

Class 9 Science Chapter 7 – Important MCQs

Work, Energy, and Simple Machines

 **New NCERT *Exploration* | 2026–27**

These MCQs are aligned with the **new Chapter 7** and cover work, work-energy theorem, energy, kinetic and potential energy, conservation of mechanical energy, power, pulleys, inclined planes, levers and mechanical advantage.

SECTION A – WORK

1. In science, work is done when:

- A. A force acts on an object but it does not move
- B. An object moves without any force
- C. A force causes displacement of an object
- D. An object changes colour

 **Answer: C. A force causes displacement of an object**

2. The SI unit of work is:

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

 **Answer: B. Joule (J)**

3. Work done by a constant force in the direction of displacement is:

- A. $W = F + s$
- B. $W = F/s$
- C. $W = F \times s$
- D. $W = s/F$

☒ **Answer: C. $W = F \times s$**

4. If a force acts on an object but produces no displacement, the work done is:

- A. Maximum
- B. Zero
- C. Negative
- D. Infinite

☒ **Answer: B. Zero**

5. When force and displacement are in the same direction, work done is:

- A. Positive
- B. Negative
- C. Zero
- D. Always infinite

☒ **Answer: A. Positive**

6. When force acts opposite to the direction of displacement, work done is:

- A. Positive
- B. Negative
- C. Zero
- D. Always maximum

☒ **Answer: B. Negative**

7. Which situation represents zero work?

- A. Lifting a book upward
- B. Pushing a wall that does not move
- C. Moving a box across the floor
- D. Throwing a ball

✓ **Answer: B. Pushing a wall that does not move**

8. A force of 10 N moves an object through 5 m in the direction of force. Work done is:

- A. 2 J
- B. 15 J
- C. 50 J
- D. 100 J

✓ **Answer: C. 50 J**

$$W = F \times s = 10 \times 5 = 50 \text{ J}$$

SECTION B – ENERGY

9. Energy is defined as the:

- A. Rate of doing work
- B. Capacity to do work
- C. Force acting on an object
- D. Product of force and time

✓ **Answer: B. Capacity to do work**

10. The SI unit of energy is:

- A. Joule
- B. Watt
- C. Newton
- D. Metre

✓ **Answer: A. Joule (J)**

11. Which is an example of energy conversion?

- A. Electrical energy → light energy in a bulb
- B. Mass → distance
- C. Time → force
- D. Speed → temperature only

✓ **Answer: A**

12. Mechanical energy is associated with an object's:

- A. Motion or position
- B. Colour
- C. Chemical composition only
- D. Temperature only

✓ **Answer: A. Motion or position**



SECTION C – KINETIC ENERGY

13. The energy possessed by an object due to its motion is called:

- A. Potential energy
- B. Kinetic energy
- C. Chemical energy
- D. Nuclear energy

✓ **Answer: B. Kinetic energy**

14. The formula for kinetic energy is:

- A. $KE = mv$
- B. $KE = \frac{1}{2} mv^2$
- C. $KE = mgh$
- D. $KE = F/t$

✓ Answer: B. $KE = \frac{1}{2} mv^2$

15. If the speed of an object is doubled, its kinetic energy becomes:

- A. Half
- B. Double
- C. Four times
- D. Eight times

✓ Answer: C. Four times

💡 Because KE is proportional to v^2 .

16. If the mass of an object is doubled while its speed remains unchanged, its kinetic energy becomes:

- A. Half
- B. Double
- C. Four times
- D. Zero

✓ Answer: B. Double

17. Which object has greater kinetic energy, if both have the same mass?

- A. Object moving at 2 m/s
- B. Object moving at 4 m/s
- C. Both have equal kinetic energy
- D. Object at rest

✓ Answer: B. Object moving at 4 m/s



SECTION D – POTENTIAL ENERGY

18. Energy possessed by an object due to its position or configuration is called:

- A. Kinetic energy
- B. Potential energy
- C. Sound energy
- D. Light energy

✓ Answer: B. Potential energy

19. The gravitational potential energy of an object raised to height h is:

- A. $PE = mv$
- B. $PE = \frac{1}{2} mv^2$
- C. $PE = mgh$
- D. $PE = F/t$

✓ Answer: C. $PE = mgh$

20. If the height of an object is doubled, its gravitational potential energy becomes:

- A. Half
- B. Double
- C. Four times
- D. Zero

✓ Answer: B. Double

21. A 2 kg object is raised to a height of 5 m. Taking $g = 10 \text{ m/s}^2$, its potential energy is:

- A. 10 J
- B. 25 J
- C. 50 J
- D. 100 J

✓ Answer: D. 100 J

$$PE = mgh = 2 \times 10 \times 5 = 100 \text{ J}$$



SECTION E – WORK-ENERGY THEOREM

22. The work-energy theorem relates the net work done on an object to its change in:

- A. Mass
- B. Kinetic energy
- C. Temperature
- D. Volume

✓ **Answer: B. Kinetic energy**

23. According to the work-energy theorem:

- A. Net work = change in kinetic energy
- B. Net work = mass $\times$ time
- C. Net work = potential energy only
- D. Net work = force $\div$ displacement

