 2.D 3.C 4.B 5.D 6.D 7.B 8.B 9.B 10.B 11.D 12.D 13.C 14.C 15.C



Class 11 Physics | Mechanical Properties Of Fluids

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Pressure at depth h in a liquid of density ρ exceeds surface pressure by:

- A. gh/ρ B. ρgh C. $\rho g/h$ D. $\rho h/g$

2. A point 2 m below water surface has gauge pressure ($\rho=1000$, $g=10$):

- A. 200 kPa B. 0.2 kPa C. 2 kPa D. 20 kPa

3. A hydraulic press has piston areas in ratio 1:20. A 50 N input produces ideally:

- A. 50 N B. 20 N C. 1000 N D. 2.5 N

4. A floating body displaces liquid whose weight is:

- A. Equal to its own weight
B. Zero
C. Always less than its weight
D. Always greater than its weight

5. Water flows steadily through a pipe. If area halves, speed becomes:

- A. Unchanged B. Twice C. Four times D. Half

6. For steady horizontal ideal-fluid flow, greater speed accompanies:

- A. Higher pressure
B. Greater density necessarily
C. Unchanged pressure necessarily
D. Lower pressure

7. Water exits a small hole 1.25 m below the free surface. Speed ($g=10$) is:

- A. 25 m/s B. 5 m/s C. 2.5 m/s D. 12.5 m/s

8. SI unit of surface tension is:

- A. N/m B. kg/m^3 C. Pa s D. N m

9. Excess pressure inside a soap bubble of radius r is:

- A. $2S/r$ B. $8Sr$ C. $4S/r$ D. S/r

10. Excess pressure inside a liquid drop of radius r is:

- A. $4S/r$ B. $S/(2r)$ C. $2S/r$ D. $2Sr$

11. For complete wetting, capillary rise is inversely proportional to:

- A. g^{-1} B. Surface tension
C. Tube radius D. Liquid density $^{-1}$

12. If a capillary radius doubles, rise of the same liquid becomes:

- A. Unchanged B. Four times C. Half D. Twice

13. Stokes' drag on a slowly moving sphere is:

- A. $\eta v/r$ B. $6\pi r v$ C. $6\pi \eta r v$ D. $6\pi \eta r^2 v$

14. Under Stokes' law, terminal speed of a sphere is proportional to:

- A. Radius squared
B. Radius
C. Inverse radius
D. Inverse radius squared

15. Water does not wet a waxed surface well. Its contact angle is typically:

- A. Greater than 90° B. Always 45°
C. Always 90° D. Zero

ANSWER KEY — check after completing all 15 questions

1.B 2.D 3.C 4.A 5.B 6.D 7.B 8.A 9.C 10.C 11.C 12.C 13.C 14.A 15.A

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper



Class 11 Physics | Thermal Properties Of Matter

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A temperature rise of 20°C equals a rise of:

- A. 253 K B. 20 K C. 36 K D. 293 K

2. A 2 m rod has $\alpha = 10^{-5} \text{ K}^{-1}$. On heating by 50 K, extension is:

- A. 100 mm B. 10 mm C. 1 mm D. 0.1 mm

3. For an isotropic solid at small expansion, volume coefficient is approximately:

- A. $\alpha/3$ B. α^2 C. 3α D. 2α

4. A hole in a metal plate expands on heating because:

- A. Only the outer edge expands
B. Metal fills the hole
C. Its area remains constant
D. All lengths scale up

5. Heat needed to warm 0.5 kg of water by 10 K ($c = 4200 \text{ J/kg K}$) is:

- A. 8400 J B. 2100 J C. 42000 J D. 21000 J

6. Equal masses of water at 20°C and 60°C mix without heat loss. Final temperature is:

- A. 30°C B. 80°C C. 40°C D. 50°C

7. During melting of pure ice at constant pressure, supplied heat mainly:

- A. Changes phase without raising temperature
B. Raises temperature continuously
C. Reduces molecular spacing to zero
D. Lowers internal energy

