Year 10 Work 15th – 16th March Name:

Check Teams to see if work has been set. Complete the following: Return the completed science work to your Tutor on Friday morning.

English Weds: Complete the Question 3 tasks on pages 60-62 of your SNAP revision guide (the ones that you use for home learning) Thurs: Complete the Question 4 tasks on pages 63-65 of your SNAP revision guides (the ones that you use for home learning). All the information you need is in your SNAP book including the relevant extract. You can find an online copy of the whole novella here: The Project Gutenberg eBook of A Christmas Carol, by Charles Dickens	**Maths** Sparx Maths – Complete the extra Home Learning that has been set. If you do not know your password, go to the Sparx site, and request a password reset.
Science Use your T4 Home Learning book to complete the attached questions. **Health and Social Care** Continue working on your Course Work which is set on Teams. **Sociology** Work will be set on Teams; alternatively use the paper copies you have been given.	**Spanish** Complete the assignment "Local area" in Languagenut.com Log in details can be found on Teams. **Sport Science/Studies** Continue working on your Course work which is set on Teams. **Business** Continue the work in your revision booklets, and revise for your upcoming assessment.

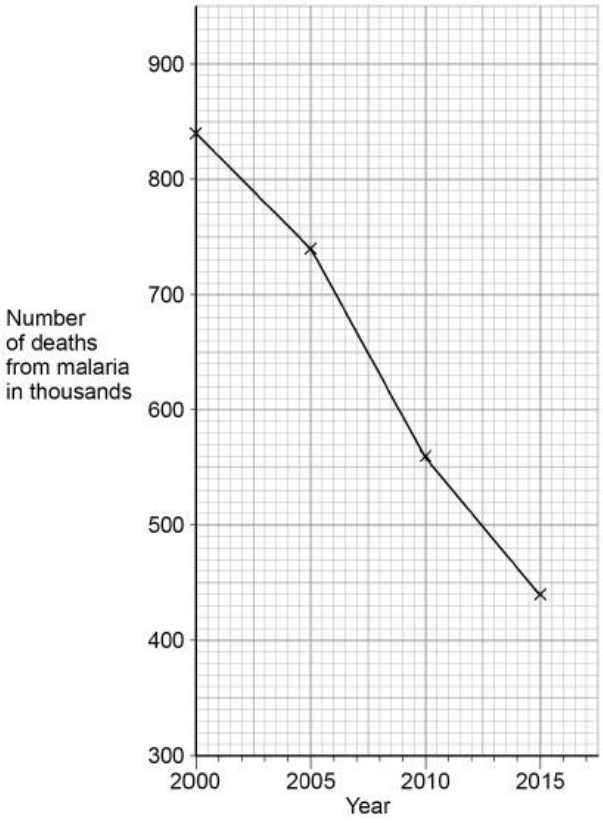
Science

Q1.

Year 10 Work 15th – 16th March Name:

Malaria is a disease transmitted by mosquitos.

The graph shows information about the number of deaths from malaria.



(a) Calculate the decrease in the number of deaths between 2000 and 2015.

Decrease in number of deaths = _____

(2)

(b) Which time period shows the greatest decrease in the number of deaths?

Tick (✓) **one** box.

2000 to 2005 ☐

2005 to 2010 ☐

2010 to 2015 ☐

(1)

(c) A student looked at the graph above and concluded that there were 800 000 deaths from malaria in 2002.

Suggest **one** reason why this conclusion might **not** be correct.

_____

_____

(1)

(d) What type of pathogen causes malaria?

Tick (✓) **one** box.

Bacterium ☐

Fungus ☐

Protist ☐

Virus ☐

(1)

(e) Scientists are developing a vaccine against malaria.

Suggest how a vaccine against malaria could reduce the spread of the disease.

_____

_____

_____

_____

(2)

(f) Give **one** way of controlling the spread of malaria.

Do **not** refer to a vaccine in your answer.

