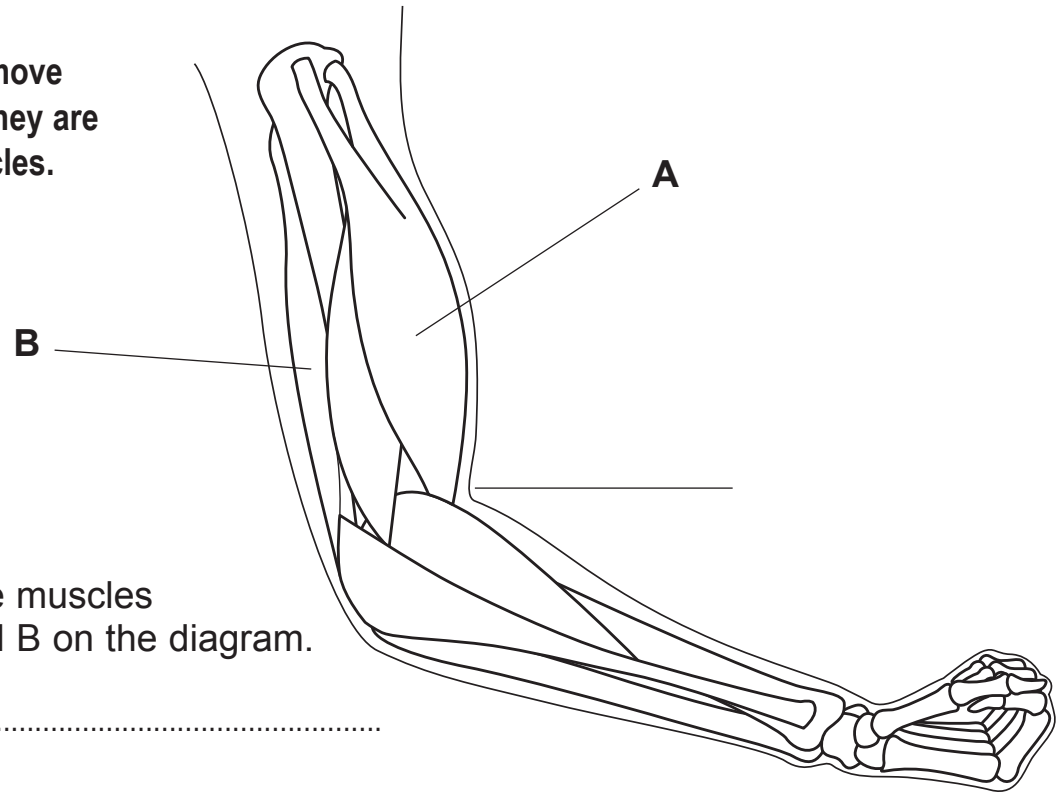
14

Name: ..... **Form:** .....

See **pages 30 and 31** of *The Body Book*

Muscles

Bones cannot move on their own. They are moved by muscles.



Q1. Name the muscles labelled A and B on the diagram.

A ✎ .....

B ✎ .....

Q2. What kind of joint is joint X?

✎ .....

Q3. Which way does the forearm move when muscle A contracts?

✎ .....

Q4. Which way does the arm move when muscle B contracts?

✎ .....

Q5. What happens to muscle A when muscle B contracts?

✎ .....

Q6. What links the brain to the muscles?

✎ .....

14 Teacher's sheet: Comprehension

See **pages 30 and 31** of *The Body Book*

ANSWERS

Introduction

Ask the students to touch their cheeks with their fingers and smile and then frown. Ask them what their fingers feel. They should feel the movement of muscles in the face. Tell the students that when they smile they use 17 muscles, and when they frown they use 40, so frowning takes much more energy than smiling.

Ask for a volunteer to be weighed and say that 45% of their weight is due to their muscles. Ask another student to calculate 45% of the volunteer's weight, and ask a third student to pile objects, such as books, onto a bathroom scale until the weight of the volunteers muscles is reached. This allows the students to visualise how much of their body is muscle.

Practical work

14: Muscles

2A: The model arm*

2B: Controlling the muscles*

*If they were not done while studying the introduction.

Integrating the practical work

You may use the introduction to the practical work on page 76 of this *Teacher's Guide* to introduce Diagram 2 on page 31 of the *Students' Book*. When you have studied Diagram 2 move on the practical work.

Extension worksheet

Pages 109 and 123.

Links

The skeleton, pages 26–27; **Joints**, pages 28–29; **Keeping fit**, pages 42–43.

Background

While skeletal muscle is made from fibres with microscopic stripes across them, smooth muscle is made from long, spindle-shaped cells. The smooth muscles in the intestine, for example, are arranged in two layers in the intestine wall. The outer layer has cells arranged along the length of the intestine and is called longitudinal muscle. When it contracts, the intestine becomes shorter. Inside this is a layer of cells arranged around the sides of the intestine and is called circular muscle. When it contracts, the width of the intestine becomes shorter. By alternately contracting the two layers of muscles, a wave of movement called peristalsis passes along the intestine which pushes the food along. This also occurs in the oesophagus (the tube that carries food from the mouth to the stomach) and can sometimes be felt when something is difficult to swallow. (See also page 82 of this *Teacher's Guide* for how muscles control the iris.)

Answers

Q1. A Biceps, B Triceps.

Q2. Hinge joint.

Q3. Upward.

Q4. Downward.

Q5. It relaxes.

Q6. Nerves.