

Quiz: The Brain and Addiction

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

1. The human brain weighs about as much as a _____.
 - a) donut
 - b) twelve-pack of Coke®
 - c) Chihuahua (the Taco Bell® dog)
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 “rewards” you.
 - a) limbic
 - b) digestive
 - c) nervous
4. When someone uses drugs repeatedly, their brain is _____.
 - a) trained to crave the drug
 - b) smaller than before
 - c) 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 limbic system is also known as the _____.
 - a) thinking center
 - b) reward system
 - c) comfort system

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 flood of 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) different drugs to get the same effect

Answer Key: The Brain and Addiction Quiz

1. **C:** The human brain weighs about three pounds, about the size of a Chihuahua. A donut only weighs a few ounces and a twelve-pack of Coke® weighs nine 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 of the brain is called the limbic system. It rewards you by releasing a brain chemical called dopamine, which produces feelings of pleasure.
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 feels/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 will 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:** Scientists call the limbic system the reward system because it regulates feelings of pleasure. This region is activated by pleasurable activities such as hanging out with friends. The limbic system is also activated 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 dopamine, the neurotransmitter that produces feelings of pleasure, to be released by the brain’s limbic system.
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 need more of the drug than before to reach the same level of dopamine in order to get the same “high.”