Name: _____ Date: _____

# Cranking Up the Well Bucket

Circle group

Long ago, many families got water from a well. A full bucket is heavy. The water can be far below the ground. Pulling the rope by hand would tire anyone out. So builders added a crank.

A crank is a wheel and axle machine. The axle is a thick rod called a barrel. It goes across the top of the well. The rope winds around the barrel. The bucket hangs from the rope. A handle on one end is shaped like a bent arm. Turn the handle, and the barrel turns. The rope winds up.

Here is the clever part. The handle goes around a big circle. The barrel turns in a much smaller one. Your hand moves a long way, but the rope moves a short way. That is the trade. You turn the handle many times, but each turn takes only a small push. The bucket feels lighter.

You use this idea when you turn a doorknob or a pencil sharpener. The part you hold goes in a big circle. That makes a hard job easier.

## Questions

**1. Why did builders add a crank?**

_____

_____

**2. What is the barrel in a well crank?**

_____

_____

**3. What hangs from the rope?**

_____

_____

**4. Which goes in the bigger circle, the handle or the barrel?**

_____

_____

**5. What is the trade when you use a crank?**

_____

_____

**6. Why does a longer handle make the bucket feel lighter?**

_____

_____

## Words to know

crank: a handle you turn to make something else turn
axle: the rod in the middle of a wheel that the wheel turns on
barrel: a rounded tube or drum shape
winds: wraps around something again and again

## 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: _____

# Cranking Up the Well Bucket

Triangle group

Long ago, many families got water from a well. A full bucket is heavy, and the water can be far below the ground. Hauling the rope hand over hand would tire anyone out. So well builders added a crank.

A crank is a wheel and axle machine. The axle is a thick rod, called a barrel, that stretches across the top of the well. The rope winds around the barrel, and the bucket hangs from the rope. At one end of the barrel is a handle shaped like a bent arm. When you turn the handle, the barrel turns, and the rope winds up around it.

Here is the clever part. The handle travels around a big circle, while the barrel turns in a much smaller one. Your hand moves a long way, but the rope moves only a short way. That is the trade. You turn the handle many times, yet each turn takes only a small push. A heavy bucket feels much lighter than it would if you lifted it straight up.

You use the same idea when you turn a doorknob or the handle of a pencil sharpener. The part you hold travels in a big circle, and that makes a hard job easier.

## Questions

**1. Why did well builders add a crank?**

_____

_____

**2. What is the barrel in a well crank?**

_____

_____

**3. What hangs from the rope?**

_____

_____

**4. Which travels in the bigger circle, the handle or the barrel?**

_____

_____

**5. What is the trade when you use a crank?**

_____

_____

**6. Why does a longer handle make the bucket feel lighter?**

_____

_____

## Words to know

crank: a handle you turn to make something else turn
axle: the rod in the middle of a wheel that the wheel turns on
barrel: a rounded tube or drum shape
winds: wraps around something again and again
hauling: pulling something heavy with effort

## 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: _____

# Cranking Up the Well Bucket

Square group

Long ago, many families drew their water from a well. A full bucket is heavy, and the water may lie far beneath the ground, so hauling the rope hand over hand would exhaust anyone. For that reason, well builders added a crank.

A crank is a wheel and axle machine. The axle is a thick rod, called a barrel, that stretches across the top of the well. The rope winds around the barrel, and the bucket dangles from the rope. At one end of the barrel is a handle shaped like a bent arm. When you turn the handle, the barrel turns as well, and the rope winds up around it.

Here is the clever part. The handle travels around a large circle, while the barrel turns in a much smaller one. Your hand moves a long way, yet the rope moves only a short distance, and that is the trade. You must turn the handle many times, but each turn requires only a small push. A heavy bucket therefore feels far lighter than it would if you lifted it straight up.

You rely on the same idea whenever you turn a doorknob or the handle of a pencil sharpener. The part you hold travels in a big circle, and that makes a difficult job much easier.

## Questions

**1. Why did well builders add a crank?**

_____

_____

**2. What is the barrel in a well crank?**

_____

_____

**3. What dangles from the rope?**

_____

_____

**4. Which travels in the larger circle, the handle or the barrel?**

_____

_____

**5. What is the trade when you use a crank?**

_____

_____

**6. Why does a longer handle make the bucket feel lighter?**

_____

_____

## Words to know

crank: a handle you turn to make something else turn
axle: the rod in the middle of a wheel that the wheel turns on
barrel: a rounded tube or drum shape
winds: wraps around something again and again
hauling: pulling something heavy with effort

## 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: Cranking Up the Well Bucket

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

### Circle: Cranking Up the Well Bucket

Easier · 178 words · Flesch-Kincaid grade 2

1. Pulling a heavy bucket by hand would tire anyone out.
2. A thick rod across the well that the rope winds around.
3. The bucket.
4. The handle.
5. You turn many times, but each turn is a small push.
6. It goes in a bigger circle, so your hand moves farther and needs less push.

### Triangle: Cranking Up the Well Bucket

This passage · 207 words · Flesch-Kincaid grade 3.9

1. Pulling a heavy bucket up by hand would tire anyone out.
2. A thick rod across the top of the well that the rope winds around.
3. The bucket.
4. The handle.
5. You turn the handle many times, but each turn takes only a small push.
6. A longer handle travels in a bigger circle, so your hand moves farther and needs less push for the same job.

### Square: Cranking Up the Well Bucket

Harder · 217 words · Flesch-Kincaid grade 5.3

1. Hauling a heavy bucket up by hand would exhaust anyone.
2. A thick rod stretching across the top of the well that the rope winds around.
3. The bucket.
4. The handle.
5. You must turn the handle many times, but each turn requires only a small push.
6. A longer handle travels in a bigger circle, so your hand moves farther and needs less push to do the same job.