

The Primary Stage of Grades (4-5)
School Year 2022- 2023

Name: Key

Subject: Science

Unit 7: Effects of Forces

Worksheet 3: Balanced and unbalanced forces

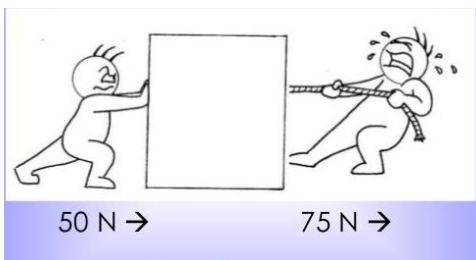
Date: / /

Class: Grade 5 CP (All sections)

Objective/s:

- Identify balanced and unbalanced forces acting on different objects, and calculate the resultant force.

Q1: Find the resultant force in each of the following situations:



$\xrightarrow{\quad} \xrightarrow{\quad} \xrightarrow{\quad}$
 Resultant Force = $50\text{ N} + 75\text{ N} = 125\text{ N}$



$\xrightarrow{\quad} \xleftarrow{\quad} \xrightarrow{\quad}$
 Resultant Force = $8\text{ N} - 2\text{ N} = 6\text{ N}$ (unbalanced)



$\xrightarrow{\quad} \xrightarrow{\quad} \xrightarrow{\quad}$
 Resultant Force = $10\text{ N} + 2\text{ N} = 12\text{ N}$ (unbalanced)



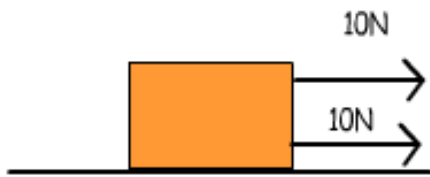
$\xrightarrow{\quad} \xleftarrow{\quad}$
 Resultant Force = $8\text{ N} - 8\text{ N} = 0\text{ N}$ (Balanced)



$\xrightarrow{\quad} \xrightarrow{\quad} \xrightarrow{\quad}$
 $\xleftarrow{\quad} \xrightarrow{\quad} \xleftarrow{\quad}$
 Resultant Force = $5\text{ N} + 3\text{ N} = 8\text{ N}$
 $10\text{ N} - 8\text{ N} = 2\text{ N}$ (unbalanced)



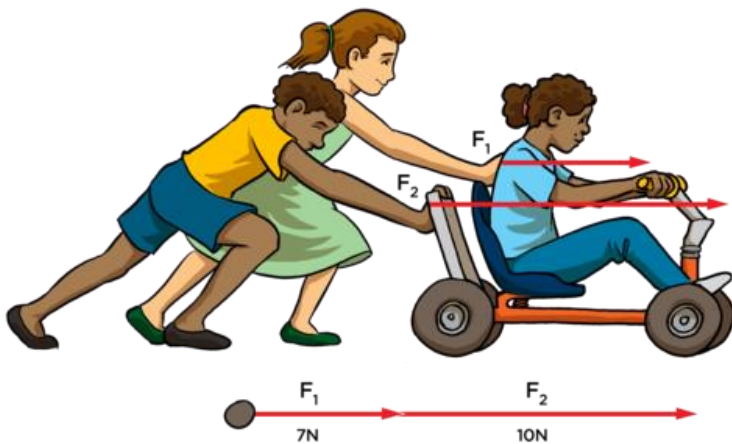
Resultant Force = $10\text{ N} - 10\text{ N} = 0\text{ N}$ (Balanced Forces)



Resultant Force = $10\text{ N} + 10\text{ N} = 20\text{ N}$ (Unbalanced Forces)

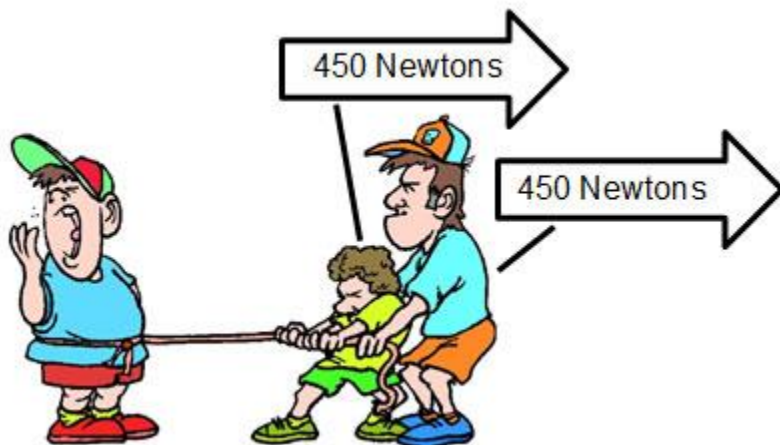


Resultant Force = $10\text{ N} - 8\text{ N} = 2\text{ N}$ (Unbalanced Forces)



