



**Life and Environmental Sciences
Processes of Life**

Additional FCAT Practice Questions

Directions: Select the best answer for each of the following questions

1. During a long-distance bicycling competition such as the Tour de France, the production of carbon dioxide and oxygen requirements change. Which of the following best describes how respiratory system adapts to exercise in regard to respiratory gases?
 - A. Breathing increases, more oxygen diffuses into the blood, more carbon dioxide diffuses out of the blood.
 - B. Breathing increases, more oxygen diffuses out of the blood, more carbon dioxide diffuses into the blood.
 - C. Breathing increases, more oxygen diffuses into the blood, more carbon dioxide diffuses into of the blood.
 - D. Breathing increases, more oxygen diffuses out of the blood, more carbon dioxide diffuses out of the blood.

2. Which of the following controls and coordinates the actions of all other organs systems?
 - A. Immune system
 - B. Muscular system
 - C. Respiratory system
 - D. Nervous system

3. Multiple Sclerosis (MS) is a difficult to live with disease. It causes a variety of symptoms including; numbness, "pins and needles" feelings on the skin, blindness, tremors, slurred speech and loss of balance. Which two body systems appear to be most affected by MS?
- A. Respiratory and nervous systems
 - B. Skeletal and nervous systems
 - C. Muscular and Respiratory systems
 - D. Muscular and nervous systems
4. After a hard workout sweat forms on the skin.



- Sweat on the surface of the skin keeps you cool, but the glands responsible can also remove excess salt from your body. Considering this removal of salt, what system does the skin belong to?
- A. Circulatory system
 - B. Excretory system
 - C. Immune system
 - D. Muscular system
5. When you take a breath, your chest expands drawing air into your lungs. In the lungs, oxygen then diffuses into the lung tissue. Which two body systems are most directly involved in the process of taking a breath?
- A. Respiratory and circulatory systems
 - B. Muscular and respiratory systems
 - C. Circulatory and muscular systems
 - D. Skeletal and respiratory systems

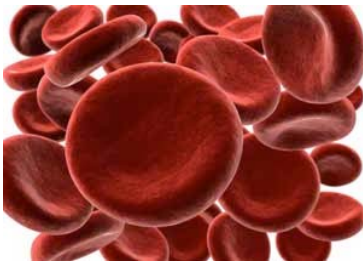
6. Your heart pumps blood through approximately 62,000 miles of blood vessels. Considering the different types of vessels that make up your circulatory system, which type likely makes up the majority of the 62,000 miles?
- A. Arteries
 - B. Capillaries
 - C. Veins
 - D. Aortas
7. Diffusion is a very slow process. How are capillaries specially designed to make the diffusion of gases into the blood as fast as possible?
- A. Capillaries have very thin walls only one cell layer thick.
 - B. Capillaries have many holes in them.
 - C. The thick walls of the capillaries squeeze the blood cells to help remove the oxygen.
 - D. The high pressure of capillaries helps force gases to move.
8. Blood is a complex mixture of cells, fluids and dissolved substances. Which of the following makes up the largest portion of blood?
- A. White blood cells
 - B. Red blood cells
 - C. Plasma
 - D. Platelets

9. Blood pressure is usually measured at the upper part of the arm.



But measuring pressure at different parts of the body produces different numbers for blood pressure; at some parts of the body it is higher, at other parts it is lower. Considering the structure and function of the circulatory system, where do you think the highest measure of blood pressure would be recorded?

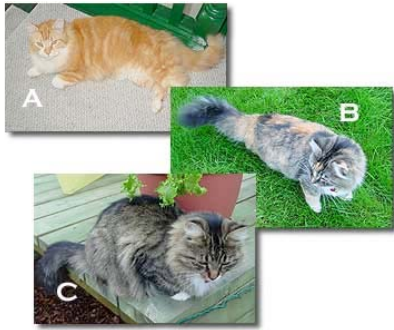
- A. In the arteries of the neck.
 - B. In the veins of the lower leg.
 - C. In the walls of the aorta as blood leaves the heart.
 - D. In the capillaries of the feet.
10. Red blood cells are round in shape, with somewhat of a "doughnut" shape.



They are also very flexible. What is the reason for the way a blood cell is shaped?

- A. Their round shape and flexibility allows them to better give up carbon dioxide.
- B. Their round shape and flexibility helps them carry oxygen.
- C. Their round shape and flexibility helps them squeeze through capillaries.
- D. Their round shape and flexibility makes them more resistant to blood pressure

11. Cats have many colors to their fur. Even among closely related cats, different colors can occur.



Cats B and C in the photo are "sisters" - they came from the same litter. Cat A is unrelated to the others. Which of the following best explains the different colors of these cats?

- A. The cats do not have the same number of chromosomes.
 - B. The cats do not have the same amount of DNA.
 - C. The cats have the same genes but different alleles.
 - D. The cats have the same alleles but different genes.
12. The tired cat in the photo has "white spotting".



These white spots can be on any part of the body, but cats are either white-spotted or they are not. The white does not blend with other colors, it only occurs in spots. If a male cat purebred for white spotting is mated to a female that is purebred without white spots, all the kittens will have white spots. What does this mean?

- A. White spotting is recessive
- B. White spotting is dominant
- C. All of the genetic material in the kittens came from the male.
- D. The female did not pass down genetic information for fur color.

13. Humans can either roll their tongue or they cannot. The gene for tongue rolling is dominant, while non-tongue rolling is recessive. If two hybrid tongue-rollers were to mate, it could be represented by the following Punnett square.

	T	t
T	TT	Tt
t	Tt	tt

- What is the chance that this mating will produce a non tongue-rolling child?
- A. 0%
B. 25%
C. 50%
D. 100%
14. Pea plants produce either round or wrinkled seed shapes. Round seeds (R) are dominant to wrinkled seeds (r). If a pea plant purebred for round seeds is crossed with a pea plant hybrid for seed shape, what is the chance that the cross will produce wrinkled seed plants?
- A. All of the plants will be wrinkled seed plants.
B. 25% of the plants will be wrinkled seed plants.
C. 50% of the plants will be wrinkled seed plants.
D. There is no chance of producing wrinkled seed plants.

15. In a cross between snapdragon plants, purebred red flower plants are crossed with purebred white flower plants. All of the offspring have pink flowers. What is the best explanation for this result?
- A. Both red and white flower color are dominant.
 - B. White flower color is dominant to red.
 - C. Red and white flower color are incompletely dominant.
 - D. Red flower color is dominant to white.

Answers

- 1. A
- 2. D
- 3. D
- 4. B
- 5. B
- 6. B
- 7. A
- 8. C
- 9. C
- 10. C
- 11. C
- 12. B
- 13. A
- 14. D
- 15. C