1 Drug classification

Drugs change what is happening inside our bodies.

Some drugs help our bodies to work properly. Some cause them damage.

Draw lines to match each type of drug to some common names for it.

Depressants	Paracetamol / morphine
Hallucinogens	LSD
Painkillers	Caffeine
Stimulants	Alcohol

Here are some facts about regularly used drugs.

1. Cigarettes contain:
   - tar which causes cancer.
   - nicotine which is addictive.
   - carbon monoxide which makes smokers get out of breath easily.

Cigarettes cause other fatal diseases.

2. Alcohol causes 2.5 million deaths in the world each year.
   – In deaths of 15–29 year olds, 9% of the time alcohol was involved.

Use the information above to answer the following questions.

1. In cigarettes:
   a Which chemical is addictive? _____
   b Which chemical causes cancer? _____
   c Which chemical might stop an athlete winning a race? _____
2. List 3 other ways that smoking is bad for health.

   _____

   _____
3. What is the number of deaths caused by alcohol each year? _____
4. Yarnbury has 250 young people aged 15-29. How many of them will die in 1 year because of alcohol? (*Hint: think %*)

   _____

2 Harmful effects of alcohol

People with increased levels of alcohol in their blood are more likely to be involved in accidents.

List at least four other effects of alcohol on a person's health or behaviour:

-
-
-
-

Classify the ones you have listed into short-term or long-term effects.

Put them into the table below.

Short-term effect (only lasts a little while)	Long-term effect (over several years)

Now add the words in the box below to the correct column of the table above.
Find out what the words mean if you do not already know.

liver damage (cirrhosis)	**blurred vision**
lowered inhibitions	**brain damage**

2A Drugs – good or bad?

Draw lines to match each type of drug to its effect.

Depressant	Increases speed of reaction.
Hallucinogen	Slows down brain activity.
Pain killer	Distorts (change) sense perception.
Stimulant	Blocks nerve impulses.

Name one drug from each group.

Stimulant _____ Depressant _____

Pain killer _____ Hallucinogen _____

Medical drugs like paracetamol are taken for headaches.

Insulin is taken to control sugar levels in diabetics.

Give four good effects and four bad effects caused by medical drugs.

Positive (good) effects	Negative (bad) effects

3 Alcohol and reaction time

People with more alcohol in their blood are more likely to have an accident.

Alcohol makes a person's reaction time longer. If they are driving they will take longer before they start to brake.

Concentration of alcohol in blood (mg/cm^3)	Reaction time (s)				
	1	2	3	Total	Average
0.00	0.55	0.57	0.56		
0.15	0.59	0.58	0.60		
0.25	0.72	0.74	0.83		

1. Look at the data for reaction times. Can you spot the anomaly? (*Hint: the anomaly is the odd one out.*)

   _____

2. Complete the table by calculating the totals and then the average reaction time for each alcohol concentration

3. Plot the averages on graph paper and stick your graph onto the back of this sheet.

4. Complete this statement:

   As the alcohol concentration in the blood _____ the reaction time _

5. If you are driving and your reaction time to start braking is longer, will you be more or less likely to have an accident? Give a reason for your answer

   _____

6. Name a drug that would reduce your reaction time. _____

Reaction time tests can be found on the Internet. See if you can test yours. Type 'reaction timer' into a search engine and you will find lots of different ways to do this.

4 Smoking and health

1. Complete the table below:

Chemical in tobacco	Effect on body
	causes cancer and other diseases.
	reduces oxygen carried by blood.
Nicotine	

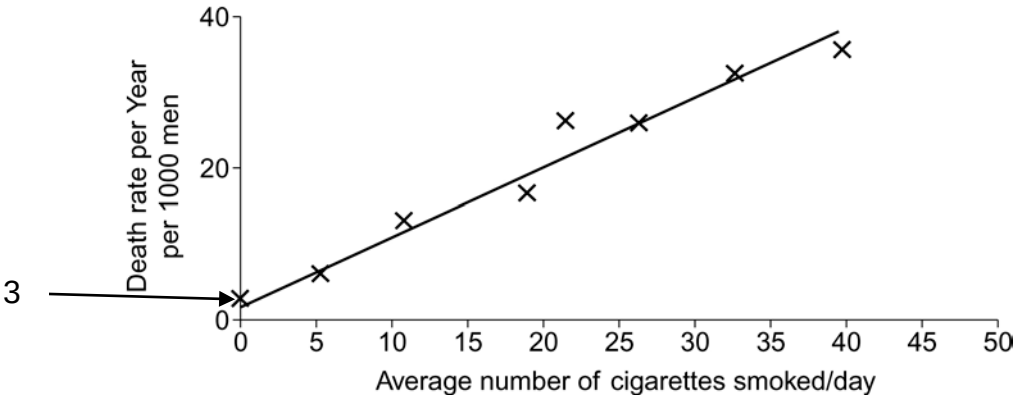
2. Which of the following is the **best** description of a **drug**? Write the letter here _____

   A: Substance which harms the body

   B: Substance which fights infection

   C: Substance which changes the way the body works.