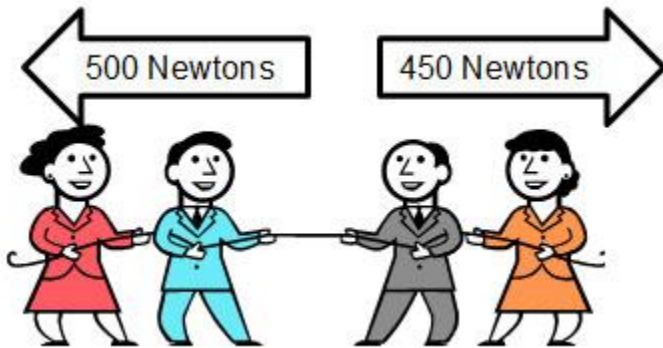
Resultant Force =

$7\text{ N} + 10\text{ N} = 17\text{ N}$



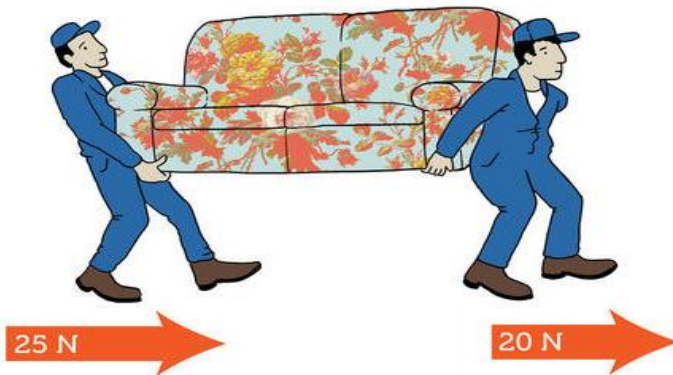
Resultant Force =

$450\text{ N} + 450\text{ N} = 900\text{ N}$



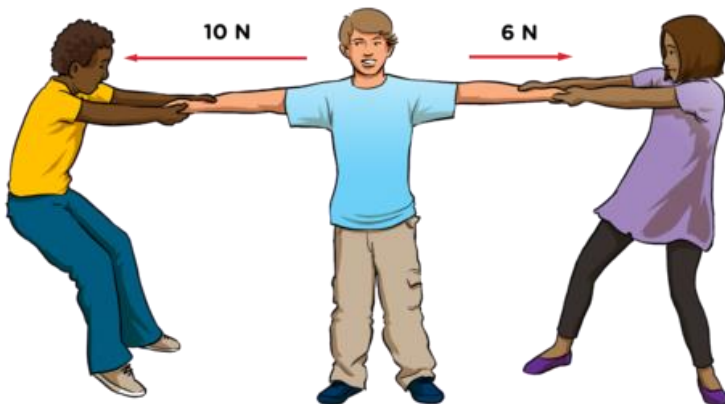
Resultant Force =

$500 \text{ N} - 450 \text{ N} = 50 \text{ N}$



Resultant Force =

$25 \text{ N} + 20 \text{ N} = 45 \text{ N}$



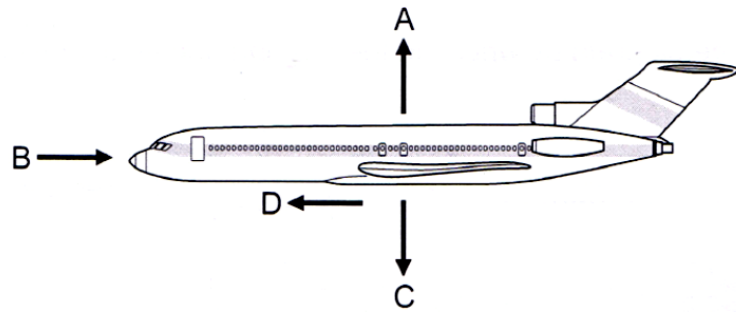
Resultant Force =

$10 \text{ N} - 6 \text{ N} = 4 \text{ N}$

Balanced forces do not cause a change in the object's motion. When balanced forces act on a moving object, the object will continue moving at the same speed in the same direction.

Unbalanced forces change the motion of an object, they may cause the object to speed up, slow down or change direction.

Q2: The picture shows an aeroplane flying.



(a) Draw a line to connect each letter to the correct force.

letter	force
A	<input type="text" value="air resistance"/>
B	<input type="text" value="moving aeroplane upwards"/>
C	<input type="text" value="moving aeroplane forwards"/>
D	<input type="text" value="gravity"/>

(b) The force moving the aeroplane forward is increased more than the air resistance.

What happens to the aeroplane?

Tick (✓) **one** box.

moves up in the air	<input type="checkbox"/>
moves down in the air	<input type="checkbox"/>
speeds up	<input checked="" type="checkbox"/>
slows down	<input type="checkbox"/>
stops moving	<input type="checkbox"/>

(c) Write down **one** way air resistance can be reduced.

By Streamlining (reducing the surface area in contact with the air).