8. Melt 0.1 kg ice at 0°C ; $L = 3.34 \times 10^5 \text{ J/kg}$. Required heat is:

- A. 3340 J B. 33400 J C. 334 J D. 334000 J

9. Water has maximum density approximately at:

- A. -4°C B. 4°C C. 0°C D. 100°C

10. Conduction through a slab doubles when, with other factors fixed:

- A. Thermal conductivity halves
B. Area doubles
C. Thickness doubles
D. Temperature difference halves

11. Two identical slabs are stacked, doubling thickness. Heat-current ratio to one slab is:

- A. 2 B. 1 C. $1/2$ D. 4

12. Heat transfer that requires no material medium is:

- A. Conduction B. Convection
C. Diffusion D. Radiation

13. An ideal black body is a:

- A. Perfect absorber of incident radiation
B. Body that emits no radiation
C. Perfect reflector
D. Body necessarily at 0 K

14. A black body's absolute temperature doubles. Total emitted power per unit area becomes:

- A. 4 times B. 8 times C. 16 times D. 2 times

15. A star's temperature doubles. Peak-emission wavelength becomes:

- A. Four times B. Half C. One-fourth D. Twice

ANSWER KEY — check after completing all 15 questions

1.B 2.C 3.C 4.D 5.D 6.C 7.A 8.B 9.B 10.B 11.C 12.D 13.A 14.C 15.B

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper



Class 11 Physics | Thermodynamics

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A gas absorbs 500 J and does 200 J work. Change in internal energy is:

- A. -300 J B. -700 J C. 700 J D. 300 J

2. For an isochoric process, work done by a gas is:

- A. $P\Delta T$ B. nRT C. Equal to heat always D. Zero

3. An ideal gas undergoes isothermal expansion. Its internal-energy change is:

- A. Equal to pressure change
B. Zero
C. Positive
D. Negative

4. In an adiabatic process, which is zero?

- A. Heat exchanged
B. Work necessarily
C. Internal-energy change necessarily
D. Temperature change necessarily

5. During adiabatic expansion of an ideal gas, temperature:

- A. Decreases
B. Becomes zero
C. Is necessarily constant
D. Increases

6. Area under a pressure-volume curve represents:

- A. Temperature
B. Entropy
C. Work done by the gas
D. Heat capacity

7. A gas expands at 10^5 Pa by 0.002 m^3 . Work done is:

- A. 2000 J B. 50 J C. 0.02 J D. 200 J

8. In a complete thermodynamic cycle, net internal-energy change is:

- A. Always negative
B. Always positive
C. Equal to total heat absorbed only
D. Zero

9. Which is a state variable?

- A. Work done
B. Path length on a P-V graph
C. Heat supplied
D. Internal energy

10. An ideal gas at constant pressure doubles its absolute temperature. Volume:

- A. Doubles B. Quadruples
C. Halves D. Stays fixed

11. For an ideal gas, molar $C_p - C_v$ equals:

- A. $2R$ B. $R/2$ C. 0 D. R

12. For a monatomic ideal gas, C_v is:

- A. $7R/2$ B. $3R/2$ C. R D. $5R/2$

13. A reversible adiabatic ideal-gas process obeys:

- A. $P/V = \text{constant}$ B. $PT = \text{constant}$
C. $PV = \text{constant always}$ D. $PV^\gamma = \text{constant}$

14. Heat flows spontaneously between two bodies from:

- A. Higher heat capacity to lower heat capacity
B. Lower temperature to higher temperature
C. Higher mass to lower mass
D. Higher temperature to lower temperature

15. In isothermal compression of an ideal gas, heat is:

- A. Released by the gas
B. Absorbed by the gas
C. Converted entirely to increased internal energy
D. Always zero