✓ **Answer: A**

24. If positive net work is done on an object, its kinetic energy generally:

- A. Decreases
- B. Increases
- C. Becomes zero
- D. Remains unchanged

✓ **Answer: B. Increases**



SECTION F – CONSERVATION OF ENERGY

25. The law of conservation of energy states that energy:

- A. Can be created but not destroyed
- B. Can be destroyed but not created
- C. Can neither be created nor destroyed, but can be transformed
- D. Always remains in the same form

☒ **Answer: C**

26. During the free fall of an object, ignoring air resistance:

- A. Potential energy increases and kinetic energy decreases
- B. Potential energy decreases and kinetic energy increases
- C. Both always decrease
- D. Both always increase

☒ **Answer: B**

27. During ideal free fall, total mechanical energy:

- A. Increases continuously
- B. Decreases continuously
- C. Remains constant
- D. Becomes zero

☒ **Answer: C. Remains constant**

28. At the highest point of an ideal pendulum swing, the bob has:

- A. Maximum kinetic energy only
- B. Maximum potential energy and zero kinetic energy
- C. Zero potential energy
- D. Zero total energy

✓ Answer: B

29. At the lowest point of an ideal pendulum swing, the bob has:

- A. Maximum kinetic energy and minimum gravitational potential energy
- B. Maximum potential energy only
- C. Zero kinetic energy
- D. No mechanical energy

✓ Answer: A



SECTION G – POWER

30. Power is defined as the:

- A. Rate at which work is done
- B. Total distance travelled
- C. Product of force and time
- D. Capacity to do work

✓ Answer: A

31. The SI unit of power is:

- A. Joule
- B. Watt
- C. Newton
- D. Kilogram

✓ Answer: B. Watt (W)

32. Power can be calculated using:

- A. $P = W/t$
- B. $P = W \times t$

- C. $P = t/W$
- D. $P = F + s$

✓ Answer: A. $P = W/t$

33. Two students do the same amount of work. The student who takes less time has:

- A. Less power
- B. Greater power
- C. Zero power
- D. The same power always

✓ Answer: B. Greater power

34. A machine does 600 J of work in 20 s. Its power is:

- A. 20 W
- B. 30 W
- C. 120 W
- D. 620 W

✓ Answer: B. 30 W

$$P = W/t = 600/20 = 30 \text{ W}$$

SECTION H – SIMPLE MACHINES

35. A simple machine is useful because it can:

- A. Create energy
- B. Change the magnitude or direction of the force needed
- C. Destroy energy
- D. Reduce mass

✓ Answer: B

36. Which of the following is a simple machine included in this chapter?

- A. Pulley
- B. Battery
- C. Thermometer
- D. Compass

 **Answer: A. Pulley**

37. Mechanical advantage is defined as:

- A. Effort / Load
- B. Load / Effort
- C. Work / Time
- D. Force $\times$ Distance

 **Answer: B. Load / Effort**

Formula:

Mechanical advantage = Load / Effort

38. If a machine lifts a load of 200 N using an effort of 50 N, its mechanical advantage is:

- A. 2
- B. 4
- C. 50
- D. 250

 **Answer: B. 4**

MA = Load / Effort = 200/50 = 4



SECTION I – PULLEY

39. A fixed pulley mainly helps by:

- A. Multiplying energy
- B. Changing the direction of effort
- C. Creating work
- D. Eliminating gravity

✓ Answer: B

40. An ideal fixed pulley has mechanical advantage:

- A. 0
- B. 1
- C. 2
- D. 4

✓ Answer: B. 1

41. A movable pulley can provide:

- A. Mechanical advantage greater than 1
- B. No mechanical advantage
- C. Only negative work
- D. Zero load

✓ Answer: A



SECTION J – INCLINED PLANE

42. An inclined plane is:

- A. A sloping surface used to raise or lower objects
- B. A circular machine
- C. A type of pulley
- D. A rotating wheel only

✓ Answer: A

43. An inclined plane makes lifting a heavy object easier by:

- A. Increasing the force required
- B. Reducing the force needed by increasing the distance over which it acts
- C. Creating energy
- D. Eliminating work

✓ **Answer: B**

44. A ramp is an example of:

- A. Pulley
- B. Lever
- C. Inclined plane
- D. Wheel and axle

✓ **Answer: C. Inclined plane**



SECTION K – LEVER

45. A lever consists of:

- A. A rigid bar that rotates about a fixed point
- B. A flexible rope only
- C. A liquid-filled tube
- D. A rotating magnet

