

Simple Machines and Work

READ ALOUD PASSAGE

Work, scientifically, is force applied over a distance moved. No movement means no work. You can push on a wall until you are tired, but you have done no work on it, because it did not move. Carrying a box up the stairs is work. You pushed it up, and it went up.

A machine cannot shrink the total work needed. It can only trade force for distance. A lever's fulcrum position sets that trade: closer to the load means easier lifting but farther to push. Think of a seesaw. A small child can lift a grown-up if the grown-up sits near the middle and the child sits way out at the end. The child pushes down a long way. The grown-up rises only a little.

Ramps, pulleys, and wheel-and-axles all make the same kind of trade, in different shapes. A ramp lets you move a heavy cart up into a truck with less force, but you have to push it farther.

Activity 1: Word Builder

Answer each question with your own words.

1. List four nouns that are simple machines.

1. _____

2. _____

3. _____

4. _____

2. List three better verbs for push that tell how you might move a heavy box.

1. _____

2. _____

3. _____

4. _____

Activity 2: Sentence Scramble

These words are mixed up. Put them in order to make a sentence. Start with a capital letter and end with a period.

1. movement / work / no / means / no

Activity 3: Grow a Sentence

This sentence is very short. Answer each question to add more information. Then put your answers together into one longer sentence.

START WITH THIS SENTENCE

The child lifts.

When?

Where?

How?

Why?

Write your expanded sentence:

Activity 4: Statement or Question?

Read each sentence. Write S if it is a statement or Q if it is a question. Then add the correct end mark on the line.

- ☐ 1. Is pushing on a wall work ____
- ☐ 2. Carrying a box up the stairs is work ____
- ☐ 3. How does a ramp make lifting easier ____
- ☐ 4. A lever turns on a fulcrum ____

Activity 5: Sentence Scramble

These words are mixed up. Put them in order to make a sentence. Start with a capital letter and end with a period.

1. work / a / up / the / is / carrying / stairs / box

2. the / machine / total / a / work / cannot / needed / shrink

3. force / it / for / distance / trade / can / only
