

What the shovel and the ramp do is to change the way in which you do the work. A **machine makes work easier by changing the amount of force you exert, the distance over which you exert your force, or the direction in which you exert your force.** You might say that a machine makes work easier by multiplying either force or distance, or by changing direction.

When you do work with a machine, you exert a force over some distance. For example, you exert a force on the handle when you use a shovel to lift mulch. The force you exert on the machine is called the **input force**, or sometimes the effort force. The machine then does work, by exerting a force over some distance. The shovel, in this case, exerts a force to lift the mulch. The force exerted by the machine is called the **output force**. Sometimes the term resistance force is used instead, because the machine must overcome some resistance.

Figure 5 A machine makes work easier in one of three ways: by changing the amount of force you exert, the distance over which you exert your force, or the direction in which you exert your force. **Interpreting Diagrams** The diagram shows the input force, the output force, and the resistance force in each type of machine.