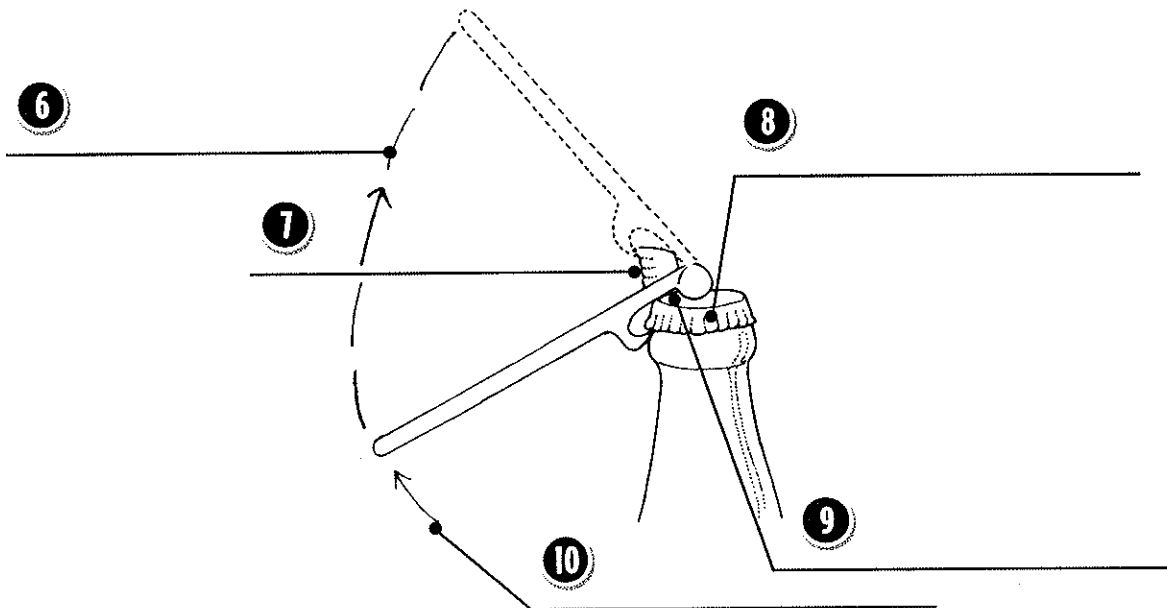
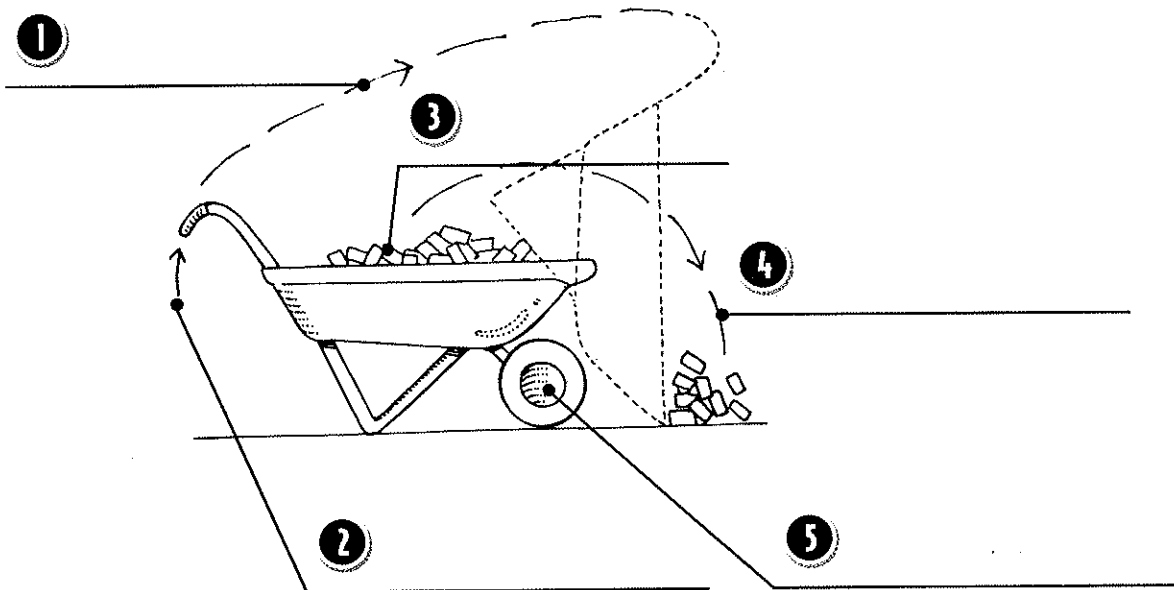


Levers at Work

The lever is a simple machine. It is a stiff bar that pivots on a point called a fulcrum. The bar moves but the fulcrum does not. With a lever, a load is lifted a certain distance when you apply force for another distance. Use the terms in the word box to label the illustrations. Some terms are used more than once.

distance you use load	distance lever uses fulcrum	force
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Three Classes of Levers

Levers come in three basic classes. They each have a **fulcrum** or pivot point. Each lever has a **force** put into the lever called an **effort** or input force. Each lever also has a force, called the **load**, which is the object being moved. The type of lever is determined by where the effort and load are placed in relation to the fulcrum. Use the terms in the word box to label each class of lever and the diagrams. Some terms are used more than once.

first class fulcrum	second class load	third class effort
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Type of Lever: _____

The effort and load are on the same side of the fulcrum, but the effort is closer in.