ANSWER KEY — check after completing all 15 questions

1.D 2.D 3.B 4.A 5.A 6.C 7.D 8.D 9.D 10.A 11.D 12.B 13.D 14.D 15.A

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper



Class 11 Physics | Kinetic Theory

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Mean translational kinetic energy of an ideal-gas molecule is:

- A. $kT/2$ B. $3RT/2$ C. $3kT/2$ D. kT^2

2. The rms speed of gas molecules is:

- A. $\sqrt{3M/RT}$ B. $3RT/M$ C. $\sqrt{RT/3M}$ D. $\sqrt{3RT/M}$

3. If absolute temperature becomes four times, rms speed becomes:

- A. Sixteen times B. Half C. Four times D. Twice

4. At the same temperature, H_2 and O_2 rms-speed ratio is (molar masses 2 and 32):

- A. 2 B. 4 C. 16 D. $1/4$

5. Gas pressure according to kinetic theory equals:

- A. $p_{rms}/3$ B. $p_{rms}^2/3$ C. $3p_{rms}^2$ D. p_{rms}^2

6. At fixed number density, doubling absolute temperature makes pressure:

- A. Unchanged B. Half C. Four times D. Twice

7. An ideal gas contains N molecules. Its equation of state is:

- A. $PV=Nk/T$ B. $P/V=NkT$ C. $PV=NkT$ D. $PV=NRT$

8. Equipartition assigns energy to each active quadratic degree of freedom as:

- A. $kT/2$ B. RT C. kT D. $3kT/2$

9. A rigid diatomic molecule at ordinary temperatures has approximately how many active degrees of freedom?

- A. 6 B. 5 C. 7 D. 3

10. For a rigid diatomic ideal gas without vibration, C_v is:

- A. $3R/2$ B. $5R$ C. $5R/2$ D. $7R/2$

11. For a monatomic ideal gas, C_p/C_v is:

- A. $5/3$ B. $4/3$ C. $7/5$ D. $3/2$

12. Two ideal gases at the same temperature have equal mean:

- A. Translational kinetic energy per molecule
B. Molecular mass
C. Molecular momentum magnitude
D. Molecular speed

13. Gas molecules exert pressure by:

- A. Transferring momentum to container walls
B. Losing all kinetic energy at walls
C. Attracting the walls continuously
D. Remaining at rest near walls

14. For fixed temperature, an ideal gas's internal energy is proportional to:

- A. Pressure squared
B. Number of molecules
C. Container shape
D. Volume alone

15. If molecular rms speed doubles at fixed gas density, pressure becomes:

- A. Unchanged B. Four times C. Half D. Twice

ANSWER KEY — check after completing all 15 questions

1.C 2.D 3.D 4.B 5.B 6.D 7.C 8.A 9.B 10.C 11.A 12.A 13.A 14.B 15.B

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper



Class 11 Physics | Oscillations

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. For SHM, acceleration a and displacement x are related by:

- A. $a = \text{constant}$ B. $a = \omega^2 x$ C. $a = -\omega^2 x$ D. $a = -\omega x^2$

2. A mass executes SHM with amplitude A . Its speed is maximum at:

- A. Every position equally
B. $x = -A$
C. $x = A$
D. Mean position

3. At an extreme position in SHM:

- A. Speed and acceleration are zero
B. Speed is zero and acceleration magnitude is maximum
C. Speed is maximum
D. Acceleration is zero