_____

_____

(1)

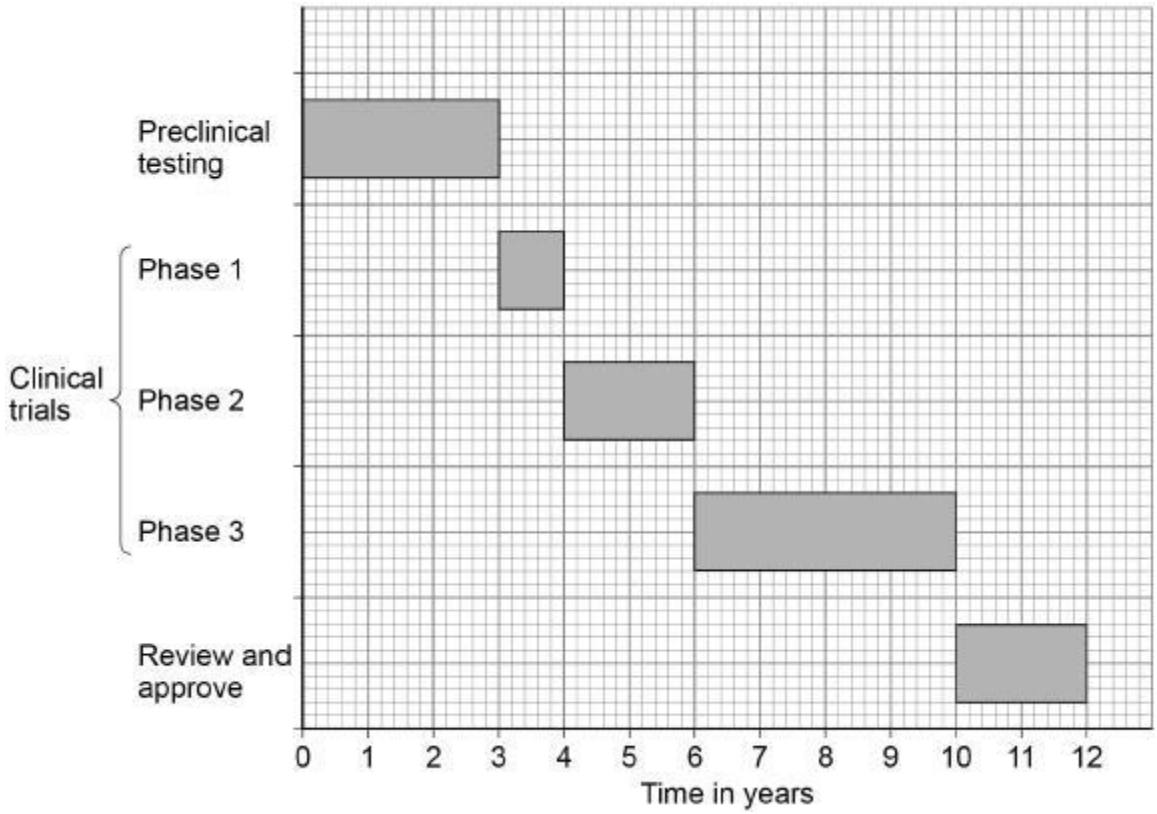
(Total 8 marks)

Q2.

New drugs are tested before they can be licensed for use with patients.

Figure 1 shows how much time the different stages of testing took for one new drug.

Figure 1



(a) Preclinical testing is done in a laboratory.

What is the drug tested on in a laboratory?

Give **one** example.

_____

(1)

(b) How many years did the clinical trials take for the drug in **Figure 1**?

_____

_____

Time for clinical trials = _____ years

(1)

(c) During Phase 1 clinical trials, the drug is tested on **healthy** volunteers using **low** doses.

What is the main purpose of Phase 1 testing?

Tick (✓) **one** box.

To find the best dose to use.	☐
To see if the drug is safe to use.	☐
To see if the drug works.	☐

(1)

During clinical trials, half of the patients are given a placebo in a double blind trial.

(d) What is a placebo?

_____

_____

(1)

(e) Who knows which patients are given the placebo and which patients are given the drug in a double blind trial?

Tick (✓) **one** box.

Not the patients or the doctors	☐
The patients and the doctors	☐
The patients but not the doctors	☐

(1)

Paracetamol and ibuprofen are two medicines used to reduce a high body temperature.

Doctors investigated which medicine was more effective at reducing high body temperature in 200 children who were ill.

The children were put into two groups, which were matched for:

- age
- gender
- body mass.

Each group had 100 children.

This is the method used.

1. Measure the body temperature of each child before any medicine is given.

2. Give children in Group 1 paracetamol.
3. Give children in Group 2 ibuprofen.
4. Measure the body temperature of each child every hour after the medicine is given.

(f) Give **two** control variables in this investigation.

1._____

2._____

(2)

(g) None of the children was given a placebo.

Suggest **one** reason why.

