



Unit 7 • Force and Motion: inertia, Newton's laws and elasticity

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 35

1 Key words

[4]

Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

elastic limit friction inertia inertia of rest mass newton plasticity reaction
unbalanced force weight

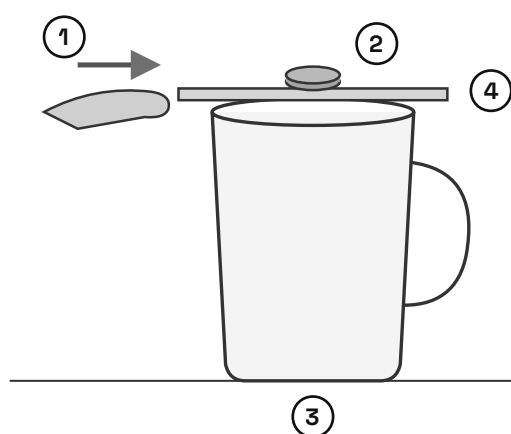
The property of a body by which it cannot by itself change its state of rest or of uniform motion is called _____. It depends on the body's _____. A passenger falls backwards when a bus starts suddenly because of _____. To change the state of motion of a body, an _____ must act on it. The force that gives a body of mass 1 kg an acceleration of 1 m/s^2 is one _____. When one body pushes another, the second pushes back with an equal and opposite force, called the _____. A body regains its shape when the deforming force is removed only if it is deformed within its _____. The property by which a body keeps its new shape after the deforming force is removed is called _____.

2 Label the diagram

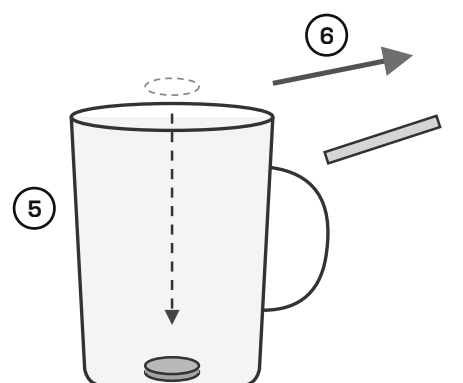
[3]

The diagram shows Activity 7.9, the coin and the card. Name the things and write what happens at the places numbered 1 to 6. Each carries 0.5 mark.

1. Before



2. A quick flick



1. _____

2. _____

3. _____

4. _____

5. _____

6. _____



[5]

Choose the correct option for each of the following questions.

- i. Stepping down from a moving bus is dangerous. Which of these explains it? [1]
 - a. inertia of rest
 - b. inertia of motion
 - c. the second law of motion
 - d. the third law of motion
- ii. Which statement about action and reaction is true? [1]
 - a. one cancels the other
 - b. both act on the same body
 - c. they are equal and act in the same direction
 - d. they act on different bodies
- iii. Which of the following is an application of elasticity? [1]
 - a. shaping mud into a flower pot
 - b. beating iron into sheets
 - c. shaping dough into flatbread
 - d. hitting a shuttlecock with a badminton racket
- iv. A loaded truck and a car are moving at the same velocity on a road. Brakes are applied to both with equal force. Which statement is true? [1]
 - a. the truck covers less distance than the car before stopping
 - b. the car covers less distance than the truck before stopping
 - c. both cover the same distance before stopping
 - d. the distance covered by the truck has nothing to do with the car's
- v. Which has the most inertia? [1]
 - a. a football flying at 20 m/s
 - b. a cricket ball
 - c. a loaded truck standing still
 - d. a bicycle going downhill

[3]

Write very short answers to the following questions.

- a. State Newton's first law of motion. [1]
-
-
- b. Define one newton (1 N). [1]
-
-
- c. Which is more elastic, rubber or steel? [1]



5 Short answers

[8]

Write short answers to the following questions.

- a. Give a reason: when the branches of a tree are shaken, its leaves and fruits fall.

[2]

- b. Give a reason: a gun must be held firmly against a strong support when it is fired.

[2]

- c. Write any two differences between elasticity and plasticity.

[2]

- d. Name the action and the reaction when a man steps from a boat on to the bank. Why may the boat move away from the bank?

[2]

6 Long answer

[4]

Write a long answer to the following question.

State Newton's second law of motion and prove that $F = ma$.



[6]

[2]

- [2]

[4]

- [4]

[illegible]

[2]

[2]

A horse pulls a cart. By Newton's third law, the cart pulls back on the horse with an equal force. Then how can the horse and the cart move forward?

(not marked)

Activity	Change in shape and size	Goes back to its shape?	Elastic or plastic?
stretching a rubber band			
squeezing a toothpaste tube			
pulling a piece of plastic bag			
pressing an air-filled balloon			
pulling a steel spring gently			