Physics 11

**Section 4.3: Newton’s Third Law
and Free Body Diagrams**

Newton’s Third Law: For every action (force) there is an equal and opposite reaction (force).

In a sense, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Examples:**

|  |  |  |
| --- | --- | --- |
| Situation | Action Force | Reaction (Buddy) Force |
|  |  |  |
|  |  |  |
|  |  |  |

Free Body Diagram: A diagram of the forces acting on an object.

Two Rules of \_\_\_\_\_\_\_\_\_ (Free Body Diagrams):

1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ must be \_\_\_\_\_\_\_\_\_\_\_\_\_ (draw only the object of interest, no others)
2. Draw \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Typical forces we use in FBDs:

|  |  |  |
| --- | --- | --- |
| Force | Symbol | Description |
| Gravity |  |  |
| Friction |  |  |
| Normal |  |  |
| Tension |  |  |
| Elastic |  |  |

**Example:** Draw a FBD for a sled being pulled at constant velocity.