Name: _____ Date: _____

A Cooper Builds a Barrel Without Glue

Circle group

A barrel looks easy to make, but it is not. A cooper is a worker who makes barrels. A good barrel can hold liquid for years. And a barrel is made without glue.

The sides of a barrel are long wooden strips. These strips are called staves. Each stave is wide in the middle and thin at the ends. The cooper sets the staves in a ring. A metal hoop holds them at one end. Now the barrel looks like an open flower.

Next, the cooper heats the wood with steam or fire. Hot wood can bend. A rope slowly pulls the open end in. The staves curve and make a round shape. The cooper slides on more hoops and tightens them. When the wood cools, it keeps its shape.

Last, the cooper fits flat pieces on the top and bottom. When the barrel is filled, the wood drinks in some liquid. The wood swells a little. Then the seams press tight. This tight fit keeps the barrel from leaking. It does not need glue.

Questions

1. What is a cooper?

_____

_____

2. What are the wooden strips in a barrel called?

_____

_____

3. How does the cooper make the wood able to bend?

_____

_____

4. What holds the staves together at the start?

_____

_____

5. What does the wood do when the barrel is filled?

_____

_____

6. Why does a barrel not need glue?

_____

_____

7. Why does the cooper heat the wood before bending it?

_____

_____

Words to know

cooper: a worker who makes barrels
stave: one of the long wooden strips that form the side of a barrel
hoop: a ring of metal that holds a barrel together
seam: the line where two pieces are joined
swell: to grow a little bigger

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: _____

A Cooper Builds a Barrel Without Glue

Triangle group

A barrel looks simple, but it is hard to build. A cooper is the craftsperson who makes barrels, and a well-made barrel can hold liquid for years. The surprise is that a traditional barrel is built without any glue.

The sides of a barrel are made of long wooden strips called staves. Each stave is cut so that it is wider in the middle and narrower at the ends. The cooper stands the staves in a ring and slips a metal hoop around one end to hold them together. At this point the barrel looks a bit like an open flower.

Next comes the clever part. The cooper heats the wood with steam or fire until it becomes bendable. Then a rope or cable slowly pulls the open end of the ring inward, and the staves curve into the round shape of a barrel. More hoops are slid on and tightened. As the wood cools, it keeps its new shape.

Finally, the cooper fits flat pieces onto the top and bottom. When a barrel is filled, the wood soaks up some liquid and swells a little. This makes every seam press together even tighter. The careful fit, and not glue, is what keeps the barrel from leaking.

Questions

1. What is a cooper?

_____

_____

2. What are the long wooden strips in a barrel called?

_____

_____

3. How does the cooper make the wood bendable?

_____

_____

4. What holds the staves in a ring while the barrel is being shaped?

_____

_____

5. What happens to the wood when a barrel is filled with liquid?

_____

_____

6. Why can a barrel hold liquid without any glue?

_____

_____

7. Why do you think the cooper heats the wood before bending it?

_____

_____

Words to know

cooper: a worker who makes barrels
stave: one of the long wooden strips that form the side of a barrel
hoop: a ring of metal that holds a barrel together
seam: the line where two pieces are joined
swell: to grow a little bigger

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: _____

A Cooper Builds a Barrel Without Glue

Square group

At first glance a barrel appears simple, yet it is surprisingly difficult to construct. A cooper is the skilled craftsperson who makes barrels, and a carefully built barrel can store liquid for many years. Remarkably, a traditional barrel is assembled without any glue whatsoever.

The curved sides of a barrel consist of long wooden strips known as staves. The cooper cuts each stave so that it is broader in the middle and narrower at both ends. After standing the staves upright in a ring, the cooper slips a metal hoop around one end to keep them together. At this stage the barrel resembles a flower that has not yet closed.

The next step is the most ingenious. The cooper heats the wood with steam or fire until it softens enough to bend. A rope or cable then gradually draws the open end of the ring inward, so the staves bow into the rounded shape of a barrel. Additional hoops are driven on and tightened, and as the wood cools it holds its new form.

Finally, the cooper fits flat pieces into the top and bottom. Once the barrel is filled, the wood absorbs a little of the liquid and swells slightly, which presses every seam together even more firmly. It is this precise fit, rather than any glue, that prevents the barrel from leaking.

Questions

1. What is a cooper?

_____

_____

2. What name is given to the long wooden strips that form a barrel's sides?

_____

_____

3. How does the cooper soften the wood so that it will bend?

_____

_____

4. What keeps the staves together in a ring while the barrel is shaped?

_____

_____

5. What happens to the wood once a barrel is filled with liquid?

_____

_____

6. Why is it possible for a barrel to hold liquid without any glue?

_____

_____

7. Why might the cooper heat the wood before trying to bend it?

_____

_____

Words to know

cooper: a worker who makes barrels
stave: one of the long wooden strips that form the side of a barrel
hoop: a ring of metal that holds a barrel together
seam: the line where two pieces are joined
swell: to grow a little bigger

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: A Cooper Builds a Barrel Without Glue

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

Circle: A Cooper Builds a Barrel Without Glue

Easier · 175 words · Flesch-Kincaid grade 1.3

1. A worker who makes barrels.
2. Staves.
3. By heating it with steam or fire.
4. A metal hoop.
5. It takes in some liquid and swells a little, so the seams press tight.
6. The staves fit tight, the hoops hold them, and the swollen wood presses the seams shut.
7. Hot wood bends more easily and may not crack.

Triangle: A Cooper Builds a Barrel Without Glue

This passage · 208 words · Flesch-Kincaid grade 4.7

1. A craftsperson who makes barrels.
2. Staves.
3. By heating it with steam or fire.
4. Metal hoops.
5. It soaks up some liquid and swells, which presses the seams tighter.
6. The staves fit together tightly, the hoops hold them, and the swelling wood presses the seams shut.
7. Wood that is not heated might crack when it is bent, and heated wood bends more easily.

Square: A Cooper Builds a Barrel Without Glue

Harder · 224 words · Flesch-Kincaid grade 7.4

1. A skilled craftsperson who makes barrels.
2. Staves.
3. By heating it with steam or fire.
4. Metal hoops.
5. It absorbs some of the liquid and swells, pressing the seams together more firmly.
6. The staves fit together precisely, the hoops hold them, and the swelling wood seals the seams.
7. Unheated wood could crack when bent, while softened wood bends without breaking.