



Name _____ Class _____ Date _____

How do drugs work in the brain?

Drugs interfere with the way neurons send, receive, and process signals via **neurotransmitters**. Some drugs, such as **marijuana** and **heroin**, can **activate neurons** because their chemical structure **mimics** that of natural neurotransmitters in the body. These drugs lead to **abnormal messages** being sent through the neural network. Other drugs, such as **amphetamine** or **cocaine**, can cause the neurons to **release abnormally large amounts** of natural neurotransmitters or **prevent the normal recycling** of these brain chemicals by interfering with **transporters**. This too **amplifies or disrupts** the normal communication between neurons.

How Cocaine Disrupts the Normal Release and Reuptake of Dopamine

Dopamine is the chemical (*neurotransmitter*) responsible for making us feel good and motivates many of our actions.

Prolonged exposure to large amounts of dopamine can alter the

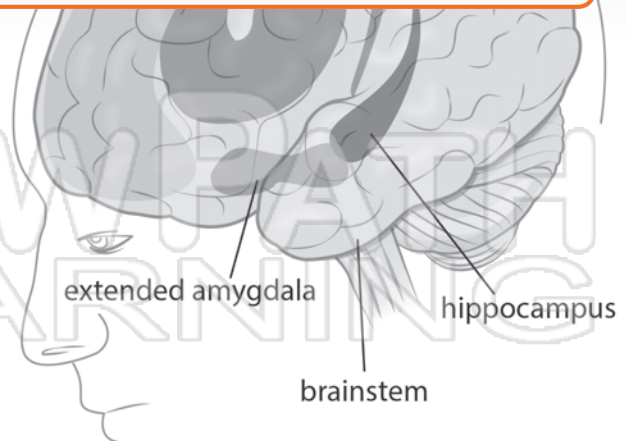


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feelings like anxiety, irritability, and unease. This circuit becomes increasingly sensitive with increased drug use. Over time, the person uses drugs to get **temporary relief** from their discomfort, rather than to get high.

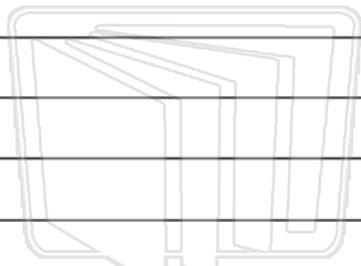
- The **prefrontal cortex** powers the ability to **think, plan, solve problems, make decisions**, and exert **self-control** over impulses. Shifting balance between this circuit, and the reward and stress circuits, make a drug user **seek the drug compulsively**.
- The **brain stem** controls basic functions critical to life, such as heart rate, breathing, and sleeping, explaining why **drug overdoses** can cause depressed breathing and even death.





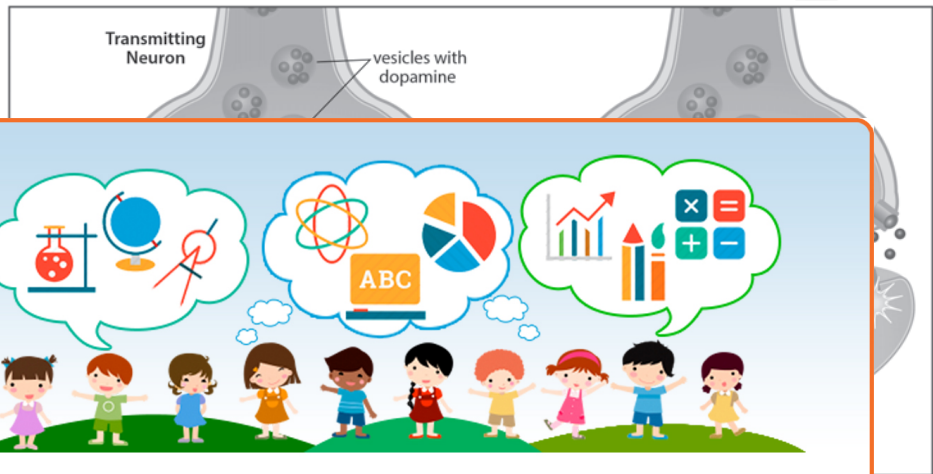
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Explain How Drugs Work in the Brain



NEW PATH LEARNING

What is Dopamine?



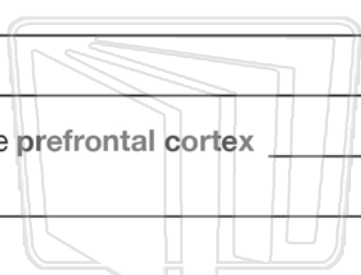
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The extended amygdala _____

The prefrontal cortex _____

The brain stem _____



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