Name: _____ Date: _____

The Wheelbarrow: A Lever on a Wheel

Circle group

A wheelbarrow is one tool, but it has two simple machines. One is the wheel. The other is the lever.

A lever is a stiff bar that turns on a fixed point. The point is called a fulcrum. In a wheelbarrow, the fulcrum is the axle of the front wheel. The load sits in the bed, between the wheel and your hands. The handles are long.

Lift the handles. The front stays on the wheel, and the back goes up. Your hands are far from the fulcrum. So a small lift moves a heavy load.

Put a heavy load close to the wheel, and it feels lighter. Put it near your hands, and it feels heavier.

The wheel helps, too. It carries most of the weight. You only lift part of it and push. Gardeners and builders use wheelbarrows to move soil, bricks and stones.

Questions

1. Which two simple machines are in a wheelbarrow?

_____

_____

2. What is the fulcrum in a wheelbarrow?

_____

_____

3. Where does the load sit?

_____

_____

4. What happens to a heavy load close to the wheel?

_____

_____

5. How does the wheel help you?

_____

_____

6. Why would very short handles be harder to use?

_____

_____

Words to know

lever: a stiff bar that turns on a point to help lift things
fulcrum: the fixed point that a lever turns around
axle: the rod in the middle of a wheel that the wheel turns on
load: something heavy that is being lifted or carried
handles: the parts of a tool that you hold in your hands

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

The Wheelbarrow: A Lever on a Wheel

Triangle group

A wheelbarrow looks like one simple tool, but it holds two simple machines. One of them is the wheel. The other is the lever.

A lever is a stiff bar that turns around a fixed point called a fulcrum. In a wheelbarrow, the fulcrum is the axle of the front wheel. The bed of the wheelbarrow, where you put the load, sits between the wheel and your hands. The handles are long and reach far back from the wheel.

When you lift the handles, the front of the wheelbarrow stays on the wheel while the back rises. Because your hands are much farther from the fulcrum than the load is, a small lift from you moves a heavy load. The longer the handles, the easier the lift.

You can make the job easier still. If you pile a heavy load close to the wheel, it feels lighter. A heavy load near the back, close to your hands, feels much heavier.

The wheel helps, too. It carries most of the weight, so you do not have to hold up the whole load. You only have to lift part of it and push. That is why gardeners and builders use wheelbarrows to move soil, bricks and stones.

Questions

1. Which two simple machines does a wheelbarrow have?

_____

_____

2. What is the fulcrum in a wheelbarrow?

_____

_____

3. Where does the load sit in relation to the wheel and your hands?

_____

_____

4. What happens to a heavy load that is piled close to the wheel?

_____

_____

5. What does the wheel do to help you?

_____

_____

6. Why would wheelbarrow handles that were very short be harder to use?

_____

_____

Words to know

lever: a stiff bar that turns on a point to help lift things
fulcrum: the fixed point that a lever turns around
axle: the rod in the middle of a wheel that the wheel turns on
load: something heavy that is being lifted or carried
handles: the parts of a tool that you hold in your hands

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

The Wheelbarrow: A Lever on a Wheel

Square group

A wheelbarrow appears to be a single, uncomplicated tool, but it actually combines two simple machines. One of them is the wheel, and the other is the lever.

A lever is a stiff bar that pivots around a fixed point known as a fulcrum. In a wheelbarrow, the fulcrum is the axle of the front wheel. The bed of the wheelbarrow, where you place the load, sits between the wheel and your hands, and the handles are long, reaching far back from the wheel.

When you lift the handles, the front of the wheelbarrow remains on the wheel while the back rises. Because your hands are much farther from the fulcrum than the load is, a small lift from you is enough to move a heavy load. The longer the handles are, the easier the lift becomes.

You can make the job easier still. A heavy load piled close to the wheel feels noticeably lighter, whereas a heavy load near the back, close to your hands, feels much heavier.

The wheel contributes as well, because it carries most of the weight, and you do not have to support the entire load yourself. You only need to lift part of it and push, which is why gardeners and builders rely on wheelbarrows to move soil, bricks and stones.

Questions

1. Which two simple machines does a wheelbarrow combine?

_____

_____

2. What is the fulcrum in a wheelbarrow?

_____

_____

3. Where does the load sit in relation to the wheel and your hands?

_____

_____

4. What happens to a heavy load that is piled close to the wheel?

_____

_____

5. How does the wheel contribute to making the job easier?

_____

_____

6. Why would extremely short handles make a wheelbarrow harder to use?

_____

_____

Words to know

lever: a stiff bar that turns on a point to help lift things
fulcrum: the fixed point that a lever turns around
axle: the rod in the middle of a wheel that the wheel turns on
load: something heavy that is being lifted or carried
handles: the parts of a tool that you hold in your hands

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: The Wheelbarrow: A Lever on a Wheel

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: The Wheelbarrow: A Lever on a Wheel

Easier · 145 words · Flesch-Kincaid grade 1.6

1. A wheel and a lever.
2. The axle of the front wheel.
3. Between the wheel and your hands.
4. It feels lighter.
5. It carries most of the weight, so you lift only part.
6. Your hands would be closer to the fulcrum, so you would have to lift harder.

Triangle: The Wheelbarrow: A Lever on a Wheel

This passage · 205 words · Flesch-Kincaid grade 3.5

1. A wheel and a lever.
2. The axle of the front wheel.
3. Between the wheel and your hands.
4. It feels lighter.
5. It carries most of the weight so you only lift part of it.
6. Your hands would be closer to the fulcrum, so you would need to lift harder to move the same load.

Square: The Wheelbarrow: A Lever on a Wheel

Harder · 217 words · Flesch-Kincaid grade 6.9

1. A wheel and a lever.
2. The axle of the front wheel.
3. Between the wheel and your hands.
4. It feels noticeably lighter.
5. It carries most of the weight, so you only lift part of the load and push.
6. Your hands would be closer to the fulcrum, so you would have to lift harder to move the same load.