



PHYSICS
EXPERIMENT 1:

Finding the Resultant Force

Name: _____

Date: _____

Partners: _____

- PURPOSE:** To study forces in equilibrium.
- HYPOTHESIS:** The resultant force of a system in equilibrium is zero.
- PROCEDURE:**

APPARATUS:	MATERIALS:
2 ring stands 2 ring clamps 2 spring balances (0-5 N) 1 set of laboratory masses	string

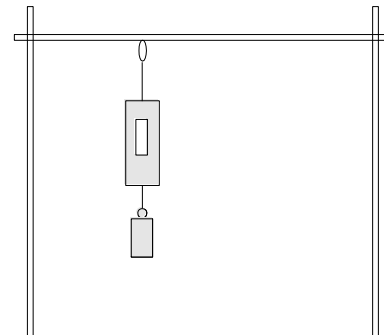
NOTE

Before using the spring balances make sure they are reset to zero.

PART-A: Two forces in equilibrium

Step-1: Hang a spring balance on a horizontal bar then answer these questions:

- What is the scale reading? _____
- What is the resultant force? _____
- Is the system in equilibrium? _____



Step-2: Hang a 200 g mass to the spring balance then answer these questions:

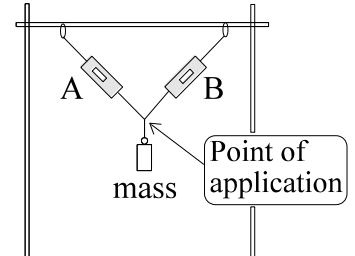
- Identify the *two* concurrent forces: _____
- What is the scale reading? _____
- What is the resultant force? _____
- Is the system in equilibrium? _____
- Is the system "at rest"? _____

Step-3: Hang a 500 g mass to the balance then answer these questions:

- a) What is the scale reading? _____
- b) What is the resultant force? _____
- c) Is the system "at rest"? _____

PART-B: Three forces in equilibrium (acting at **equal** angles)

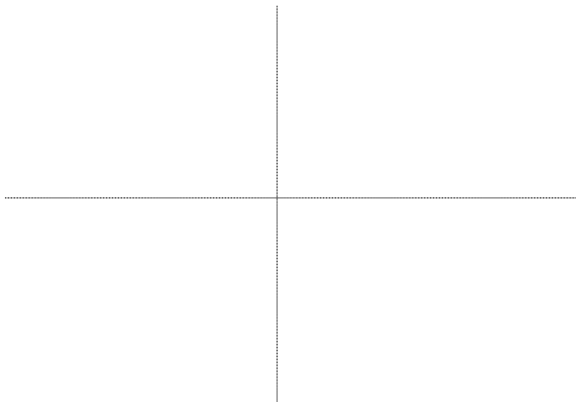
Hang a 200 g mass to the balance as shown on the right then answer the following questions:



★ **IMPORTANT:** Be sure to attach the mass in the *middle* of the string.

- a) Identify the *three* concurrent forces: _____

- b) What is the reading on scale-A? _____
- c) What is the reading on scale-B? _____
- d) What is the resultant force? _____
- e) Is the system in equilibrium? _____
- f) What is the total downward force? _____
- g) What is the total upward force? _____
- h) Is the *total force up* equal to the *total force down*. _____
- i) Is the system at "rest"? _____
- j) Below, make a sketch of the concurrent forces acting on the system.
 (Use the origin as the point of application of the forces)



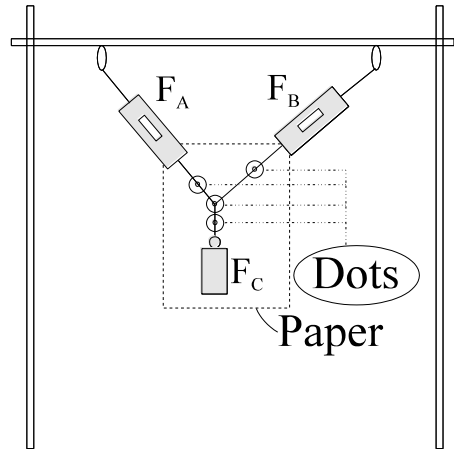
Calculations:

PART-C: Three forces in equilibrium (acting at **unequal** angles)

Hang a 200 g mass to the balance as shown on the right (F_C).

★ **IMPORTANT:** *Do not* hang the mass in the *middle* of the string.

a) Identify the *three* concurrent forces:



b) What is the reading on scale-A (F_A)?

c) What is the reading on scale-B (F_B)?

d) What is the resultant force?

e) Is the system in equilibrium?

f) What is the total downward force?

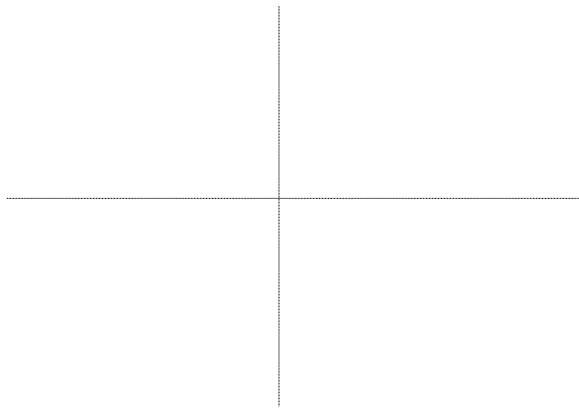
g) What is the total upward force?

h) Are total forces up equal to total forces down?

i) Is the system "at rest"?

j) Below, make a sketch of the concurrent forces acting on the system.

Calculations:



4. CONCLUSION: _____