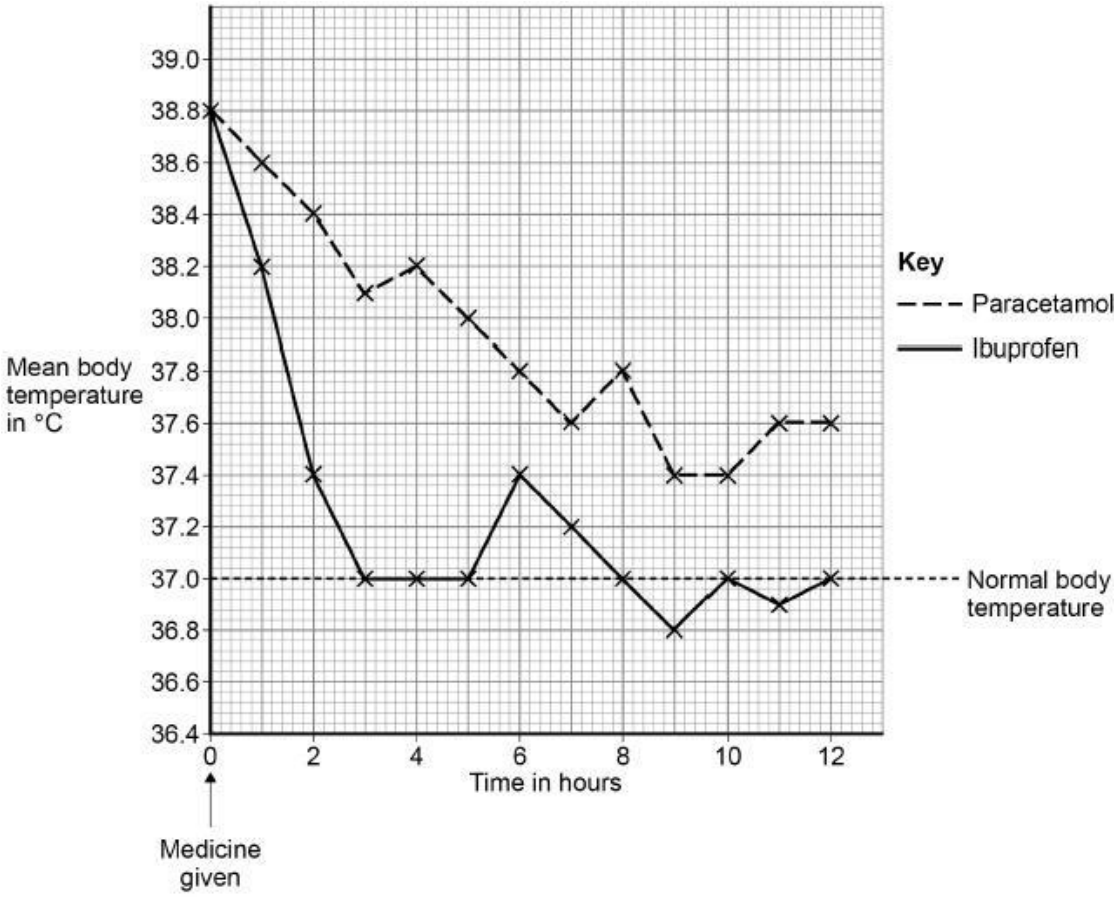
_____

_____

(1)

Figure 2 shows the results.

Figure 2



(h) What was the mean body temperature after 6 hours for the children given ibuprofen?

Mean body temperature = _____ °C

(1)

(i) The doctors concluded that children with a high body temperature should be given ibuprofen and not paracetamol.

Give **two** reasons for the doctors' conclusion.

Use **Figure 2**.

1._____

_____

2._____

_____

(2)

(Total 11 marks)

Q3.

Antibiotics are used to kill some types of pathogen.

(a) Which illness could be treated with an antibiotic?

Tick **one** box.

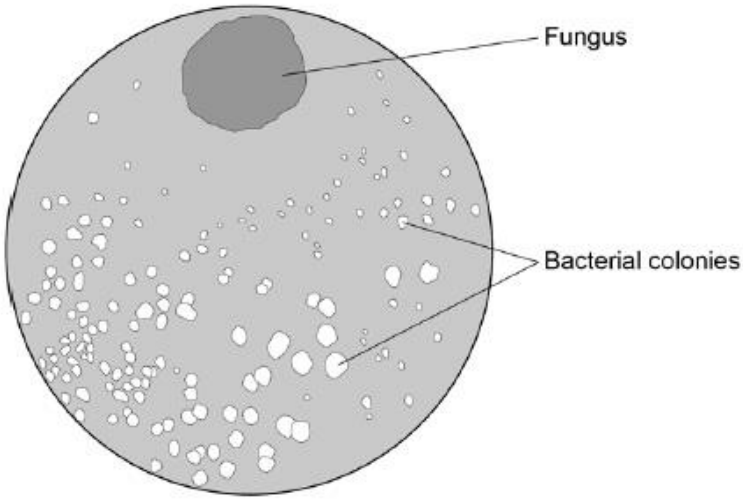
AIDS	☐
Measles	☐
Salmonella	☐
Type 2 diabetes	☐

(1)

Alexander Fleming discovered the antibiotic penicillin.

