Name: _____ Date: _____

# How a Broken Bone Builds Itself Back

Circle group

Picture a bone. You may think of something dry and hard, like a bone in a museum. But a bone in a living body is not like that. It is alive. It has blood vessels, nerves, and cells that are always at work. That is why a broken bone can mend itself.

Healing takes stages. After a break, blood gathers around the spot and makes a clot. In a few days, the body fills the area with a soft, rubbery stuff. It starts to hold the broken ends together. Then special cells build new bone across the gap. This new patch is called a callus. It is thicker and rougher than the bone around it. Over many weeks it gets hard. Then other cells slowly reshape it. At the end, the bone looks almost like it did before.

Doctors help in two ways. They take X-rays to see how the bone broke. Then they line up the pieces and keep them still. A hard cast or a splint does this. A bone heals best when the ends do not move. Glue works the same way.

Time is part of the cure. Children's bones often heal faster than adults' bones. Still, follow the doctor's rules about the cast and about sports. A bone that feels fine may still be weak.

## Questions

**1. What is inside a bone in a living body?**

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**2. What forms right after a break?**

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**3. What is a callus?**

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**4. What do doctors use to see how a bone broke?**

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**5. Why does a cast or splint help a broken bone heal?**

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_____

**6. Why can a bone that feels fine still be weak?**

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**7. Why can a living bone mend itself when a museum bone cannot?**

_____

_____

## Words to know

clot: a thick lump formed when blood stops flowing
callus: a patch of new bone that grows over a break
cast: a hard cover that holds a broken bone still
splint: a stiff support that keeps a body part from moving
reshape: to change something into a new form

## 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: _____

# How a Broken Bone Builds Itself Back

Triangle group

When you picture a bone, you might imagine something dry and hard, like the bones in a museum. A bone inside a living body is very different. It is a busy, living part, with blood vessels, nerves, and cells that are always working. That is why a broken bone can repair itself.

Healing happens in stages. Right after a break, blood collects around the damaged spot and forms a clot. Within days, the body fills the area with a soft, rubbery material that begins to hold the broken ends together. Next, special cells lay down new bone across the gap. This new patch is called a callus, and it is thicker and rougher than the bone around it. Over many weeks it hardens, and then other cells slowly reshape it until the bone returns to nearly its original form.

Doctors help in two ways. First, they take pictures called X-rays to see exactly how the bone broke. Second, they make sure the pieces line up and then keep the area from moving. A hard cast or a splint does this job. Healing works best when the broken ends stay still, in the same way that glue sets best when you do not wiggle the parts.

Time is part of the cure. The bones of children often heal faster than those of adults. Even so, it is important to follow the doctor's directions about the cast and about when to return to sports. A bone that feels fine may still be weaker than it looks.

## Questions

**1. What is inside a bone in a living body?**

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_____

**2. What forms right after a break?**

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_____

**3. What is a callus?**

_____

_____

**4. What do doctors use to see how a bone broke?**

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**5. Why does a cast or splint help a broken bone heal?**

_____

_____

**6. Why can a bone that feels fine still be weak?**

_____

_____

**7. Why is a living bone able to repair itself while a museum bone cannot?**

_____

_____

## Words to know

clot: a thick lump formed when blood stops flowing
callus: a patch of new bone that grows over a break
cast: a hard cover that holds a broken bone still
splint: a stiff support that keeps a body part from moving
reshape: to change something into a new form

## 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: _____

# How a Broken Bone Builds Itself Back

Square group

When you imagine a bone, you may picture something dry and brittle, like the skeletons displayed in a museum. A bone inside a living body is entirely different. It is a vigorous, living structure, equipped with blood vessels, nerves, and cells that are constantly at work, which is precisely why a broken bone is able to repair itself.

Healing proceeds in stages. Immediately after a fracture, blood collects around the damaged spot and forms a clot. Within a few days, the body fills the region with a soft, rubbery material that begins to bind the broken ends together. Next, specialized cells deposit new bone across the gap. This fresh patch, called a callus, is thicker and rougher than the surrounding bone. Over many weeks it hardens, and then other cells gradually reshape it until the bone returns to very nearly its original form.

Doctors assist in two principal ways. First, they take pictures called X-rays to determine exactly how the bone broke. Second, they ensure that the pieces are properly aligned and then prevent the area from moving. A hard cast or a splint accomplishes this task. Healing is most successful when the broken ends remain still, much as glue sets best when you refrain from wiggling the parts.

Time is an essential part of the cure. The bones of children often heal more quickly than those of adults. Even so, it is important to follow the doctor's instructions regarding the cast and regarding when to return to sports, because a bone that feels perfectly fine may still be weaker than it appears.

## Questions

**1. What does a bone inside a living body contain?**

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**2. What forms immediately after a fracture?**

_____

_____

**3. What is a callus?**

_____

_____

**4. What do doctors use to determine how a bone broke?**

_____

_____

**5. Why does a cast or splint help a broken bone heal?**

_____

_____

**6. Why might a bone that feels fine still be weaker than it appears?**

_____

_____

**7. Why can a living bone repair itself when a museum bone cannot?**

_____

_____

## Words to know

clot: a thick lump formed when blood stops flowing
callus: a patch of new bone that grows over a break
cast: a hard cover that holds a broken bone still
splint: a stiff support that keeps a body part from moving
reshape: to change something into a new form

## 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: How a Broken Bone Builds Itself Back

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

### Circle: How a Broken Bone Builds Itself Back

Easier · 220 words · Flesch-Kincaid grade 2.1

1. Blood vessels, nerves, and cells that are always at work.
2. A blood clot around the spot.
3. A thicker, rougher patch of new bone across the gap.
4. X-rays.
5. It keeps the broken ends from moving so they can join.
6. It may still be reshaping and may not be done healing.
7. A living bone has cells and blood that keep working.

### Triangle: How a Broken Bone Builds Itself Back

This passage · 255 words · Flesch-Kincaid grade 5.3

1. Blood vessels, nerves, and cells that are always working.
2. A blood clot around the damaged spot.
3. A thicker, rougher patch of new bone that forms across the gap.
4. X-rays.
5. It keeps the broken ends from moving, so they can join together.
6. It may still be reshaping and has not finished healing.
7. A living bone has cells and blood that keep working.

### Square: How a Broken Bone Builds Itself Back

Harder · 264 words · Flesch-Kincaid grade 8.4

1. Blood vessels, nerves, and cells that are constantly at work.
2. A blood clot around the damaged spot.
3. A thicker, rougher patch of new bone deposited across the gap.
4. X-rays.
5. It prevents the broken ends from moving, so they can join together.
6. It may still be reshaping and may not have finished healing.
7. A living bone has cells and blood that keep working.