Type of Lever: _____

The fulcrum is between the effort and the load.


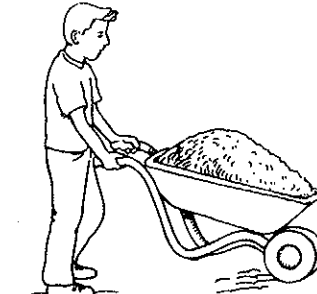

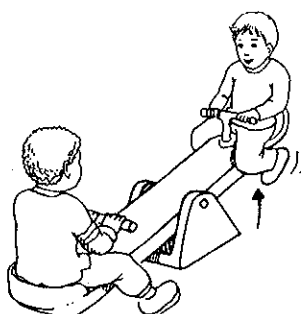

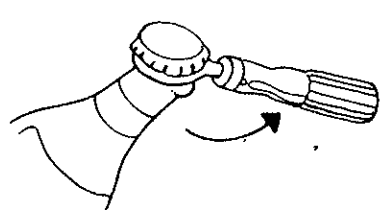
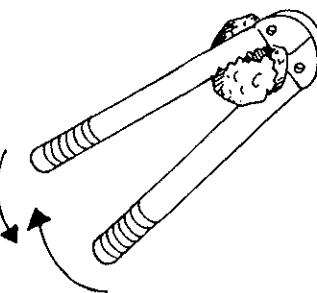
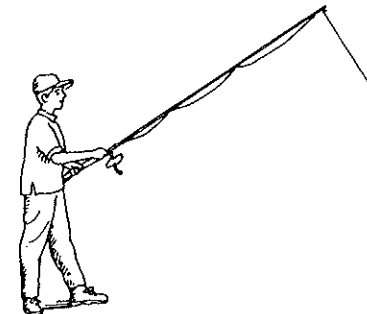

Type of Lever: _____

The effort and load are on the same side of the fulcrum, but the effort is farther out.

Classes of Levers

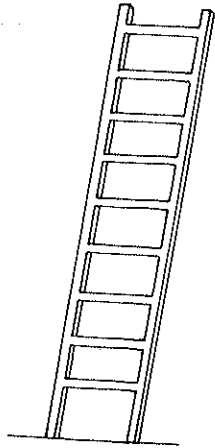
Use the terms in the word box to label each class of lever in the illustrations.

first class second class third class

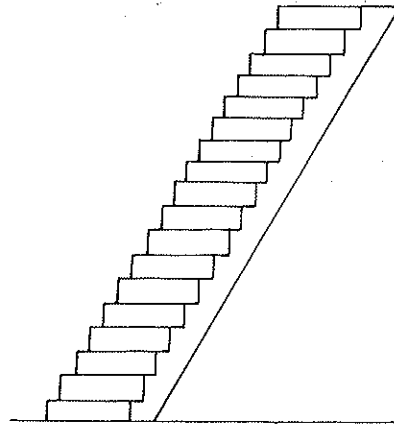
 <p>1 _____</p>	 <p>2 _____</p>	 <p>3 _____</p>
 <p>4 _____</p>	 <p>5 _____</p>	 <p>6 _____</p>
 <p>7 _____</p>	 <p>8 _____</p>	 <p>9 _____</p>

Inclined Planes

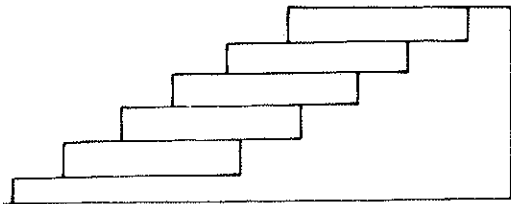
An **inclined plane** is a slope or ramp that does not move. Instead, it helps you move or raise things that are too heavy otherwise. With an inclined plane, you can do more work with your own force over a greater distance. Describe how the object in each illustration helps you do work more easily.



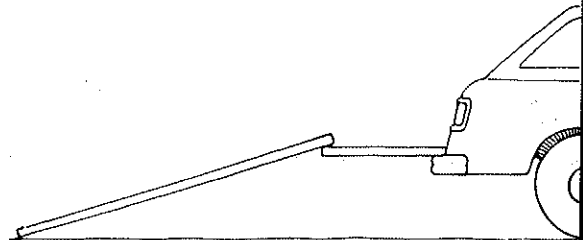
1



2



3



4

Mechanical Advantage of Inclined Planes and Levers

Mechanical advantage is the advantage created by a machine that enables people to do work while using less force. Use the example diagram to identify resistant force and effort force. Then use the formula to calculate the mechanical advantage for each diagram.

mechanical advantage = resistance force divided by effort force

$$MA = \frac{F_R}{F_E}$$

1 _____

2 _____

3 _____

4 _____