

# Balanced & Unbalanced Forces

Name:

Date:

**INQUIRY**

**In Korean ssireum wrestling, two people push equally hard. Nobody moves. Why?**

Discuss with your partner. Write your initial ideas below:

## Key Vocabulary

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Term	Definition
<b>Balanced</b>	Equal and opposite. Net force = 0. No change in motion.
<b>Unbalanced</b>	Net force is not 0. Object accelerates.
<b>Resultant</b>	The overall combined force.

## Part A — Identifying

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1. Balanced or unbalanced? (a) Car at constant speed (b) Ball slowing down (c) Book on table (d) Rocket launching. [4 marks]

## Part B — Calculating

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2. Dog pulls sled 50 N right. Friction 30 N left. Resultant force and direction? [2 marks]

Show your working:

3. Tug-of-war: Team A 450 N left, Team B 520 N right. Resultant? [2 marks]

Show your working:

### **Part C — Newton's First Law**

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4. On the German Autobahn, passengers lurch forward when braking. Explain using Newton's First Law. [3 marks]