Name _____ Date _____ Class _____

Enrich

The Skeletal System

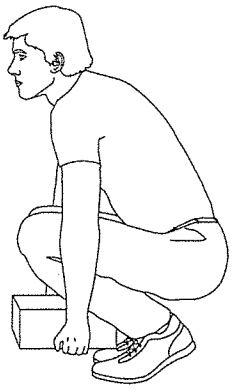
While most animals support their backs with four legs, humans use only two. Some scientists think that this is one reason why humans are likely to suffer from back pain. Read the passage below and then answer the questions that follow on a separate sheet of paper.

A Pain in the Back

Back pain can be caused by such things as incorrect posture when sitting or standing, lifting heavy objects incorrectly, sleeping on a mattress that does not provide enough support for the neck and back, or being overweight. Also, working on a computer that is not correctly positioned can be responsible for back pain. Even stress can cause a painful back. The figures below illustrate the correct way to sit while working at a computer and to lift heavy objects.

Sitting at a Computer Don't slouch. Sit with your lower back against the back of the chair. The keyboard should be directly in front of you. The screen should be centered in front of you and the top of the screen should be at eye level.

Lifting Heavy Objects First, make sure you can lift the object without straining. Then lift by bending at your knees, not at your back. Keep the object as close to your body as possible. Don't twist your body. It is better to push a heavy object than to pull it.



1. Why do you think the computer keyboard and screen should be centered directly in front of the person seated at the computer?
2. You are helping your next-door neighbor move some boxes of books from your house to his. How should you move the boxes to avoid injuring your back?
3. What type of shoes do you think would be likely to cause back pain? Why?
4. A friend tells you she has pain in her lower back. What are some back-care tips you could give her?

Place the outside corner, the corner away from the dotted line, in the corner of your copy machine to copy onto letter-size paper.

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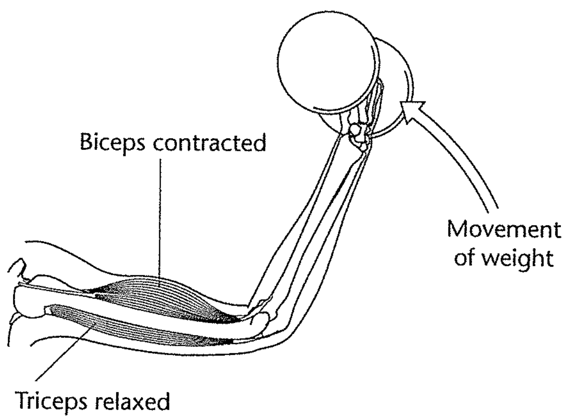
Enrich

The Muscular System

Exercise makes individual muscle cells grow wider by stimulating protein synthesis. This causes the muscle to become thicker. Muscles increase in strength as they become thicker. Read the paragraph below and look at the diagram. Then answer the questions that follow in the space provided.

Pumping Iron

Any exercise that makes a muscle try to move an immovable object or to lift a heavy one can work toward increasing that muscle's strength. You can increase the difficulty of the exercise by adding additional weight. The figure below demonstrates a biceps curl, a common strength-training exercise used to build arm muscles. The arrows show the direction of movement, and the circles represent a weight.



1. How does exercise build muscles?

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____

2. How can you increase the amount of exercise your arm muscles can do in the exercise pictured above?

____

____

3. How does the exercise shown above demonstrate that skeletal muscles must work in pairs?

____

____

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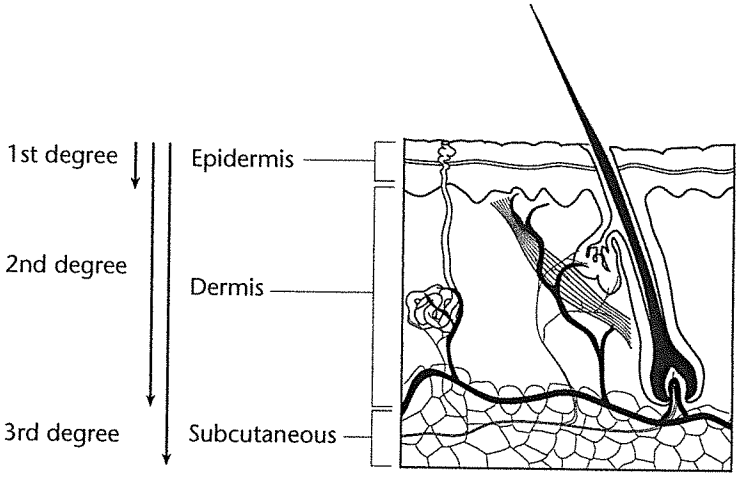
The Skin

Doctors classify burns according to the depth of skin damage. Burns can be classified as first-, second-, and third-degree burns, as shown in the diagram below. Look at the diagram and read the passage. Then answer the questions that follow on a separate sheet of paper.



Burns

First-degree burns can be caused by briefly touching a hot object or by coming into contact with hot water or steam. A mild sunburn is also considered a first-degree burn. In a first-degree burn, only the epidermis is damaged. These burns make the skin turn red and swell slightly.

Second-degree burns can be caused by coming into contact with flames, spilling a very hot liquid on yourself, or getting a deep sunburn. In a second-degree burn, both the epidermis and the dermis are damaged. These burns turn the skin bright red and cause blisters. These burns are very painful.

Third-degree burns can also be caused by contact with flames or by spilling hot liquids on yourself. In a third-degree burn, the entire thickness of the skin is damaged, including blood vessels, sweat glands, oil glands, hair follicles, and other skin tissues and structures. These burns are often leathery in appearance and may be red, white, tan, or brown in color. The person feels no pain because even the skin's pain receptors are damaged.

1. Which layer of the skin is affected by a first-degree burn? By a second-degree burn?
2. List at least four parts of the skin that are damaged by a third-degree burn.
3. Because the skin is destroyed in third-degree burns, what would be one possible complication of these burns while the patient is recovering? Explain your answer.
4. Many burns occur in the kitchen. What are two things you can do to prevent burn accidents there?