3. The graph below shows the effects of smoking on health.



3

   a Complete the sentence by stating the pattern of results in the graph:

   As the average number of cigarettes smoked per day…

   _____

   _____

   b Put a circle round the anomaly on the graph.

   c What is the death rate per 1000 of these groups of people?

   i Men who do not smoke _____ .

   ii Men who smoke 15 cigarettes per day _____ .

   iii Men who smoke 25 cigarettes per day _____ .

4. Circle the correct word in the sentence below.

   When men stop smoking their risk of death will go **up / down**.

5. Write a short report about why smoking is bad for your health.

   You should include each of the words below:

   nicotine tar cancer heart attack carbon monoxide death addictive

5 Diseases caused by pathogens

Pathogen is a name for microbes which cause disease.

Microbes are very, very small organisms.

Infectious diseases can spread between people.

There are three main types of pathogen. These are:

Bacteria **Fungi** **Viruses**

See if you can find information to help you complete the blanks in the table below.

Name of disease	caused by	spread by
cholera	bacteria	
typhoid		
salmonella		food
influenza	virus	
athletes foot	fungus	
HIV		transfer of body fluids
dysentery		flies

Write out a definition (meaning) for each of the following words.

Microbe _____

_____

Pathogen _____

_____

Infectious _____

_____

6 Preventing entry of pathogens

How do pathogens enter the body? List at least four ways.

1 _____

2 _____

3 _____

4 _____

Draw a stick figure in the box below. Label where the skin and stomach are.

Add arrows to show the ways pathogens enter the body. (Use your answers from above).

Complete each word below to show what defence mechanisms we have to stop pathogens from hurting us. The first letter of each word has been given to help you.

S_____ stops bacteria getting inside you.

A_____ in the stomach kills bacteria.

M_____ in the nose is a physical barrier.

L_____ in tears provide a chemical defence.

DRUGS AND BACTERIA

Describe three ways you can kill pathogens.

Use these words to help: soap, handling food, sneezing, tissues, worktops, hands.

1. _____

   _____

2. _____

   _____

3. _____

   _____

Now use the words from the box below to complete the sentences that follow.
Words can be used once, more than once, or not at all.

antiseptic	bleach	cream	grazes	pathogens	skin

We use _____ hand gel to kill _____ on

our _____. We can also use antiseptic _____

on _____ to stop _____ entering.

7 Growing microbes

Equipment needed

Equipment	Why its needed
ready-made agar plates	to provide food for the microbes.
cotton buds	to collect and spread the sample.
sticky tape	to keep the lid on the dish.
pot of antiseptic	to dispose of cotton buds safely.

Cut out the boxes and sort into the correct order to show the method for the investigation. Number the stages from 1 to 6. Then stick them on to another piece of paper in the correct order. **Wash your hands after doing this practical.**

Give your plate to your teacher to put into an incubator for the microbes to grow.	Look at your plate in the next lesson but do NOT remove lid.
Swab the agar plate gently with the cotton bud.	Put a strip of sticky tape at each side of the slide from top to bottom to hold it in place. DO NOT put sticky tape all the way round the lid.
Put the lid on your dish and label with your name and the date.	Using a cotton bud rub one of the surfaces in the laboratory for 30 seconds.

8A Antibiotics

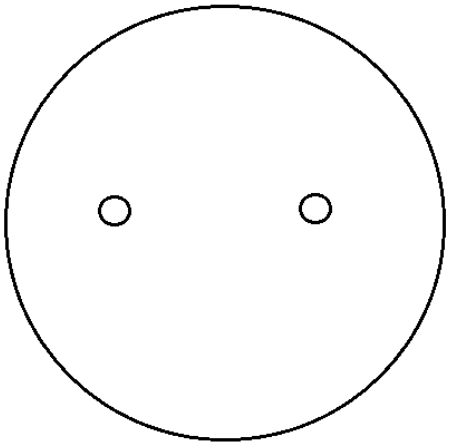
Doctors prescribe **antibiotics**.

You collect antibiotics from a pharmacy e.g. Boots or Lloyds Pharmacy.

Antibiotics kill bacteria.

Different antibiotics kill different bacteria.

Investigating antibiotics.



Method:

1. Collect an agar plate with bacteria growing in it.
2. Put 2 antibiotic discs on each agar plate. Make sure they are far apart.
3. Put the lid back on and use sticky tape to hold it in place. Make sure you **don't** put sticky tape all the way around the lid. Label the plate with your name and the date.
4. Give the plate to you teacher.
5. Wash your hands.
6. Examine the plate during the next lesson.
7. Draw what you see.
8. Label the clear parts where the antibiotic has killed the bacteria.

