KS3 SCIENCE · BIOLOGY

Drugs and health revision sheet

Name _____



1. What is a drug?

- A **drug** is a substance that changes the way the body or the mind works.
- **Medicines** are drugs that are used to help the body. They treat an illness or ease its symptoms.
- **Recreational drugs** are taken for their effect, not for a medical reason.
- Any drug can do harm. Even a medicine is harmful if it is taken in the wrong way, so always follow the label.

MEDICINES	LEGAL RECREATIONAL DRUGS	ILLEGAL RECREATIONAL DRUGS (UK)
Paracetamol (a painkiller), antibiotics, asthma inhalers, hay fever tablets	Caffeine. For adults only: alcohol and nicotine	Cannabis and cocaine, for example



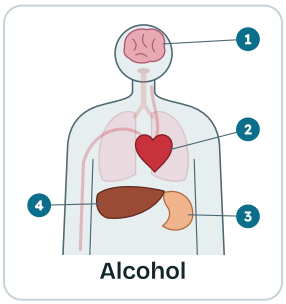
2. Alcohol

- Alcohol is a **depressant**: it slows down the nervous system, so the brain is less active.
- **Short term:** reaction time gets longer. Judgement, balance and speech get worse. A car travels further before a driver who has been drinking can brake.
- **Long term:** years of heavy drinking can damage the liver, the brain and the heart.
- Alcohol is addictive. In the UK it is against the law to sell it to anyone under 18.



3. Smoking

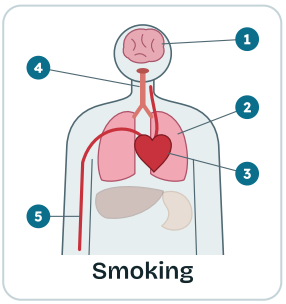
- **Nicotine** is the addictive drug in tobacco smoke. It is a stimulant. Most vapes contain nicotine too.
- **Why it is hard to stop:** nicotine reaches the brain within seconds. The body gets used to it and needs it just to feel normal, which is **addiction**. When the nicotine wears off, **withdrawal symptoms** begin, such as a strong craving and feeling irritable. Another cigarette takes them away for a while, so the loop starts again.
- Withdrawal symptoms usually ease over a few weeks. Nicotine patches or gum from a pharmacy ease the craving without the smoke.



Alcohol

Where alcohol does harm

1. **Brain:** slower reactions, and poorer judgement, balance and speech. Over years, brain damage and memory loss.
2. **Heart:** over years, higher blood pressure, so heart disease and strokes are more likely.
3. **Stomach:** alcohol passes into the blood here and in the small intestine. The lining can become sore.
4. **Liver:** breaks alcohol down. Over years, scarring called **cirrhosis**.



Smoking

Where smoking does harm

1. **Brain:** addiction to nicotine.
2. **Lungs:** lung cancer, and damage to the cilia and the alveoli.
3. **Heart:** beats faster. Heart disease and heart attacks are more likely.
4. **Mouth and throat:** cancer, caused by chemicals in tar.
5. **Blood vessels:** become narrower, so blood pressure rises. A stroke is more likely.



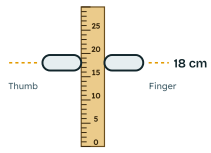
4. Drug misuse and addiction

STIMULANTS	DEPRESSANTS
Speed up the nervous system: the brain and nerves are more active	Slow down the nervous system: the brain and nerves are less active
You feel more alert. Reaction time gets shorter	Reactions get slower. Reaction time gets longer
Caffeine, nicotine	Alcohol

- **Drug misuse** means taking an illegal drug, or taking a legal drug or a medicine in a way that does harm.
- It changes **behaviour** (taking risks, poor decisions), **health** (damage to the brain, the liver and the heart) and **life processes**, such as movement (clumsy), sensitivity (slow to react) and nutrition (loss of appetite).
- **Addiction** means depending on a drug and finding it very hard to stop. Stopping brings **withdrawal symptoms**, such as a craving, shaking or feeling sick.

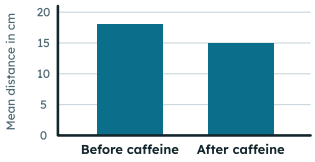
Worried about a drug, or about someone who takes one? Talk to an adult you trust, such as a parent, a teacher or a school nurse.

Investigation: does caffeine change reaction time?



Caught at 18 cm

1. A helper holds a ruler so that its 0 cm mark is level with the volunteer's open finger and thumb.
2. The helper lets go without warning. The volunteer catches the ruler.
3. Read how far the ruler fell. Do three tests and work out the **mean**.
4. The adult volunteer drinks a cup of coffee, waits half an hour, and is tested again in exactly the same way.



The mean results

Distance in cm	Test 1	Test 2	Test 3	Mean
Before caffeine	19	17	18	**18**
After caffeine	16	14	15	**15**

Example results. Mean before = (19 + 17 + 18) ÷ 3 = 18 cm.

- **Conclusion:** the sooner the ruler is caught, the less far it falls. After caffeine it fell less far, so the reaction time was shorter. Caffeine is a stimulant.
- **Fair test:** change only the caffeine. Keep the same person, hand, ruler, starting position and quiet room.
- **Repeats:** one result could be a fluke. A mean of three tests is more reliable.
- **Limits:** one volunteer is a very small sample. A better test would use many people, and would compare coffee with a drink that has no caffeine in it.

Key words

Drug: a substance that changes the way the body or mind works
Medicine: a drug that treats an illness or eases its symptoms
Recreational drug: a drug taken for its effect, not for a medical reason
Painkiller: a medicine that eases pain
Antibiotic: a medicine that treats infections caused by bacteria
Caffeine: a stimulant found in coffee, tea and cola
Alcohol: a depressant found in drinks such as beer and wine
Nicotine: the addictive drug in tobacco smoke
Stimulant: a drug that speeds up the nervous system
Depressant: a drug that slows down the nervous system
Nervous system: the brain, the spinal cord and the nerves
Reaction time: the time taken to respond to something you see, hear or feel
Liver: the organ that breaks down alcohol
Cirrhosis: scarring of the liver, which heavy drinking can cause
Drug misuse: taking a drug in a way that does harm or breaks the law
Addiction: depending on a drug and finding it very hard to stop
Withdrawal symptoms: unpleasant effects felt when an addicted person stops taking a drug
Craving: a strong urge to take a drug again

Pictures are illustrations made for this sheet, not real photographs.