



Name: \_\_\_\_\_

Hour: \_\_\_\_\_

### **So what do muscles do?**

Muscles move cows, snakes, worms and humans. Muscles move you! Without muscles you couldn't open your mouth, speak, shake hands, walk, talk, or move your food through your digestive system. There would be no smiling, blinking, breathing. You couldn't move anything inside or outside you. The fact is, without muscles, you wouldn't be alive for very long!

### **Do I have lots of muscles?**

Indeed. On average, probably 40% of your body weight is in muscles. You have over 630 muscles that move you. Muscles can't push. They pull. You may ask yourself, if muscles can't push how can you wiggle your fingers in both directions, back and forth, back and forth? The answer? Muscles often work in pairs so that they can pull in different or opposite directions.

### **How do muscles move?**

The cells that make up muscles contract and then relax back to original size. Tiny microscopic fibers in these cells compress by sliding in past each other like a sliding glass door being opened and then shut again. The cells of your muscles use chemical energy from the food you eat to do this. Without food, and particular kinds of nutrients, your muscles wouldn't be able to make the energy to contract!

Some muscles are known as "voluntary" — that is, they only work when you specifically tell them to. Do you want to say something? Or swing a bat? Or clap your hands? These are voluntary movements. Others, like the muscular contracting of your heart, the movement of your diaphragm so that you can breathe, or blinking your eyes are automatic. They're called involuntary movements. And how do any of these muscles move? Through signals from your nerves, and, in some cases, your brain, as well.

### **Can you hurt muscles?**

Yup. If you hear someone say that they "pulled" a muscle, they have, in fact, torn a muscle in the same way that you can tear a ligament or break a bone. And, like these other living body parts, with a little help, they generally mend themselves.

### **Factoids:**

- You have over 30 facial muscles which create looks like surprise, happiness, sadness, and frowning.
- Eye muscles are the busiest muscles in the body. Scientists estimate they may move more than 100,000 times a day!
- The largest muscle in the body is the gluteus maximus muscle in the buttocks.

1. What does the word voluntary mean in this article?
2. According to the article what is a synonym for involuntary?
3. According to the article, how do muscles keep you alive?
4. What explanation does the author give about how muscles can move you if they can only pull not push?
5. Why does the author make the comparison to muscle cells to a sliding glass door?
6. In the article why does the author use clapping or swinging a bat as an example of voluntary muscle movements?
7. Explain the function of muscles in the human body. Include the differences between voluntary and involuntary movements using examples from the text to help explain the concepts.