PURPOSE
Your skin serves many important functions:

Protection
It protects your organs, muscles, and bones from injury. It also protects your body from exposure to germs.

Temperature
It helps keep your body temperature constant, no matter what the temperature is outside.

Sensory Control
It has nerve endings that enable you to feel sensations.

Moisture Control
It keeps your body fluids from evaporating.

ANATOMY
Your skin is composed of three layers:

Epidermis
Epidermis is the outer layer of skin that you can see. Lacking blood vessels, the epidermis gets oxygen and nutrients from the lower layers. It continually creates new skin cells to replace dead cells on the surface. The epidermis also produces melanin, which gives your skin its color.

Dermis
Dermis is the middle layer of skin. It contains three types of tissues and is composed of many cells and structures, including hair follicles, nerves, blood vessels, and oil and sweat glands.

Subcutaneous Tissue
Subcutaneous Tissue is the third, or bottom, layer of skin. It is made up of fat and connective tissue that contains larger nerves and blood vessels. It helps your body stay warm and protects your organs from impact. The depth of subcutaneous tissue varies from person to person.

PROTECTION
Here are some tips for protecting your skin from:

Sun
Use a sunscreen with a sun protection factor (SPF) of 15 or higher on skin that is exposed to the sun. Regular use can help prevent sunburn, wrinkles, and skin cancer. Wearing a hat, a long-sleeve shirt, and long pants can also block your skin from the sun’s harmful rays.

Cuts
When your skin is cut, gently wash the area with warm water and soap. Apply an antibiotic cream or ointment to protect the area from infection and cover it with a sterile bandage. (More serious cuts or injuries should be treated by a doctor immediately.)

**Burns**
For minor burns, apply a burn cream or ointment to soothe the pain and irritation. For more serious burns, see a doctor immediately.

**Insect Bites and Rashes**
Don’t scratch! Scratching may further irritate or break the skin. Use a cream or ointment to limit itchiness and protect the area from infection.

**CARE**
Keeping your skin clean is an important part of maintaining your complexion and avoiding skin-related problems. Whether your skin is oily, dry, or balanced, always wash it gently.

**Hands and Face**
When washing your hands, use warm water and mild soap. (Strong soap can remove oil from your skin, causing dryness.) Keeping your hands clean will reduce the spread of germs to other parts of your body.

Wash your face at least once or twice a day, depending on your skin type. Apply warm water and a gentle cleanser with your hands, since abrasive washcloths can irritate your skin. Always rinse well and pat your skin dry with a soft towel.

**Bathing and Showering**
Bathe or shower once a day. Twice a day may be necessary for people with very oily skin or physically active lives while people with very dry skin might want to bathe every other day.

Taking long showers or baths with hot water can remove oil from your skin. Be sure to limit your shower or bath to 15 minutes; use warm, soapy water; and rinse yourself well.

**Moisturizing**
Moisturizers can help your skin stay moist and healthy. They provide a protective seal that helps prevent the evaporation of water through your skin due to exercise or exposure to the elements. Apply a moisturizer after taking a bath or shower or any time your skin feels dry.
What is skin?
You’ve learned that skin is actually made up of three different layers, each of which has a different function. They are:

- The epidermis
- The dermis
- The subcutaneous tissue

The epidermis is the top layer of skin, the part you see. Only as thick as a sheet of paper, the epidermis mostly builds new skin cells and makes melanin, a pigment that gives skin its color. When you go outside, the melanin in your skin protects you from being burned by the sun’s ultraviolet rays.

The bottom of the epidermis is called the basal layer. Cells in the basal layer divide and form squamous cells, which produce keratin, a protein that protects your skin from dangerous chemicals and infections.

Also found in the basal layer of your epidermis are melanocytes, which make the melanin in your skin, and Langerhans cells, which are part of your immune system.

As the basal cells divide, they push the squamous cells up toward the surface of your skin. As they move up, they shrink, flatten, and die. When they reach the top layer of the epidermis, they become the stratum corneum, which protects the body using the keratin produced earlier.

The dermis is the middle of your skin and makes up the majority of it. It includes strong fibers called collagen and elastin, which give your skin strength and elasticity.

The dermis also contains sweat glands, oil glands, blood vessels, nerve fibers, lymph channels, hair follicles, and muscle cells. Your sense of touch comes from the nerve endings found in the dermis.

The outer surface of the dermis is covered with projections that help it fit with the inner surface of the epidermis. Where the epidermis falls in between those projections, dermal ridges and furrows, such as those that make up the whorls on your fingertips, are created.

The subcutaneous tissue is the bottom layer of skin and is mostly made up of fat. It also contains your skin’s nerves and blood vessels, as well as the roots of your oil and sweat glands and of your hair follicles.

A hair follicle is the tubular sac that contains a hair. One hair grows out of each follicle and follicles are found throughout the body, except on the palms, soles, and lips.

Oil glands also are known as sebaceous glands. They secrete an oily substance called sebum, which gives skin and hair their moisture, protecting them from friction, acting as waterproofing, and giving skin and hair a healthy glow. Oil glands are found all over your body, but are concentrated on the scalp, face, chest, and genitals.

Sweat glands help the body cool off. There are two types: The eccrine glands produce sweat when you’re hot, stressed, or experiencing heavy emotions. They’re mostly found on your palms, soles, scalp, and underarms. The apocrine glands develop during puberty and
produce sweat during times of stress or high emotion. They’re mostly found under your arms and around your nipples and genitals. Sweat is released from the lower layers of the skin through pores, or tiny holes in the skin.

