

CLASS 9 SCIENCE

CHAPTER 7 • WORK, ENERGY, AND SIMPLE MACHINES

MCQs • Multiple-Choice Practice

1. Work is said to be done by a force when the force:

- A. Is applied but causes no displacement
- B. Causes displacement in the direction of the force
- C. Always acts upward
- D. Changes the mass of an object

2. The SI unit of work is:

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

3. For a constant force acting in the direction of displacement, work done is:

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

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

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

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

- A. Positive
- B. Negative
- C. Always zero
- D. Undefined

6. The work-energy theorem states that work done on an object is equal to its:

- A. Mass
- B. Change in energy
- C. Momentum only
- D. Power

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7. Energy is defined as the:

- A. Rate of doing work
- B. Capacity to do work
- C. Force acting per unit area
- D. Product of force and time

8. The SI unit of energy is:

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

9. Which is an example of energy conversion?

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

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

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

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

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

12. The kinetic energy of an object of mass m moving with speed v is:

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

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

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

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

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

15. Potential energy may be stored due to an object's:

- A. Position or deformation
- B. Speed only
- C. Temperature only
- D. Time only

16. The gravitational potential energy of an object of mass m at height h is:

- A. $\frac{1}{2}mv^2$
- B. mgh
- C. ma
- D. W/t

17. If an object is raised to twice its height, its gravitational potential energy becomes:

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

18. During the free fall of an object, its potential energy generally:

- A. Increases while kinetic energy decreases
- B. Decreases while kinetic energy increases
- C. Remains zero
- D. Becomes mass

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19. If no other external forces act on a freely falling object, its mechanical energy:

- A. Is conserved
- B. Always increases
- C. Always decreases
- D. Becomes zero

21. 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

23. The SI unit of power is:

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

20. 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. Equal zero energies

22. 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

24. Power can be calculated using:

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

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25. A machine is useful because it can:

- A. Change the magnitude or direction of the force needed
- B. Create energy
- C. Reduce total work in an ideal system
- D. Destroy energy

26. Mechanical advantage of a simple machine is:

- A. $\text{Load} \div \text{Effort}$
- B. $\text{Effort} \div \text{Load}$
- C. $\text{Load} \times \text{Effort}$
- D. $\text{Work} \div \text{Time}$

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

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

28. Which simple machine consists of a rigid bar that rotates about a fixed point?

- A. Lever
- B. Pulley
- C. Inclined plane
- D. Wheel only

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

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

30. Which class of lever has the fulcrum between the load and effort?

- A. Class I
- B. Class II
- C. Class III
- D. No class

ANSWER KEY

Chapter 7 • Work, Energy, and Simple Machines

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	2	B	3	A	4	B	5	A
6	B	7	B	8	A	9	A	10	A
11	B	12	B	13	B	14	B	15	A
16	B	17	B	18	B	19	A	20	B
21	A	22	A	23	B	24	A	25	A
26	A	27	A	28	A	29	B	30	A

Quick Revision: Work • Work-energy theorem • Energy • Kinetic energy • Potential energy • Mechanical energy • Conservation of energy • Power • Simple machines • Mechanical advantage • Pulley • Inclined plane • Lever