Balanced and Unbalanced Forces

Grade 3

Name _____ Date _____

Remember: Balanced forces are equal and opposite: no change in motion. **Unbalanced** forces are unequal: the motion changes.

Look for change: Did the object start, stop, speed up, slow down or turn? Then the forces are unbalanced.

Tug of War

In tug of war, two teams pull a rope in opposite directions.

If both teams pull with the **same strength**, the rope doesn't move. The forces are **balanced**. Balanced forces are equal in size and opposite in direction, so they cancel each other out.

If one team pulls harder, the rope moves toward that team. Now the forces are **unbalanced**. Unbalanced forces cause a change in motion: an object can start moving, stop, speed up, slow down or change direction.

Balanced forces are all around us. A book resting on a table is pulled down by gravity, but the table pushes up just as hard, so the book stays still.

1. Check your understanding

Circle the best answer.

1. What happens when forces are balanced?

(a) The object's motion doesn't change. (b) The object speeds up.
(c) The object breaks.

2. In tug of war, what makes the rope move?

(a) Both teams pull equally. (b) One team pulls harder. (c) Nobody pulls.

3. Why does a book on a table stay still?

(a) The table pushes up as hard as gravity pulls. (b) There is no gravity.
(c) The book is glued.

4. Unbalanced forces can make an object...

(a) only stay still (b) start, stop or change direction (c) disappear

Balanced and Unbalanced Forces

Grade 3

2. Balanced or unbalanced?

Circle balanced or unbalanced.

1	Two friends push a box equally from opposite sides. It doesn't move.	balanced	unbalanced
2	A soccer ball is kicked and flies away.	balanced	unbalanced
3	A lamp sits still on a desk.	balanced	unbalanced
4	A wagon starts rolling when you pull it.	balanced	unbalanced
5	A hanging picture stays in place.	balanced	unbalanced
6	A bike speeds up going down a hill.	balanced	unbalanced

3. Think like a scientist

Answer in a complete sentence.

1. **Two kids push on opposite sides of a door. The door doesn't move. What do you know about their pushes?**

Answer Key

Balanced and Unbalanced Forces · Grade 3

1. Check your understanding

1. What happens when forces are balanced?

(a) **The object's motion doesn't change.** (b) The object speeds up. (c) The object breaks.

2. In tug of war, what makes the rope move?

(a) Both teams pull equally. (b) **One team pulls harder.** (c) Nobody pulls.

3. Why does a book on a table stay still?

(a) **The table pushes up as hard as gravity pulls.** (b) There is no gravity. (c) The book is glued.

4. Unbalanced forces can make an object...

(a) only stay still (b) **start, stop or change direction** (c) disappear

2. Balanced or unbalanced?

1	Two friends push a box equally from opposite sides. It doesn't move.	**balanced**	unbalanced
2	A soccer ball is kicked and flies away.	balanced	**unbalanced**
3	A lamp sits still on a desk.	**balanced**	unbalanced
4	A wagon starts rolling when you pull it.	balanced	**unbalanced**
5	A hanging picture stays in place.	**balanced**	unbalanced
6	A bike speeds up going down a hill.	balanced	**unbalanced**

3. Think like a scientist

Sample answer.

1. **Two kids push on opposite sides of a door. The door doesn't move. What do you know about their pushes?**
   Their pushes are equal and opposite, so the forces are balanced.