Read this article. Then answer questions 29 through 35.

Breaking Bones, Healing Bones

Accidents happen all the time, and sometimes people break bones. However, human bones are very strong. They support a person's entire body weight. Some bones, such as the femur bone in the thigh, can support many times more than an individual's body weight. Yet if bones are so strong, why do they break sometimes?

Imagine each of the 206 bones in your body as a pencil. You can bend it a little with no harm, but bend it too much and it will snap. Bones are made to withstand, or hold up against, everyday stresses, from running to climbing to dancing. But too much stress, or force, can cause a fracture, or a crack in a bone.

Broken Bones—Stages of Healing

Breaking a bone can be very painful and frightening. Injuries during professional sports games, for example, can result in fractured or broken bones. It can be shocking to see concerned team members help an injured player off the field. However, these teams have trained medics who know how to treat broken bones.

The difference between a simple and compound fracture depends on how badly the bone is separated into pieces and whether the bone protrudes, or sticks out, from the skin. Compound fractures are especially serious. Luckily, our bodies can mend, or heal, all types of fractures. How does a bone heal after a break?

The healing of a broken bone occurs in several stages. A few days after the bone is broken, cells begin to form cartilage between the two ends of the broken bone. Cartilage is a spongy material that fills the gap. Cartilage acts as protective material between two bones that meet at a joint. This spongy material holds and releases fluid as pressure is put on and taken from moving bones and joints.

GO ON

Because cartilage is not very strong, it is important that a broken bone not move. As a remedy for this problem, a bone doctor, or orthopedist, often uses a cast to keep the broken bone in place as it heals. The orthopedist determines the degree of the break to decide how the injury should be treated. A more severe break might require surgery for the bone before the broken limb is placed in a cast. Treatment of a less severe break usually begins by setting the bone, or putting its pieces in the correct position, before placing the broken limb in a cast.

Over time, the cartilage hardens and forms what is called a woven bone. As the bone heals, bone cells develop into what looks like threads. These threads begin to connect and weave together around the place where the bone was broken. When the woven bone forms at the fracture, it is a sign that healing is in full swing. Doctors use x-rays to examine and assess the damage and confirm that the bone is healing properly.

Bone Remodeling

As the bone heals, more cartilage and woven bone are created than the body needs to unite the fragments. Over time, this woven bone is replaced by bone that is especially strong around lines of stress. This "new" bone is much stronger than woven bone. When healing is complete, the new bone restores the shape of the original bone.

Once the fracture is completely healed, the bone should be as strong as it was originally. However, this process can take several years. During this stage, it is important to perform exercises with weights to strengthen the bones and the muscles that support them.

Protecting Bones

Because you never know when an accident will happen, it is impossible to protect bones from all injuries. However, there are things you can do to make it less likely you will break a bone. Exercising and eating a balanced diet are two ways to make your bones stronger and more resistant to injury. Foods with calcium, such as yogurt, milk, cheese, green leafy vegetables, and sardines, are good for building strong bones.

Always wear proper safety equipment when playing sports. Put on your seatbelt whenever you get into an automobile. Wear knee and elbow pads when skateboarding or rollerblading, and never ride a bike without a helmet. But if you do happen to break a bone, trust that your body has the power to heal it.

A The article informs readers about bones by explaining how broken bones heal.

B The article entertains readers with interesting stories about injuries and the healing process.

C The article persuades people to wear safety equipment by demonstrating that protecting bones is important.

D The article describes bones by comparing and contrasting bones and cartilage.

30 Read this sentence from lines 24 and 25.

The orthopedist determines the degree of the break to decide how the injury should be treated.

Which word or phrase has the same meaning as the word "determines" as it is used in this sentence?

A feels strongly about

B takes control of

C figures out

D guesses

GO ON

31 Which sentence from the article **best** supports the claim that the human body has the power to heal itself?

A "Some bones, such as the femur bone in the thigh, can support many times more than an individual's body weight." (lines 2 through 4)

B "A few days after the bone is broken, cells begin to form cartilage between the two ends of the broken bone." (lines 17 and 18)

C "This spongy material holds and releases fluid as pressure is put on and taken from moving bones and joints." (lines 20 and 21)

D "As a remedy for this problem, a bone doctor, or orthopedist, often uses a cast to keep the broken bone in place as it heals." (lines 23 and 24)

32 Which sentence is the **best** summary of the section "Bone Remodeling"?

A When a bone is broken and reformed, this new bone is stronger than the original.

B Eventually, strong new bone replaces woven bone, making it as good as new.

C As broken bones heal, people should lift weights to help keep them strong.

D The body weaves the bone and cartilage together to heal the broken bone.

33 How does the author **best** help readers understand the healing process for broken bones?

A by explaining the role of sports team medics and doctors in treating such injuries

B by explaining when surgery might be required before injuries can begin healing

C by explaining that our bodies can heal both a simple and a compound fracture

D by explaining what cartilage is and how it gradually hardens into woven bone

34 Based on the article, what can be inferred about how diet affects healing bones?

A Diet affects healing when a break in the bone is severe.

B Exercise is more important than diet for healing broken bones.

C Eating a proper diet builds strong bones and prevents injury.

D A good diet helps speed up the healing process.

35 How does the last paragraph **best** support the article's central idea?

A by including ideas about injury prevention

B by pointing out ways injuries can occur

C by focusing on sports-related injuries

D by explaining that injuries are unavoidable

STOP