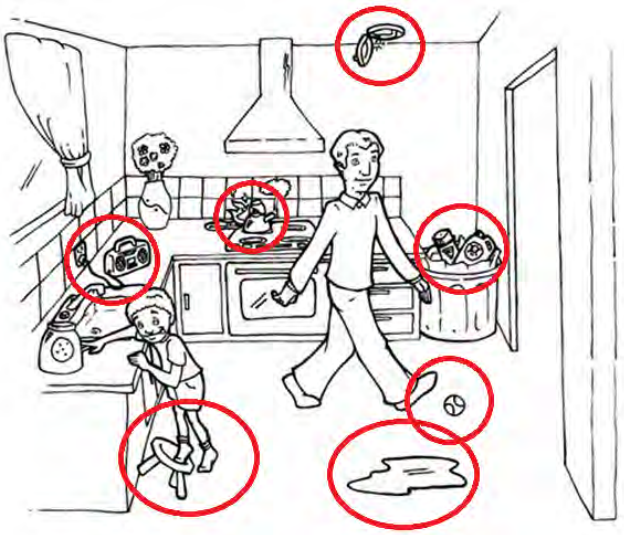
Activity answer key

All levels

Elementary Level Answers

1 Find the hazards



4 Mystery Phrase

Solar energy is free, clean and renewable!

8 Wash your hands

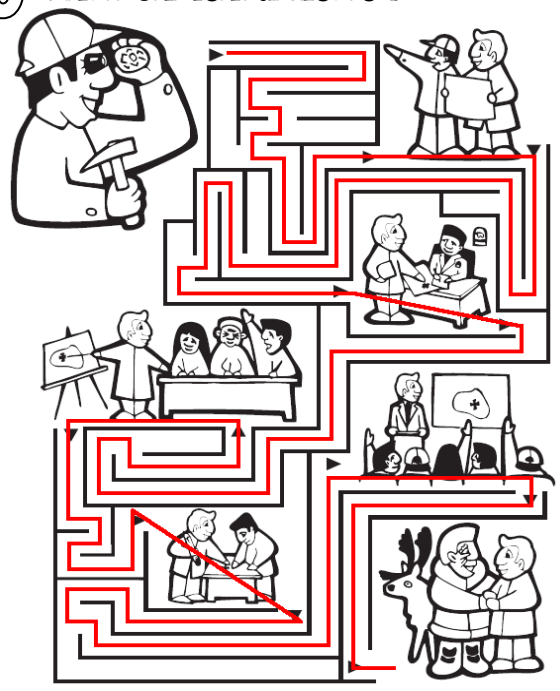
1. F
2. A
3. C
4. D
5. G
6. B
7. E

3 Word Search

Secret: BREATHE EASY

G	N	I	H	G	U	O	C	B	R	G				
	I	R	R	I	T	A	T	I	O	N				
	T	S	N	E	L	L	O	P	T	I	S	V	H	
F	R	E	S	H	A	I	R	E	O	H	E	E	T	
	O	T	T	E	M	O	H	T	B	T	U	N	L	
	G	I	O	A	M	H	T	S	A	A	C	T	A	
A	E	M	V	G	O	M	S	U	C	E	E	I	E	
S	N	E	E	Z	I	N	G	D	C	R	B	L	H	
E	D	I	X	O	N	O	M	N	O	B	R	A	C	
T	I	N	D	O	O	R	A	I	R	H	A	T	E	
	O	G	N	I	Z	E	E	H	W	E	B	I		
	X	N	O	I	T	U	L	L	O	P	A	O		
	I	S	C	O	M	B	U	S	T	I	O	N		
	D	L	U	O	M	E	K	O	M	S	Y			
	E													

9 Environmental Review



Intermediate Level Answers

1 Climate Change errors

1. Atmosphere
2. Climate
3. Depending
4. Sea
5. Travels
6. Environment
7. Conditioner
8. Champions

2 Unscramble the words

1. Chemicals
2. Toxic
3. Corrosive
4. Poison
5. Flammable
6. Explosive
7. Hazardous Materials
8. Caution
9. Danger
10. Extreme Danger

3 Eggsposed to danger

1. Heavy rain causes flood
   This can cause 3
2. Winter snow comes early
   This can cause 4
3. Other salmon builds redd in same spot
   This can cause 2
4. Untreated sewage flows from factory
   This can cause 1
5. Bridge is built upstream
   This can cause 5

4 Environment Quiz

1. D
2. A
3. A
4. D
5. C
6. B
7. B
8. D
9. E
10. C

6 Identify Me

I will spend **ONE YEAR** rearing in this **COSTAL STREAM**. During that time, I will have to **LOOK** for **FOOD** and be alert for **PREDATORS**! While I'm **GROWING**, everything about the **STREAM**- the **ROCKS**, the **ROOTS**, the **OTHER ANIMALS**- will be **IMPRINTED** in my brain. After **TWO** years of travelling in the **OCEAN** I may weigh as much as **SIX** kg. Then, probably late **NOVEMBER**, I will come back here to **SPAWN**, guided by the smell of this good old

7 Conserve energy crossword puzzle

Across

1. hybrid
2. idling
3. sunlight
4. ethanol
5. pedestrian
6. close
7. dishwasher
8. composting

Down

1. baths
2. incandescents
3. greenpower
4. tires
5. fan
6. cold
7. thermostat
8. packaging

Secondary Level Answers

2 Food Safety and Food Quality Quiz

1. B
2. C
3. A
4. B
5. C

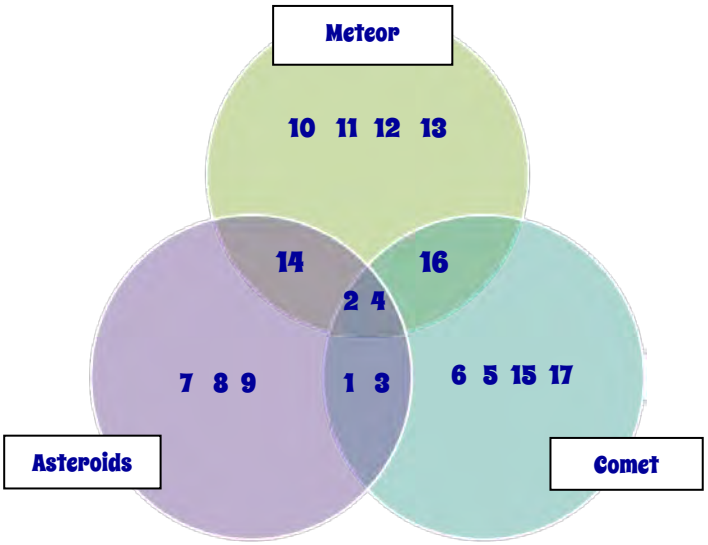
3 What elements are you made of?

	Description	Facts
Element #1 – 61% **Answer: Oxygen**	Oxygen makes up 61 percent of your body's mass. Oxygen is essential to life as it's a component of DNA and most important compounds in the body. Oxygen is present in your body mostly as water (H_2O), so the actual amount may vary. When you inhale, oxygen is absorbed through your lungs and picked up by the iron in your red blood cells. From there, it is carried to wherever it's needed throughout the body.	**Health fact:** Although water is essential to life, giving too much water to someone who is badly dehydrated can upset the balance of sodium and potassium ions in the heart muscle, leading to a heart attack.
Element 2 – 23% **Answer: Carbon**	We are carbon-based life forms. This is because carbon is a very sociable element — it forms strong chemical bonds not only to itself but also to other atoms. Carbon's stability makes possible the long chains and rings of atoms that form everything from your DNA to the steroids and proteins in your body. About 23 percent of your body mass is made of carbon.	**Health fact:** Although carbon on its own is harmless, some compounds of carbon are highly toxic. Carbon monoxide (CO) is an odourless, colourless gas found in combustion fumes such as car exhaust. Red blood cells pick up CO faster than oxygen, so if the air contains high amounts of CO, the body may not get enough oxygen. This can lead to illness or death.

Element 3 – 10% **Answer: Hydrogen**	Although hydrogen is the most abundant element in the universe, it makes up only about 10 percent of your body mass. Its most important role is as a component of water (H_2O). Water carries nutrients to your cells and removes toxins from the environment. Almost all reactions in the body take place in water. We need about 2.5 litres of water every day to keep healthy. About half of this comes from the liquids we drink, and half from food. Without hydrogen, you couldn't digest food. The acid in your stomach is a compound of hydrogen and chlorine (hydrochloric acid).	**Health fact:** Magnetic resonance imaging (MRI), a technology for scanning the body non-invasively, depends on the distribution of water throughout the body. Without water and the hydrogen it contains, MRI scans would not be possible.
Element 4 – 2.6% **Answer: Nitrogen**	Nitrogen makes up 2.6 percent of your body's weight. It's a component of DNA and of important molecules such as haem (part of the haemoglobin that carries oxygen in your blood). It's also a component of the amino acids that form enzymes and other proteins. Nitrogen is important for growth, especially during pregnancy. Although the air we breathe contains plenty of nitrogen, we don't absorb it in this form. Instead, we get most of our nitrogen from the foods we eat. Many foods contain nitrogen, especially protein sources such as meat and dairy products.	**Health fact:** During World War I, doctors found that workers who were packing ammunition shells with the explosive nitroglycerine (made of carbon, nitrogen, hydrogen and oxygen) had very low blood pressure. This led to the use of nitroglycerine to dilate blood vessels. It's often used to treat angina — chest pain caused by reduced blood flow to the heart.
Element 5 – 1.4% **Answer: Calcium**	Calcium accounts for about 1.4 percent of your body weight. Calcium is a metal, and the most abundant metal in the body. It's mostly found in bone but it also has other important functions, such as controlling cell division, aiding in the conduction of nerve impulses and contraction of muscles, and keeping blood pH stable. It's also important for blood clotting.	**Health fact:** Bone is constantly being created and broken down in the body, which helps to keep the level of calcium in the blood steady. When the body runs low on calcium, it makes up the deficiency from bone and replaces it later when there is excess calcium in the blood. As people get older, the calcium isn't replaced as easily, which can lead to osteoporosis.
Element 6 – 1.1% **Answer: Phosphorus**	Phosphorus makes up about 1.1 percent of your body weight. In the form called white phosphorus, it is highly flammable and poisonous. Luckily, in the natural world phosphorus is found only in the form of phosphate, which is a phosphorus atom bonded to four oxygen atoms. Although it's a small component of DNA, phosphorus is found in the body mostly as calcium phosphate in bone. Phosphorus also makes it possible for your body to move. When the energy molecule, adenosine	**Health fact:** A new family of drugs called bisphosphonates, which contain phosphorus, is being used to treat osteoporosis. These drugs bind to the calcium in bone and slow down the action of bone-eroding cells, so that bone-building cells can work more effectively.

	triphosphate (ATP), releases a phosphate molecule, this creates the energy needed for contracting muscles. The body creates, uses and recycles about one kilogram of ATP every hour.	

5 The difference between comets, meteors and asteroids

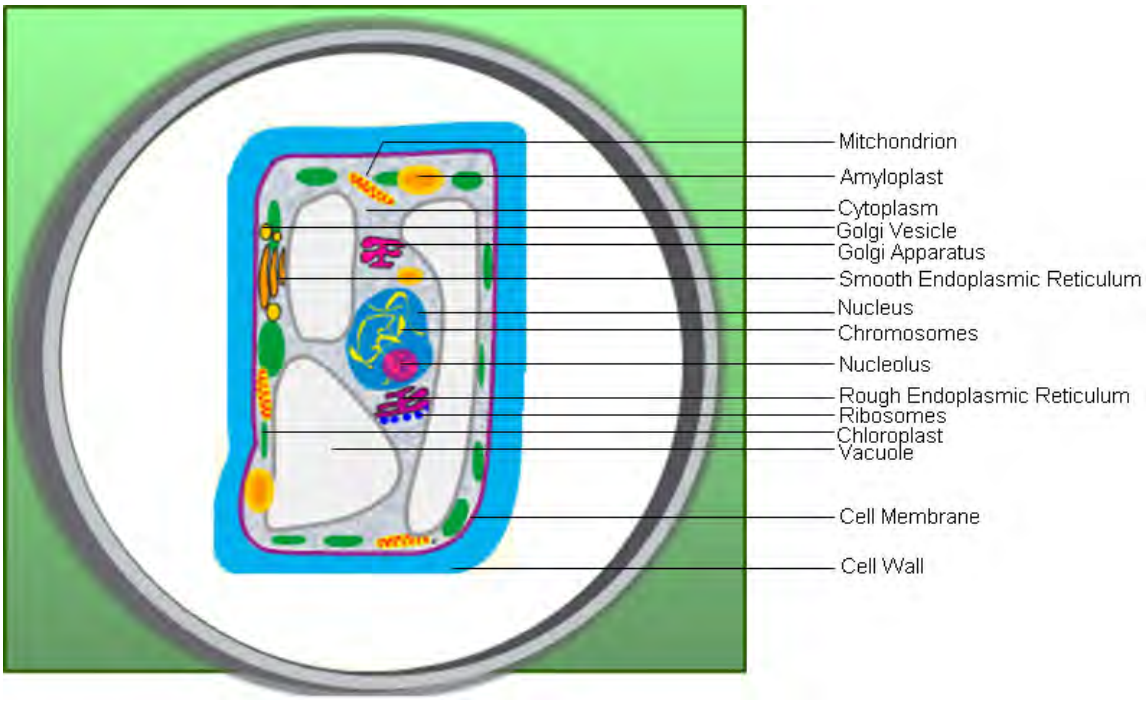


Characteristics

1. Progress across the sky very slowly
2. Remnants of the formation of the solar system
3. Reflect sunlight
4. Rocky composition
5. Orbits the Sun in highly elliptical orbits
6. Measure a few kilometres in diameter
7. Most found in the asteroid belt
8. Most are less than a kilometre in diameter
9. Most have slightly elliptical orbit
10. Most are less than 100 m in diameter
11. Also known as shooting stars
12. Most burn up as they enter the Earth's atmosphere
13. Streak across the sky very fast
14. Most are fragments of large asteroids
15. Icy objects
16. Meteor showers are caused by the Earth passing through the debris path of a comet
17. Tail always points away from the sun

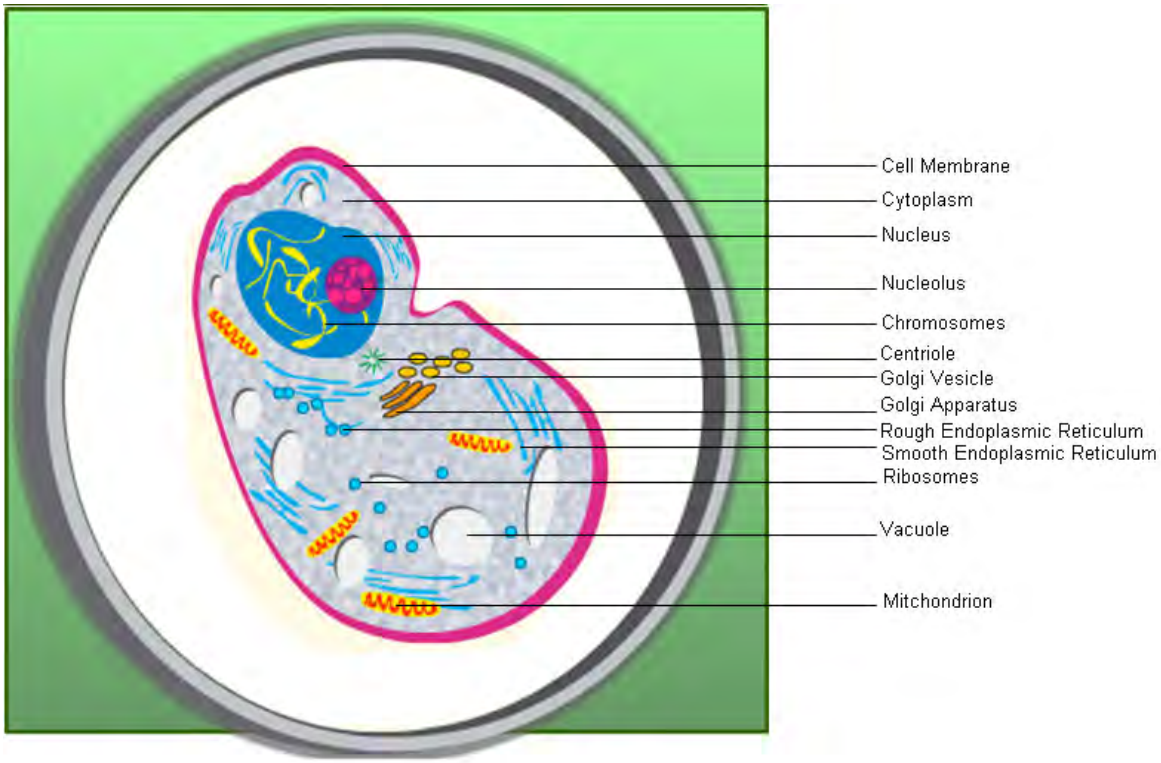
6 Biology Basics Part I

Plant Cell



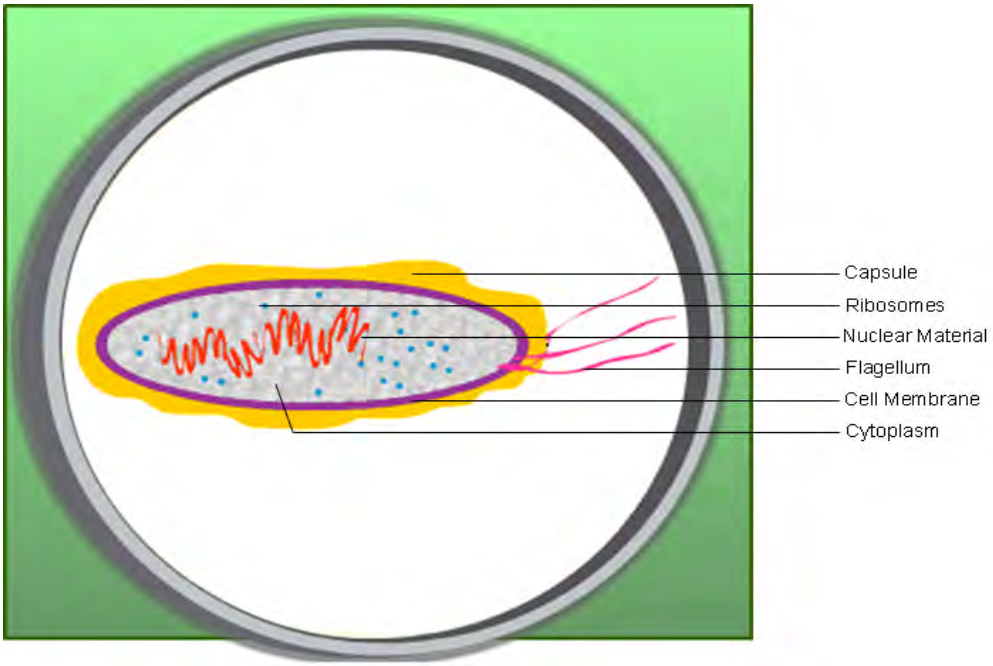
7 Biology Basics Part II

Animal cell



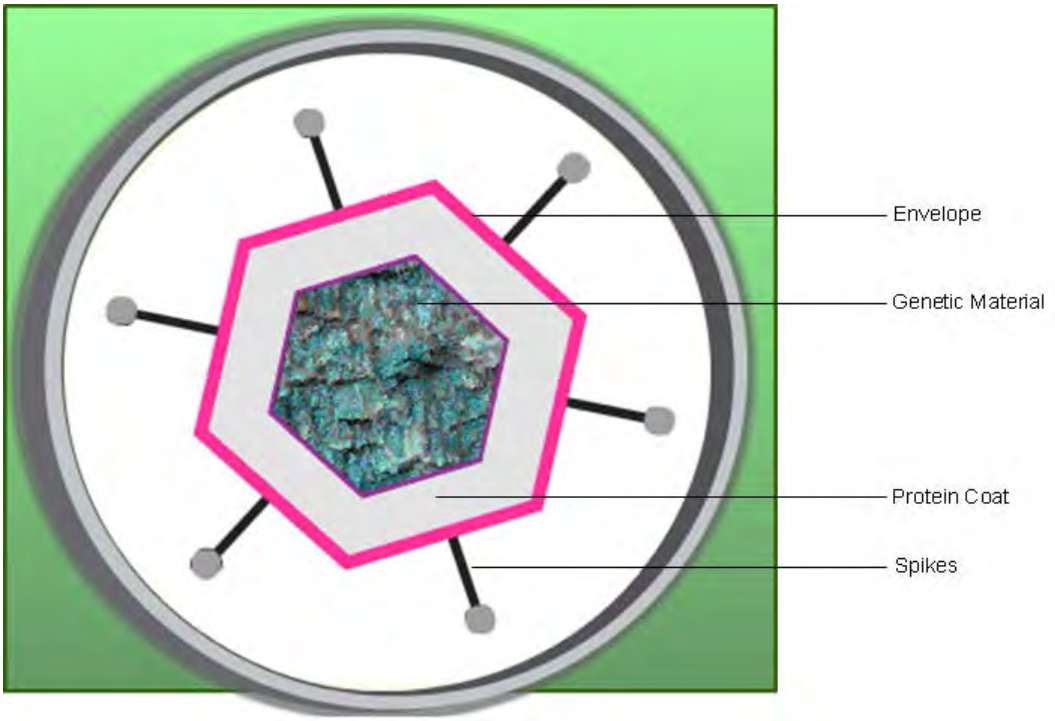
8 Biology Basics Part III

Bacteria



9 Biology Basics Part IV

Virus



10 Sudoku

3	6	7	1	2	8	9	4	5
4	2	9	6	5	3	8	7	1
5	1	8	9	7	4	3	6	2
6	3	5	8	4	2	7	1	9
8	9	1	3	6	7	5	2	4
2	7	4	5	1	9	6	8	3
1	8	6	2	3	5	4	9	7
7	5	2	4	9	6	1	3	8
9	4	3	7	8	1	2	5	6

11 Understanding spectrometers

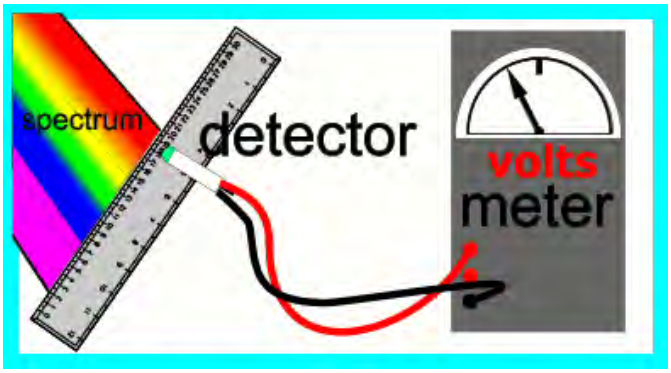
Students have been given a photocell attached to a voltmeter which measures the voltage output of the photocell.

The voltage output is proportional to the intensity of the light that illuminates it.

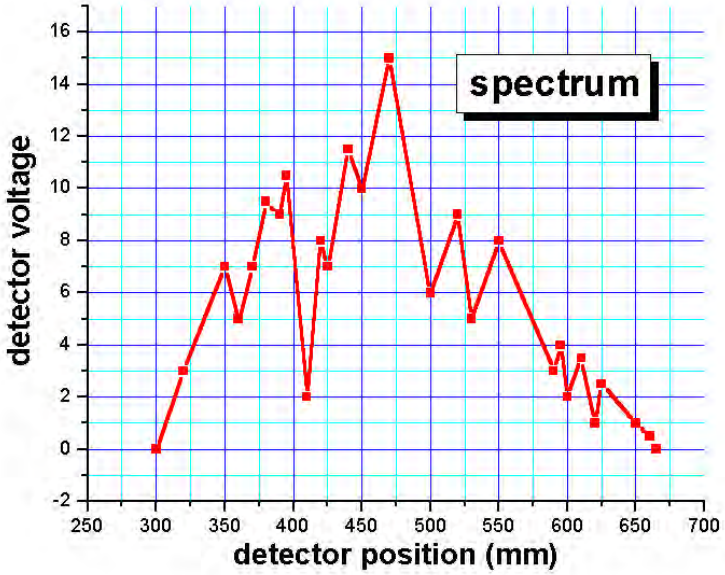
By moving the detector across the spectrum the voltage that is output is recorded at each position along the spectrum, as illustrated above.

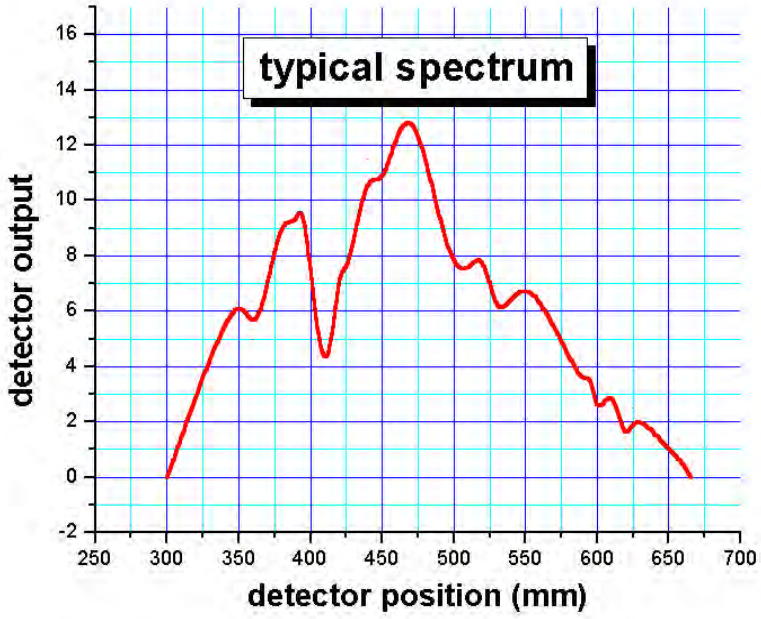
Assignment:

Using the data collected in the chart below, plot the intensity (voltage) against the recorded position to built a spectrogram (chart) of the observed spectrum.



Recorded Data





Teacher's notes: Item 1

Spectra seldom have "sharp" changes in slope, rather they appear smoothed because the detector integrates one spectral region into the next.

The first figure shows the graph as plotted by the students. The second one shows the same spectrum, scanned with the same detector, but instead of sampling discrete points in the spectrum as the students have, the detector is smoothly "swept" across the spectrum and its output is electronically recorded.

Teacher's notes: Item 2

In this assignment we have assumed no wavelength dependence on the detector's sensitivity. Real detectors have a very strong wavelength dependence. To determine the "true" intensity of each region of the spectrum, the sensitivity "curve" of the detector must be known.

For example, if the detector is only one-half as sensitive to red light as it is to blue light, then all red light measurements must be multiplied by a factor of two to make reliable comparisons of the light intensity in each of these regions.