

Section 1: Multiple Choice Questions

Question 1: Types of Motion

What is the primary difference between speed and velocity?

1. A) Speed is a scalar quantity, while velocity is a vector quantity.
2. B) Speed is a vector quantity, while velocity is a scalar quantity.
3. C) Speed is the rate of change of distance, while velocity is the rate of change of displacement.
4. D) Speed is the rate of change of displacement, while velocity is the rate of change of distance.

Question 2: Forces and Newton's Laws

Which of the following is an example of a contact force?

1. A) Gravity
2. B) Friction
3. C) Normal force
4. D) All of the above

Question 3: Energy and Work

What is the unit of measurement for energy?

1. A) Joules (J)
2. B) Newtons (N)
3. C) Watts (W)
4. D) Kilograms (kg)

Question 4: Types of Motion

An object is moving in a circular path. What type of motion is this an example of?

1. A) Linear motion
2. B) Rotational motion
3. C) Periodic motion
4. D) Random motion

Question 5: Forces and Newton's Laws

A force of 10 N is applied to an object, causing it to accelerate at 2 m/s^2 . What is the mass of the object?

1. A) 2 kg
2. B) 5 kg
3. C) 10 kg
4. D) 20 kg

Section 2: Short Answer Questions

Question 6: Motion and Forces

Describe the motion of an object under the influence of a constant force. Be sure to include the effects of the force on the object's velocity and acceleration.

Question 7: Energy and Work

A car accelerates from 0 to 30 m/s in 6 seconds. Calculate its acceleration and explain the forces acting on it.

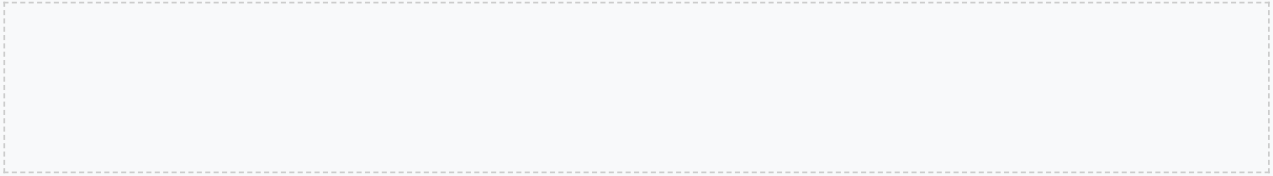
Question 8: Motion and Energy

A ball is thrown upwards with an initial velocity of 20 m/s. Calculate its maximum height and explain the energy transformations that occur.

Section 3: Diagram Labeling

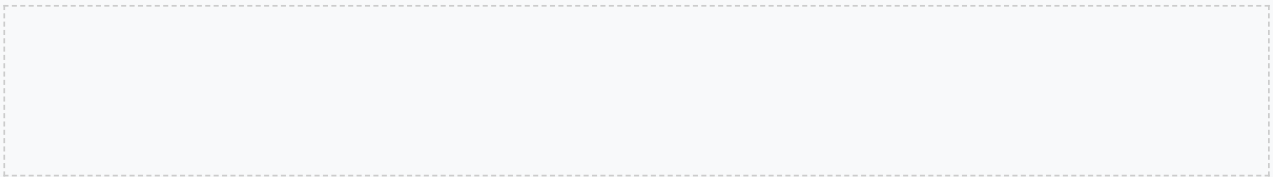
Question 9: Forces and Motion

Label the forces acting on an object at rest on a horizontal surface.



Question 10: Energy and Work

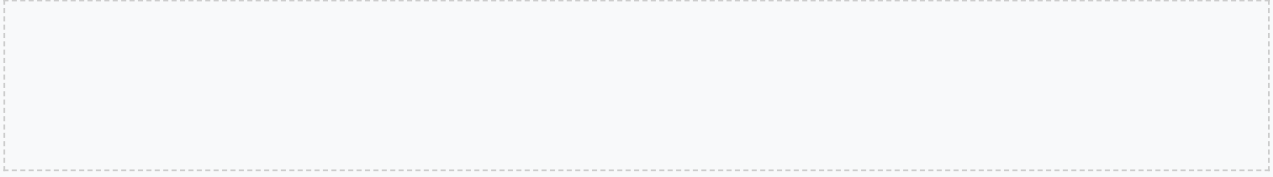
Identify and label the different types of energy present in a system consisting of a moving car and a stationary tree.



Additional Activities

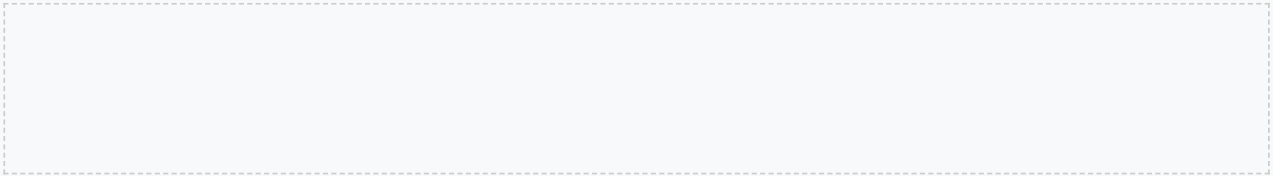
Activity 1: Motion Graphs

Plot the motion of an object moving at a constant velocity. Label the x and y axes, and include a title and legend.



Activity 2: Energy Conversion

Describe a real-world scenario where energy is converted from one type to another. Explain the energy transformations that occur and calculate the efficiency of the conversion.



Answer Key

Multiple Choice Questions

1. A) Speed is a scalar quantity, while velocity is a vector quantity.
2. D) All of the above
3. A) Joules (J)
4. B) Rotational motion
5. B) 5 kg

Short Answer Questions

6. The motion of an object under the influence of a constant force is characterized by a constant acceleration. The force causes the object to change its velocity, resulting in a change in its kinetic energy.
7. The car's acceleration is 5 m/s^2 . The forces acting on the car are the force of the engine and the force of friction.
8. The ball's maximum height is 20 m. The energy transformations that occur are the conversion of kinetic energy to potential energy and the conversion of potential energy back to kinetic energy.

Assessment Rubric

Multiple Choice Questions

1 mark per question

Short Answer Questions

5 marks per question, broken down into:

- *2 marks for accuracy and completeness of answer*
- *1 mark for clarity and organization of answer*
- *1 mark for use of scientific formulas and principles*
- *1 mark for application to real-world scenario*

Diagram Labeling

5 marks per question, broken down into:

- *2 marks for accuracy and completeness of labeling*
- *1 mark for clarity and organization of labeling*
- *1 mark for use of scientific terminology*
- *1 mark for identification of physical phenomena*