Plate after incubation.	Plate before incubation.

8B Does a stronger antibiotic kill more bacteria?

Some antibiotics have more molecules in the same sized tablets than others.

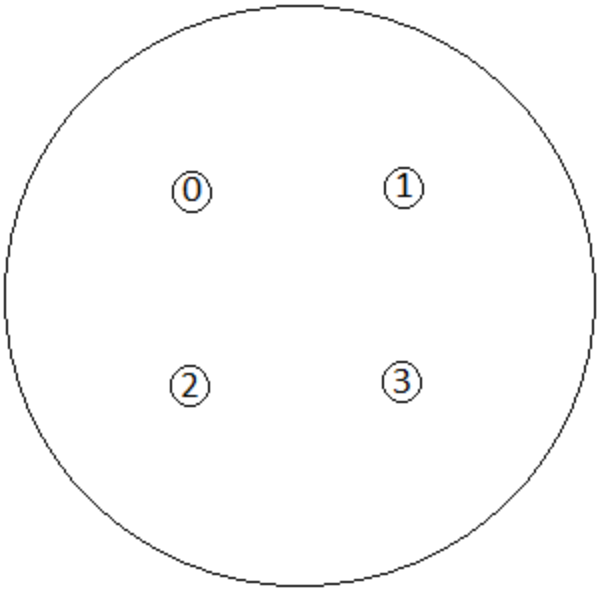
They are stronger or more concentrated.

This simulation will investigate whether more concentrated antibiotics kill more bacteria than less concentrated ones.

Equipment	Needed for.
starch agar plates	to represent bacterial growth.
amylase solutions labelled 0, 1, 2, 3	to represent antibiotic.
cork borer	to make wells in the agar.
dropping pipettes	to put five drops of each amylase solution into the wells.
iodine 0.1M	to detect the “bacteria.”

1. Wear eye protection.
2. Collect a starch agar plate. Label it with your name and the date.
3. Make a hole with the cork borer where the plate is labelled 0, 1, 2 and 3. Take the jelly out of each hole.
4. Take solution 0 and use the dropping pipette to put five drops into the hole labelled 0.
5. Repeat with solutions 1, 2 and 3 into the holes labelled 1, 2 and 3.
6. Put a lid on the plate and use sticky tape to keep it in place.
7. Give your plate to your teacher to incubate.
8. Leave it for at least 24 hours.
9. Remove the sticky tape and the lid.
10. Cover the agar with iodine.
11. **Wash your hands after this practical.**
12. Draw the results on the diagram of the plate on the next page, then answer the questions.

DRUGS AND BACTERIA



1. The ‘antibiotic’ in well 3 was the most concentrated. Did it make the largest clear area?

   _____

   _____

2. Solution ‘0’ was water. Did it kill any ‘bacteria’?

   _____

   _____

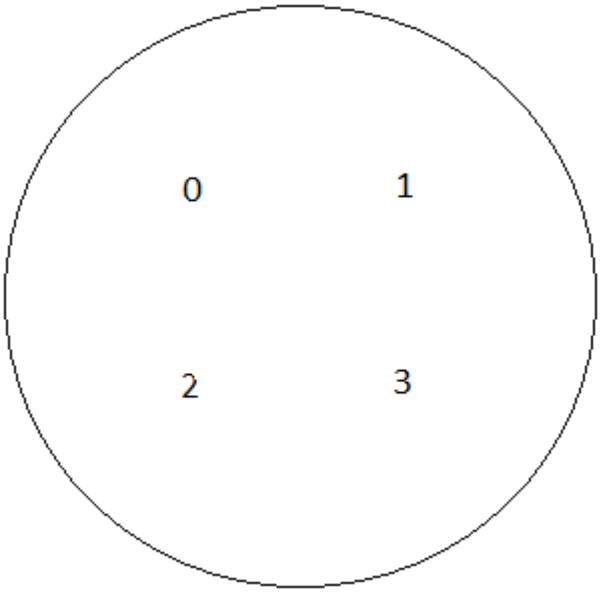
3. Complete the sentence by circling one of the options in each pair of words.

   From the simulation, I have found that **more / less** concentrated antibiotics kill **more / less** bacteria.

8C Antibiotics technician notes

Starch agar plates:

1. Use large Petri dishes.
2. Make agar up as normal but with 20cm^3 less water per 100 cm^3.
3. Allow to cool slightly.
4. Meanwhile make up a 1% starch solution with boiling water.
5. Leave to cool slightly.
6. Add starch solution to the agar in the ratio 20 starch: 80 agar.
7. Pour the plates.
8. Allow to cool and set.
9. Label plates as shown below.



- Make amylase solutions- 0%, 0.5%, 1% and 5%. Label them as 0, 1, 2 and 3.