✓ **Answer: A**

46. The fixed point about which a lever rotates is called the:

- A. Load
- B. Fulcrum
- C. Effort
- D. Load arm

✓ **Answer: B. Fulcrum**

47. In a lever, the force applied by the user is called:

- A. Load
- B. Effort
- C. Fulcrum
- D. Resistance arm

 **Answer: B. Effort**

48. The force or object being moved by a lever is called:

- A. Effort
- B. Fulcrum
- C. Load
- D. Effort arm

 **Answer: C. Load**

49. In a Class I lever, the:

- A. Load lies between fulcrum and effort
- B. Effort lies between fulcrum and load
- C. Fulcrum lies between load and effort
- D. Fulcrum is absent

 **Answer: C**

50. Which is an example of a Class I lever?

- A. Wheelbarrow
- B. Scissors
- C. Tweezers
- D. Lemon squeezer

 **Answer: B. Scissors**

51. Which is an example of a Class II lever?

- A. Scissors
- B. Wheelbarrow
- C. Tweezers
- D. Broom

✓ **Answer: B. Wheelbarrow**

52. Which is an example of a Class III lever?

- A. Seesaw
- B. Wheelbarrow
- C. Tweezers
- D. Bottle opener

✓ **Answer: C. Tweezers**



SECTION L – APPLICATION-BASED MCQs

53. A student pushes a wall with a force of 100 N, but the wall does not move. The work done on the wall is:

- A. 100 J
- B. 10 J
- C. Zero
- D. 1000 J

✓ **Answer: C. Zero**

54. A person lifts a 10 kg object through 2 m. Taking $g = 10 \text{ m/s}^2$, the work done against gravity is:

- A. 20 J
- B. 50 J

- C. 100 J
- D. 200 J

✓ Answer: D. 200 J

$$W = mgh = 10 \times 10 \times 2 = 200 \text{ J}$$

55. A machine makes it possible to lift a load using less force by:

- A. Creating energy
- B. Increasing the distance over which the effort acts
- C. Destroying energy
- D. Reducing the load's mass

✓ Answer: B

56. In an ideal machine:

- A. Energy is created
- B. Energy is destroyed
- C. Input work equals output work
- D. Output work is always greater than input work

✓ Answer: C

57. Why is a machine not capable of creating energy?

- A. Machines obey conservation of energy.
- B. Machines have no moving parts.
- C. Machines have no force.
- D. Machines always have zero work.

✓ Answer: A

58. A spoon can act as a lever. Moving the load closer to the fulcrum generally:

- A. Increases the effort required
- B. Can reduce the effort required
- C. Makes the fulcrum disappear
- D. Makes work zero

✓ **Answer: B**

59. Which statement is correct?

- A. A machine always reduces the total work done.
- B. A machine can make work more convenient by changing force or direction.
- C. A machine creates energy.
- D. A machine destroys energy.

✓ **Answer: B**

60. A student performs 300 J of work in 10 s. Another performs the same work in 5 s. Who has greater power?

- A. First student
- B. Second student
- C. Both have equal power
- D. Neither has power

✓ **Answer: B. Second student**

First: $300/10 = 30 \text{ W}$

Second: $300/5 = 60 \text{ W}$



QUICK ANSWER KEY

Q	Ans.	Q	Ans.	Q	Ans.
1	C	21	D	41	A
2	B	22	B	42	A
3	C	23	A	43	B

4	B	24	B	44	C
5	A	25	C	45	A
6	B	26	B	46	B
7	B	27	C	47	B
8	C	28	B	48	C
9	B	29	A	49	C
10	A	30	A	50	B
11	A	31	B	51	B
12	A	32	A	52	C
13	B	33	B	53	C
14	B	34	B	54	D
15	C	35	B	55	B
16	B	36	A	56	C
17	B	37	B	57	A
18	B	38	B	58	B
19	C	39	B	59	B
20	B	40	B	60	B

MUST-REMEMBER FORMULAS

Work

$$W = F \times s$$

Kinetic Energy

$$KE = 1/2 mv^2$$

Potential Energy

$$PE = mgh$$

Power

$$P = W/t$$

Mechanical Advantage

$$MA = \text{Load} / \text{Effort}$$

Principle of Lever

$$\text{Effort} \times \text{Effort arm} = \text{Load} \times \text{Load arm}$$

Work-Energy Theorem

$$\text{Net work} = \text{Change in kinetic energy}$$

Conservation of Energy

Energy can neither be created nor destroyed; it can only be transformed from one form to another.

The 2026–27 syllabus specifically requires students to calculate **work, kinetic energy, potential energy and power**, explain energy conversion and conservation, and identify and calculate the mechanical advantage of **pulleys, inclined planes and levers**.

Highest-Priority Revision

 Work: positive, negative & zero

 Work-energy theorem

 Kinetic energy

 Potential energy

 Conservation of mechanical energy

 Power

 Fixed & movable pulley

 Inclined plane

 Three classes of lever

 Mechanical advantage