

A. Define each of the following. Also give standard units where appropriate.

Apparent Weight (32)	Scalar (34)
Augggh! (31)	Sliding Friction (37, 38)
Displacement (31)	Sliding Friction Coefficient (39, 40)
Force (31)	Spring constant (33)
Gravitational Field Strength (6, 34)	Standard Deviation (30b)
Inclination angle (40)	Static Friction Coefficient (39, 40)
Mass (6, 34, 42)	Static Friction Limit (39, 40)
Normal (39)	Tension (33)
Operational Definition (32)	Total force (31, 36)
Rolling Friction (40b)	Vector (30, 33)
	Weight (0, 6, 31, 32, 35)

B. Discoveries:

- How do we avoid confusion when describing or naming forces? (31)
- Interaction Law: (31) Whenever object A exerts a force on object B, we can be certain that ___ exerts an ___ but ___ force on ___.
- What is the total force acting on a non-accelerating object? (31, 32, 36, 38, 40) _____
- What kind of motion results if the total force on an object is not zero? (31, 32, 33, 34R, 37, 38)
 - How can we predict the direction of an object's acceleration? (31, 37) _____
- When is an object's apparent weight equal to true weight? _____
-When is it greater? _____ When is it less? (32, 33, 35) _____
- The mass of an object can be measured with a _____. The SI unit of mass is the ____ (6, 35)
- The weight of an object can be measured with a ____ if the object is not ____ing.
A familiar unit of weight is the _____. (6, 33, 35) The **SI** unit of weight is the _____. (39)
One pound is equal to _____ newtons. One newton is equal to ____ pound. (6, 46)
- How does the weight of an object depend on its mass? (6, 32, 37, 39) $W =$ _____
- How strong is the earth's gravity? $g =$ _____ or _____ (6, 35, 39, 46)
As we move away from the earth we expect to find _____er gravity.
- Hooke's Equation: How does the tension of a spring depend on its amount of stretch? _____ (7, 33)
- How do we add vectors? (30, 34R) _____
- On p. 30b we found that we can draw and measure lines with a precision of roughly \pm __ cm.
To obtain $\pm 1\%$ precision, every vector in a diagram must be at least __ cm. long. (30b)
- What two facts did you discover about static friction force? (39, 40, 41)
- How do we predict the *direction* of a sliding friction force or a drag force? (24, 37, 38) _____
- Does sliding friction depend on sliding speed? (24, 38) ____ (See also #11 on RS II.)
- Under what conditions is the forward force on an object equal (in strength) to the friction force?
 - The object must be on a _____ surface. (38)
 - Its acceleration must be _____, so its velocity is _____.
- How can we *alter* the strength of a sliding friction force? (38, 39) _____
- How do we *predict* the strength of a sliding friction force? (38, 39) _____
- For any given pair of surfaces the _____ friction coefficient is always greater than or equal to the _____ friction coefficient. (39)
- If an object is moving with constant speed along a circular path, it must be accelerating toward the _____ of the circle. (35)
- How does skidding distance depend on initial speed? _____ (26R)