| | |
|---|---|
| **Student Name:** _____ | **Class:** _____ |
| **Student ID:** _____ | **Date:** {{DATE}} |

## Assessment Details

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|---|---|
| **Duration:** 2 hours | **Total Marks:** 100 |
| **Topics Covered:** | • Force and Motion<br>• Newton's Laws of Motion<br>• Energy and Work<br>• Types of Forces |

### Instructions to Students:

1. Read all questions carefully before attempting.
2. Show all working out - marks are awarded for method.
3. Calculator use is permitted except where stated otherwise.
4. Write your answers in the spaces provided.
5. If you need more space, use the additional pages at the end.
6. Time management is crucial - allocate approximately 1 minute per mark.

## Section A: Multiple Choice [20 marks]

**Question 1** **[2 marks]**

What is the relationship between force and motion?

A) Force causes motion

B) Motion causes force

C) Force and motion are unrelated

D) Force opposes motion

**Question 2** **[2 marks]**

Which type of force is responsible for opposing motion between two surfaces that are in contact?

A) Friction

B) Gravity

C) Normal

D) Applied

**Question 3** **[2 marks]**

According to Newton's First Law of Motion, what happens to an object at rest or in motion when no net force is applied?

A) It accelerates

B) It decelerates

C) It remains at rest or in motion

D) It changes direction

## Section B: Short Answer Questions [40 marks]

**Question 4** **[8 marks]**

Describe the difference between a contact force and a non-contact force. Provide an example of each.

**Question 5** **[8 marks]**

Explain how Newton's Second Law of Motion relates to the concept of acceleration.

**Question 6** **[8 marks]**

Describe a scenario where Newton's Third Law of Motion is observed.



**Question 7** **[8 marks]**

What is the relationship between force, mass, and acceleration? Use an equation to support your answer.

## Section C: Diagram Labeling Tasks [20 marks]

### Task 1 [5 marks]

Label the following forces on the diagram: friction, gravity, normal, applied.

### Task 2 [5 marks]

Identify and label the type of motion (linear, circular, rotational) in the given diagram.

### Task 3 [5 marks]

Label the forces acting on an object in the given scenario, including the net force.

## Section D: Additional Activities [20 marks]

### Activity 1 [10 marks]

Design an experiment to demonstrate the concept of friction. Include a diagram and a brief description of the materials and procedures.

### Activity 2 [10 marks]

Create a diagram to illustrate the concept of Newton's Third Law of Motion. Include a brief description of the forces acting on the objects in the diagram.

## Conclusion

This assessment is designed to evaluate students' understanding of the relationship between force, motion, and energy, as well as their ability to identify types of forces and explain Newton's laws of motion.

The success criteria for this assessment are:

- Students will be able to describe the relationship between force, motion, and energy.
- Students will be able to identify types of forces and explain Newton's laws of motion.
- Students will be able to apply their knowledge of force and motion to real-world scenarios.