In addition to containing all these things, the subcutaneous tissue also acts as a pillow to protect your internal organs from injury and holds in your body’s heat to keep you warm.

Why do we have skin?
We all know that skin keeps us from seeing each other’s bones. But, really, what is it supposed to do? Skin has four main jobs:

1. **Protection:** Your skin is your first line of defense. It keeps dirt, germs, chemicals, and other harmful substances from getting to your insides, as well as keeping all your delicate organs from getting hurt.

   Skin keeps you from drying out. The oil produced in your sebaceous glands rises to the surface of your skin or hair and makes it so that only so much moisture can leave your body. With a few exceptions, when your skin feels dry it is because your skin has lost too much oil and moisture is being allowed to escape from the body.

2. **Temperature regulation:** Blood vessels in your skin expand and contract based on how warm or cold you are. When your body is hot, your blood vessels expand and bring warm blood closer to the surface of your skin, giving you a reddish complexion. Your sweat glands also make extra sweat to release body heat to the top of your skin where it can evaporate and cool you off. In this way, your skin acts like a built-in air conditioning unit.

   When you’re cold, the opposite happens. Your skin’s blood vessels narrow, trying to keep the warm blood away from the surface of the skin. Your skin will become pale and cold, and your body heat will move inward toward your organs.

   You also may develop goose bumps. When your body gets cold (or excited), it causes the muscles attached to the base of each hair to pull them upright. This reflex, which all mammals and birds have, lets an animal with more hair than we have warm up by trapping extra air next to the skin and acting as a warming layer. Animals also use this technique to make themselves look bigger to enemies. That’s why a cat looks bigger just before it gets into a fight with another cat, and why birds look fluffier when they’re sitting at a birdfeeder on a cold day. Goosebumps don’t actually serve any purpose for humans anymore.

3. **Sensation:** Nerves in your skin send signals through your spinal cord to your brain about the things around you. This tells you about your surroundings, like whether you’re touching wet mud or hard rock. They also protect you by warning you about what can hurt you, like really hot or sharp things.

   Nerve receptors are not evenly spaced throughout the body. Where they are closer together, you are more sensitive. They are furthest apart in the middle of your back. They are closest on our hands, lips, face, neck, tongue, and feet. In fact, each
fingertip has about 100 touch receptors.

There are about 20 different kinds of nerve endings; the most common ones are heat, cold, pain, and pressure or touch receptors. There are more pain nerve endings than any other kind, which helps the body know where it is injured.

4. **Health warnings:** Your skin can act as an early warning system to let you know that there’s something wrong elsewhere in your body. Your skin’s texture, temperature, and color all give hints about your general health and when something is wrong elsewhere. For instance, if your skin is hot, then you may have a fever and be sick. Or a yellowish color to your skin may point to problems with your liver. And a weirdly shaped brownish spot that suddenly appears could point to cancer.
**Skin Assessment Questions**  
**Student Version**

1. When washing your face, it is recommended that you use _____ and _____.  
   A. a wash cloth, harsh cleanser  
   B. your hands, gentle cleanser  
   C. strong soap, astringent  
   D. soap, water

2. Your skin performs some important functions, including: ___________.  
   A. protection, temperature control, sensory control, and moisture control  
   B. digestion  
   C. oxygen exchange  
   D. circulation

3. Moisturizers provide a protective seal that helps prevent the evaporation of _____ through your skin.  
   A. oil  
   B. skin cells  
   C. gas  
   D. water

4. Melanin is produced in the ____________ layer of skin.  
   A. epidermis  
   B. dermis  
   C. hypodermis

5. The dermis contains each of the following structures, except ____________.  
   A. hair follicles  
   B. nerves  
   C. fat  
   D. blood vessels

6. The hypodermis, or subcutaneous tissue, protects your inner organs from ____________.  
   A. germs  
   B. impact  
   C. the sun’s rays  
   D. disease
7. Doctors recommend using sunscreen with an SPF of at least _______ on a daily basis.
   A. 15
   B. 30
   C. 45
   D. 60

8. Wearing a hat, __________, and __________ can block the sun’s harmful rays.
   A. shorts, sandals
   B. long sleeve shirt, long pants
   C. jewelry, watch
   D. scarf, mittens

9. When your skin is cut, gently wash it and apply a(n) ______________.
   A. sunscreen
   B. moisturizer
   C. antibiotic cream
   D. bug spray

10. If you have a serious burn, it is best to ____________.  
    A. see a doctor immediately
    B. ignore it
    C. apply a burn cream
    D. cover with a sterile bandage

11. Which of the following structures in the dermis are involved in your skin’s sense of touch?
    A. nerve endings
    B. blood vessels
    C. lymph nodes
    D. hair follicles

12. Which of the following substances is secreted by oil glands, provides moisture for your skin, and protects it from friction?
    A. melanin
    B. elastin
    C. sebum
    D. collagen

13. When your body is hot, your blood vessels __________ and bring warm blood closer to the surface of your skin.
    A. contract
    B. expand
    C. collapse
    D. leak
14. What is the purpose of goosebumps for humans?
   A. keeping body cool
   B. keeping body warm
   C. alerting you to danger
   D. no purpose

15. Which phrase describes where nerve receptors are found in your body?
   A. evenly spaced throughout your body
   B. unevenly spaced throughout your body
   C. on your hands, lips, face, neck, tongue, and feet
   D. everywhere but the middle of you back
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