

## Balanced And Unbalanced Forces Worksheet Answer Key PDF

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### Part 1: Building a Foundation

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**What is the unit of measurement for force?**

undefined. Joules

**undefined. Newtons ✓**

undefined. Watts

undefined. Pascals

The correct answer is B) Newtons, which is the standard unit of force.

**Which of the following are characteristics of balanced forces? (Select all that apply)**

**undefined. Equal in magnitude ✓**

**undefined. Opposite in direction ✓**

undefined. Cause acceleration

**undefined. Result in no change in motion ✓**

The correct answers are A) Equal in magnitude, B) Opposite in direction, and D) Result in no change in motion.

**Define what a force is and provide an example of a force in everyday life.**

**A force is a push or pull on an object, and an example could be gravity pulling an apple to the ground.**

**List two examples of balanced forces and describe the situation briefly.**

1. Example 1

**A book resting on a table.**

2. Example 2

**A person holding a weight steady.**

Examples could include a book resting on a table and a person holding a weight steady.

**When an object is at rest and remains at rest, what can be said about the forces acting on it?**

undefined. They are unbalanced

**undefined. They are balanced ✓**

undefined. There are no forces acting

undefined. The forces are changing

The correct answer is B) They are balanced, as the object is not moving.

## Part 2: Application and Analysis

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**If a car is moving at a constant speed on a straight road, what can be inferred about the forces acting on it?**

**undefined. The forces are balanced ✓**

undefined. The forces are unbalanced

undefined. There are no forces acting

undefined. The forces are increasing

The correct answer is A) The forces are balanced, as the speed is constant.

**In which of the following situations would you expect to find unbalanced forces? (Select all that apply)**

**undefined. A rocket launching into space ✓**

**undefined. A cyclist coasting downhill ✓**

**undefined. A person pushing a stationary car ✓**

undefined. A leaf floating on a still pond

The correct answers are A) A rocket launching into space, B) A cyclist coasting downhill, and C) A person pushing a stationary car.

**Describe a real-world scenario where unbalanced forces are at play and explain the outcome of these forces on the object involved.**

**An example could be a soccer ball being kicked, where the force of the kick causes it to move.**

**Which of the following best describes the relationship between balanced forces and motion?**

undefined. Balanced forces always cause motion

**undefined. Balanced forces prevent changes in motion ✓**

undefined. Balanced forces only occur in moving objects

undefined. Balanced forces increase speed

The correct answer is B) Balanced forces prevent changes in motion.

**Analyze the following situations and identify which involve balanced forces. (Select all that apply)**

**undefined. A lamp hanging from the ceiling ✓**

undefined. A car accelerating from a stop

**undefined. A satellite orbitin Earth at constant speed ✓**

undefined. A ball being thrown

The correct answers are A) A lamp hanging from the ceiling and C) A satellite orbitin Earth at constant speed.

**Analyze the effects of unbalanced forces on a moving vehicle when brakes are applied suddenly. Discuss the changes in motion and forces involved.**

**When brakes are applied, unbalanced forces cause the vehicle to decelerate rapidly, changing its motion.**

### **Part 3: Evaluation and Creation**

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**Which scenario would most likely require a reevaluation of forces to maintain balance?**

**undefined. A building swaying in the wind ✓**

undefined. A book on a stable shelf

undefined. A stationary car in a garage

undefined. A boat floating on calm water

The correct answer is A) A building swaying in the wind, as it needs to adjust to maintain balance.

**Evaluate the following statements and identify which are true regarding unbalanced forces. (Select all that apply)**

**undefined. They can cause an object to start moving ✓**

**undefined. They always result in a change of direction ✓**

**undefined. They can stop a moving object ✓**

undefined. They have no effect on stationary objects

The correct answers are A) They can cause an object to start moving, B) They always result in a change of direction, and C) They can stop a moving object.

**Propose a design for a simple experiment to demonstrate the effects of balanced and unbalanced forces. Describe the setup, procedure, and expected outcomes.**

**An example could be using a toy car on a flat surface to show balanced forces and then applying a push to demonstrate unbalanced forces.**