



# PHYSICS

SAMPLE BOOK



# PHYSICS



I'm the  
**Intelli Kid**

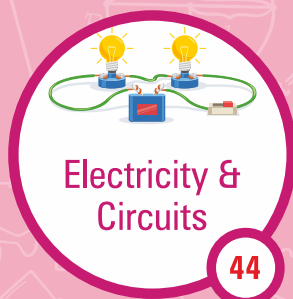
and  
I'm becoming the  
**Best Version**  
of myself with





# INDEX

GRADE-6



**ALLEN**  
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# I AM PROGRESSING

(Tick mark the columns after achieving the Learning Milestones)



TOPIC	1 <sup>st</sup> Learning	Exercise Solving	1 <sup>st</sup> Revision	2 <sup>nd</sup> Revision
 <b>Measurement &amp; Motion</b>				
 <b>Time, Distance &amp; Speed</b>				
 <b>Light, Shadows &amp; Reflection</b>				
 <b>Electricity &amp; Circuits</b>				
 <b>Fun with Magnets</b>				
 <b>Force &amp; Pressure</b>				
 <b>Work &amp; Energy</b>				



# PHYSICS

## SAMPLE THEORY

# CHAPTER 7

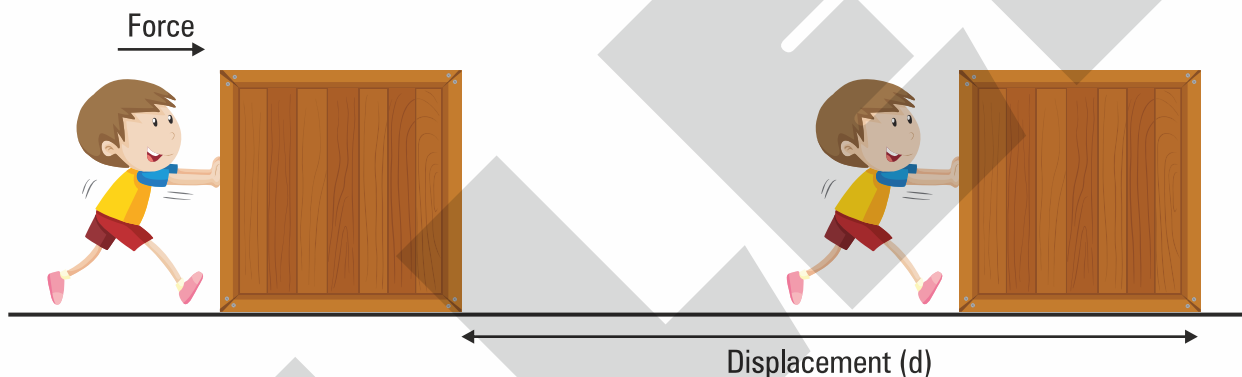
# WORK & ENERGY

## INTRODUCTION

We often use 'work' and 'energy' together usually. For example, we may say, "I have lots of energy to do this work right now". In science also, work and energy are related terms. In this chapter, we will see what these two words mean and how they are related.

## WORK

- If a force is applied on the object, an object may either move or remain stationary.
- When the **object moves by applying force, work is said to be done.**
- Since it is a physical quantity, it is measured by **the product of force applied and displacement** of the object.



$$\text{Work} = \text{Force} \times \text{displacement}$$

OR

$$W = F \times d$$



*A labourer exerts a force on the trolley & it moves, thus work is done by him.*



*A boy exerts a force on the wall but it does not move, thus no work is done by him.*

- Activities like reading, thinking and sleeping are not considered work as no force is applied and no object is moved.
- Some examples of workdone are lifting a bucket from the ground, opening a door, closing a door, moving a table, playing, etc.
- Two must conditions required for work to be done are:
  - A force must be applied.
  - The object must be displaced.
- When the object moves in the direction of applied force, then workdone is positive.

#### Examples of positive workdone



*A nurse moving the patient on the wheelchair.*



*Ball falling due to force of gravity*

- When the object moves opposite to the direction of applied force, then workdone is negative.

#### Examples of negative workdone



*When the water is being pulled out of the well, the force applied on the rope is downwards, but the bucket comes upward.*



*Ball thrown up, force of gravity downwards but movement of ball is upwards.*

# PHYSICS

## SAMPLE EXERCISE





# EXERCISE

## GRADE - 6 Work & Energy



**Directions:** Solve each of the following multiple choice questions by choosing the most appropriate option.

1. **What are the conditions required for work to be done on the object by the force ?**

- (i) Force should be applied on the body.
- (ii) Object must be displaced from its position.
- (iii) Object must be big in size.
- (iv) Force must be in the direction of displacement always.

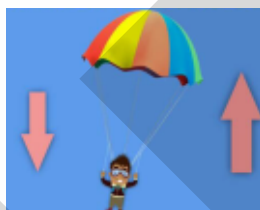
(1) (i) and (ii) only

(2) (ii) and (iii) only

(3) (i), (ii) and (iii) only

(4) All are the required conditions

2. **Workdone by air friction is \_\_\_\_\_.**



(1) positive

(2) negative

(3) zero

(4) all of these

3. **Which of the following does not possess potential energy ?**

- (1) A stretched rubber band.
- (2) A compressed spring.
- (3) Water stored in an overhead tank.
- (4) A car moving with high speed on the ground.

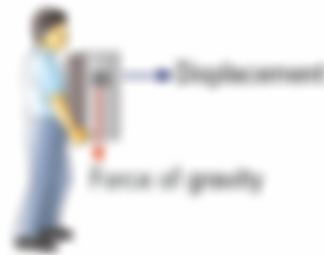
4. **Which of the following has both kinetic energy and potential energy ?**

- (1) A flying aeroplane
- (2) A ceiling fan doing rotational motion
- (3) An athlete running at full speed
- (4) Both (1) & (2)

5. **In which of the following examples work is done?**

- (1) Motion of a ball falling towards the ground.
- (2) A man pushing the wall.
- (3) A block moving on a frictionless surface.
- (4) Both (1) & (3)

6. What will be the nature of work done by the force of gravity in the given example?



- (1) Zero (2) Positive (3) Negative (4) None of these

7. Which of the following does not possess chemical energy?

- (1) A banana (2) A car battery  
(3) A firecracker (4) A ball moving higher in the sky

8. Which of the following is not a fossil fuel?

- (1) Coal (2) Natural gas (3) Oil (4) Wood

9. A boy picked up a book of 1 kg to a height of 1 m. Calculate the work done.

- (1) 1 J (2) 9.8 J  
(3) 9 J (4) 11 J

10. Kinetic energy of a body depends on its

- (1) Speed (2) Mass (3) Colour

- (1) Only (1) (2) Only (2) (3) Only (1) & (2) (4) All (1), (2) & (3)

11. According to law of conservation of energy

- (1) Energy can be created  
(2) Energy can be transformed from one form to another  
(3) Energy can't be destroyed  
(4) All of these

12. At which point, the kinetic energy of the ball will be maximum?



- (1) A (2) B (3) C (4) Somewhere between B & C