4. A frequency of 5 Hz corresponds to period:

- A. 2π s B. 5 s C. 10 s D. 0.2 s

5. For $x = 0.04 \cos(10t)$ in SI units, maximum speed is:

- A. 0.4 m/s B. 0.04 m/s C. 4 m/s D. 10 m/s

6. For the same SHM, maximum acceleration is:

- A. 4 m/s^2 B. 0.4 m/s^2 C. 0.04 m/s^2 D. 40 m/s^2

7. A spring-mass oscillator has period:

- A. $2\pi\sqrt{(m/k)}$ B. $\sqrt{(mk)}$ C. $2\pi m/k$ D. $2\pi\sqrt{(k/m)}$

8. If oscillator mass becomes four times, its spring period becomes:

- A. Unchanged B. Four times C. Twice D. Half

9. If spring constant becomes four times at fixed mass, period becomes:

- A. Twice B. Four times C. One-fourth D. Half

10. A small-angle pendulum has period:

- A. $2\pi\sqrt{(g/L)}$ B. $2\pi\sqrt{(L/g)}$ C. $\sqrt{(Lg)}$ D. $2\pi L/g$

11. To double a pendulum's period, its length must become:

- A. Four times B. Twice C. One-fourth D. Half

12. Total energy of a spring oscillator of amplitude A is:

- A. $kA^2/2$ B. $kA/2$ C. kA D. kA^2

13. At $x = A/2$, potential energy as a fraction of total SHM energy is:

- A. 1 B. $1/2$ C. $3/4$ D. $1/4$

14. SHM displacement and velocity differ in phase by:

- A. $\pi/2$ rad B. 2π rad C. 0 D. π rad

15. An SHM particle goes from mean position to the next extreme in:

- A. $T/4$ B. T C. $2T$ D. $T/2$

ANSWER KEY — check after completing all 15 questions

1.C 2.D 3.B 4.D 5.A 6.A 7.A 8.C 9.D 10.B 11.A 12.A 13.D 14.A 15.A

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper



Class 11 Physics | Waves

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A wave has frequency 50 Hz and wavelength 2 m. Speed is:

- A. 100 m/s B. 0.04 m/s C. 25 m/s D. 52 m/s

2. In a transverse wave, particles oscillate:

- A. Parallel to propagation
B. Along the wave at wave speed
C. Perpendicular to propagation
D. Only in circles

3. Sound in air is primarily:

- A. Transverse B. A matter wave
C. Electromagnetic D. Longitudinal

4. Wave speed on a stretched string is:

- A. $\sqrt{T/\mu}$ B. $T\mu$ C. T/μ D. $\sqrt{(\mu/T)}$

5. String tension becomes four times at fixed μ . Wave speed becomes:

- A. Four times B. Twice C. Unchanged D. Half

6. For $y=0.02 \sin(4\pi x-20\pi t)$ in SI units, frequency is:

- A. 20 Hz B. 2 Hz C. 10 Hz D. 5 Hz

7. For that wave, wavelength is:

- A. 2 m B. 4 m C. 0.5 m D. 0.1 m

8. The form $\sin(kx-\omega t)$ represents travel along:

- A. Positive x-direction B. Positive y-direction
C. No propagation D. Negative x-direction

9. Two coherent equal-amplitude waves in phase produce amplitude:

- A. 2A B. A C. 0 D. 4A

10. For equal-amplitude waves with phase difference π , resultant amplitude is:

- A. Zero B. $\sqrt{2}A$ C. A D. 2A

11. In a standing wave, adjacent nodes are separated by:

- A. λ B. $\lambda/4$ C. 2λ D. $\lambda/2$

12. A node and its nearest antinode are separated by:

- A. $\lambda/2$ B. λ C. $\lambda/4$ D. 2λ

13. A string of length L fixed at both ends has fundamental frequency:

- A. $2v/L$ B. $v/(2L)$ C. v/L D. $v/(4L)$

14. A pipe closed at one end has fundamental frequency:

- A. $v/(2L)$ B. $4v/L$ C. $v/(4L)$ D. v/L

15. Two tuning forks have frequencies 256 and 260 Hz. Beat frequency is:

- A. 4 Hz B. 2 Hz C. 258 Hz D. 516 Hz

ANSWER KEY — check after completing all 15 questions

1.A 2.C 3.D 4.A 5.B 6.C 7.C 8.A 9.A 10.A 11.D 12.C 13.B 14.C 15.A

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper