Year 9 Term 1 Science Knowledge Organiser Biology 3 Health and Disease

CORE - MUST KNOW FOREVER...

Microorganism- a very small living thing that we cannot see with our eyes, for example bacteria.
Pathogen - a microorganism that causes disease, commonly called a germ.
4 types of pathogen:

1) Bacteria
2) Virus
3) Fungi
4) Protist

Pathogens can be spread by:

1) Water and food
2) Air (droplets from coughs and sneezes)
3) Direct contact (touching things that are contaminated)

You can reduce the spread of disease by:

1) Being hygienic (hand washing)
2) Vaccination
3) Isolating people who are ill
4) Destroying vectors that spread disease (such as mosquitoes for malaria)

White blood cells defend the body against pathogens

Painkillers- drugs such as paracetamol which reduce pain. They do not kill pathogens

Antibiotics- drugs which kill or prevent growth of bacteria
Penicillin- is a type of antibiotic
Toxins- chemicals that are harmful
Epidemic- a big outbreak of a disease

GOOD TO KNOW...

Bacteria cells are 100 times smaller than our body cells. They can invade our body and make us ill by producing toxins. Your body is also home to countless billions of 'good' or 'friendly' bacteria that do lots of good things for us such as help us digest our food

White blood cells do 3 things to defend you from pathogens:
1)Consume them and destroy them (phagocytosis)
2) Producing **antitoxins** to counteract the toxins
3) Producing **antibodies** that stick to parts of the pathogens called antigens. This signals them for destruction

Antibodies are specific to one type of pathogen so your body keeps a record of all the types of pathogen it has encountered. If you are infected with the same pathogen a second time the whote blood cells already have the antibodies so they can respond quickly to kill the pathogen and you will not get ill.
Vaccines have helped to control and have even eliminated some very infectious diseases. However vaccines don't always work and sometimes there are rare side effects.

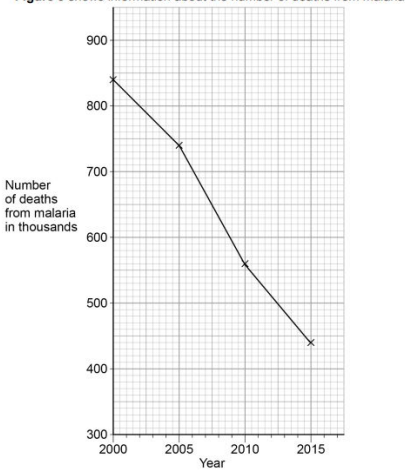
Lots of medical drugs are made using chemicals that we originally found in plants. Plants produce chemicals to defined against pests and pathogens and this is a big research area for modern medicine

Medical drugs are developed using this process

1) Preclinical trials. Testing on samples of tissues and cells in the laboratory
2) Preclinical trials. Testing on live animals to see if it is harmful and if it works
3) Clinical trials. Testing on humans in double blind trials with a placebo.

HOW TO...

Figure 9 shows information about the number of deaths from malaria.



Read graphs in exam questions

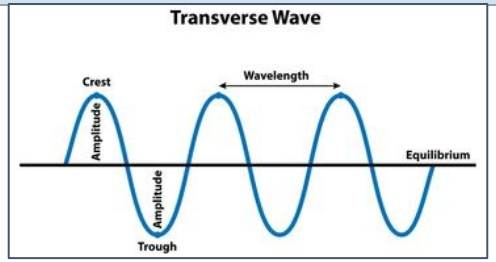
1) Read the label on the Y axis
2) Read the label on the x axis
3) Look at the line of the graph and identify if it has an overall positive or negative correlation
4) Think about what the graph is actually showing you- what is the story? What is the relationship between the 2 things on it?
5) Does the graph obviously break down into 2 or 3 clear sections that you could talk about?
6) the gradient of the line shows you how quickly something changes

Year 9 Term 1 Science Knowledge Organiser [Waves]

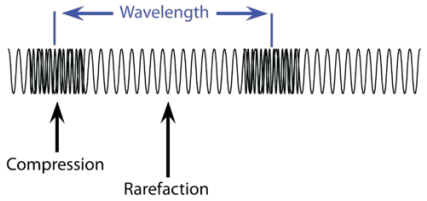
CORE - MUST KNOW FOREVER.....

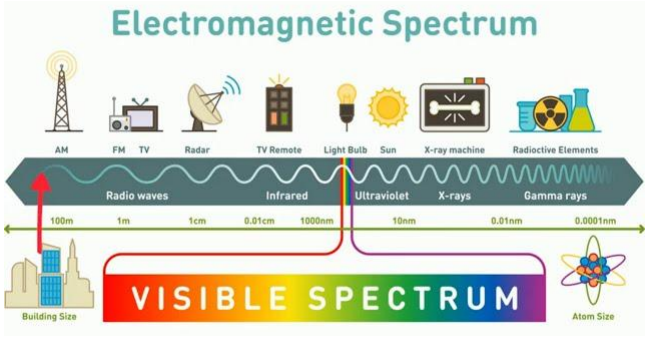
Term	Definition
Peak/crest	The highest point above equilibrium
Trough	The lowest point below equilibrium
Amplitude	The maximum displacement of a point of a wave from equilibrium
Wavelength	Distance covered by a full cycle of the wave, usually measured from peak to peak, or trough to trough
Compression	The smallest gap between waves
Rarefraction	The largest gap between waves

GOOD TO KNOW...



Longitudinal Wave





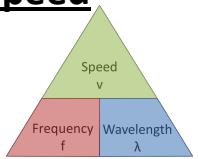
HOW TO....

Calculating Wave Speed

$v = f \times \lambda$

Velocity = frequency x wavelength

in m/s in Hz in m



Example

A wave has a wavelength of 0.45m and a frequency of 60Hz. Calculate the wave speed

Velocity = Frequency X Wavelength
Velocity = 0.45 x 60
Velocity = 27m/s

Rich
Men
In
Vegas
Use
eXpensive
Gadgets