Quiz: Brain and Addiction

Instructions: After reviewing **Facts on Drugs: Brain and Addiction** on the *NIDA for Teens* Web site (http://teens.drugabuse.gov/), take this short quiz to test your knowledge.

1. The human brain weighs about as much as a _____.
   a) doughnut
   b) 12-pack of soda
   c) Chihuahua

2. Neurons in the brain communicate with each other by _____.
   a) passing axons
   b) releasing chemicals
   c) instant messaging

3. When you do something you enjoy, like watch a good movie, your _____ system gets activated.
   a) limbic
   b) digestive
   c) nervous

4. When someone uses drugs repeatedly, their brain _____.
   a) becomes trained to crave the drug
   b) becomes smaller than before
   c) is not changed

5. After a prolonged period of drug abuse, the brain_____.
   a) needs less drug to get the same effect
   b) needs more drug to get the same effect
   c) experiences increasing amounts of dopamine

6. The brain's reward system is part of the _____.
   a) sensory cortex
   b) limbic system
   c) spinal cord

7. Brain cells or neurons turn electrical impulses into _____.
   a) chemical signals
   b) movement
   c) axons

8. Drugs work in the brain because they have similar _____
   a) electrical charges as brain cells
   b) size and shape as natural brain chemicals
   c) nerve cells as the brain

9. Drugs of abuse create intense feelings because they _____.
   a) depress the nervous system
   b) shut off receptors in the occipital lobe
   c) cause a rise in dopamine in the limbic system

10. Drug abusers develop "tolerance" for drugs, meaning they need _____.
    a) more drug to get the same effect
    b) less drug to get the same effect
    c) neither A or B

Answer Key: Brain and Addiction Quiz

1. **C**: The human brain weighs about 3 pounds, about the size of a Chihuahua. A doughnut only weighs a few ounces, and a 12-pack of soda weighs 9 pounds.

2. **B**: The transfer of a message from one neuron to another occurs by releasing chemicals called neurotransmitters into the spaces called synapses between the neurons. The axon is the long threadlike fiber that transmits the message.

3. **A**: The "reward" system is part of the limbic system, which gets activated when you do something you like. Dopamine is a brain chemical that is released, producing feelings of pleasure and letting you know that something important is happening.

4. **A**: The brain is wired to remember feelings of pleasure, including those produced by drugs unnaturally. The brain then strives to repeat those feelings, which the drug user experiences as a craving for the drug.

5. **B**: At first, drug use may cause floods of dopamine. But prolonged drug abuse causes the brain's dopamine levels to decrease. That means the brain might need more of the drug just to get the dopamine levels back to normal and even more to produce the high that it craves.

6. **B**: The limbic system is involved in emotions, learning and memory, and other functions necessary for survival. The reward circuit is part of the limbic system and is activated by pleasurable activities, such as hanging out with friends and by drugs of abuse.

7. **A**: A message travels down a neuron as an electrical impulse. To pass the message to another neuron, the electrical impulse triggers the

chemical signals called neurotransmitters, which flow into the synapse (the gap between the two neurons) and trigger an electrical impulse in the next neuron. Axons are the branches of a neuron that release the neurotransmitter.

8. **B**: Drugs "fool" the brain because they are similar in size and shape as the natural brain chemicals called neurotransmitters.

9. **C**: Drugs of abuse cause the brain's limbic system to release dopamine, the neurotransmitter that produces feelings of pleasure.

10. **A**: Drug tolerance makes people need more and more of the same drug to get the same effect because, over time, drugs will cause the brain to produce less dopamine, the neurotransmitter that produces feelings of pleasure. Drug abusers may need more of the drug than before to reach the same level of dopamine to get the same "high."