He noticed that one of his Petri dishes containing bacteria had become contaminated with a fungus.

The diagram shows the Petri dish.



(b) Read the information about the discovery of penicillin.

Draw **one** line from each piece of information to its description.

Information	Description
Fleming noticed that there were only a few bacterial colonies growing near the fungus.	Conclusion
Fleming thought the fungus must have produced a chemical (penicillin) that killed the bacteria around it.	Hypothesis
He injected 8 mice with bacteria and gave 4 of these mice an injection of penicillin.	Investigation
The 4 mice injected with penicillin survived. The 4 mice **not** given penicillin died.	Observation
	Result

(4)

(c) Look at the diagram of the petri dish.
The greater the distance from the fungus the more bacteria grew.
Suggest **one** reason for this.

_____

_____

(1)

(d) Give **two** reasons why Fleming's discovery was important.

1._____

2_____

(2)

(Total 8 marks)

Q4.

Antibiotics are used to treat bacterial infections.

(a) Which substance is used as an antibiotic?

Tick (✓) **one** box.

Aspirin	☐
Digitalis	☐
Penicillin	☐

(1)

Gonorrhoea and chlamydia are two sexually transmitted infections.

Gonorrhoea and chlamydia infections can be treated with antibiotics.

(b) Give **one** symptom of gonorrhoea.

_____

_____

(1)

A scientist investigated which antibiotics were most effective at treating gonorrhoea and chlamydia.

This is the method used.

1. Grow gonorrhoea bacteria in a Petri dish.
2. Prepare four different antibiotic solutions, **A**, **B**, **C** and **D**, of the same concentration.
3. Cut four filter paper discs to the same size.
4. Soak each paper disc in a different antibiotic solution.
5. Put the four paper discs into the Petri dish.
6. Repeat steps 3 to 5 using a Petri dish with chlamydia bacteria growing in it.
7. Keep both Petri dishes at 25 °C for 3 days.

(c) Give **two** control variables used in this investigation.

1 _____

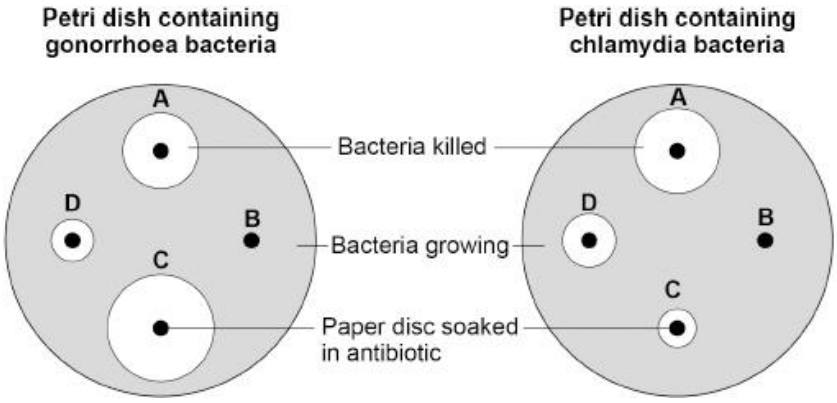
_____

2 _____

(2)

The figure below shows the results.

A clear area around a paper disc is where the antibiotic has killed the bacteria.



(d) Which antibiotic did **not** kill either type of bacterium?

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

(1)

(e) Which antibiotic would be the most effective to treat a person with a **gonorrhoea** infection?

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

(1)

(f) Which antibiotic would be the most effective to treat a person who had both gonorrhoea **and** chlamydia infections?

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

(1)

(g) Antibiotics **cannot** be used to treat HIV infections.

Suggest **one** reason why.

_____

(1)

Fungi can cause an infection of the fingernails and toenails.

Fungal nail infections can spread from one person to another person.

(h) Some people go to nail salons to have their nails shaped and painted.

Suggest **one** way workers in nail salons can reduce the risk of infections being spread.

_____

(1)

(i) Suggest **one** reason why fungal infection of toenails is more common than fungal infection of fingernails.

_____

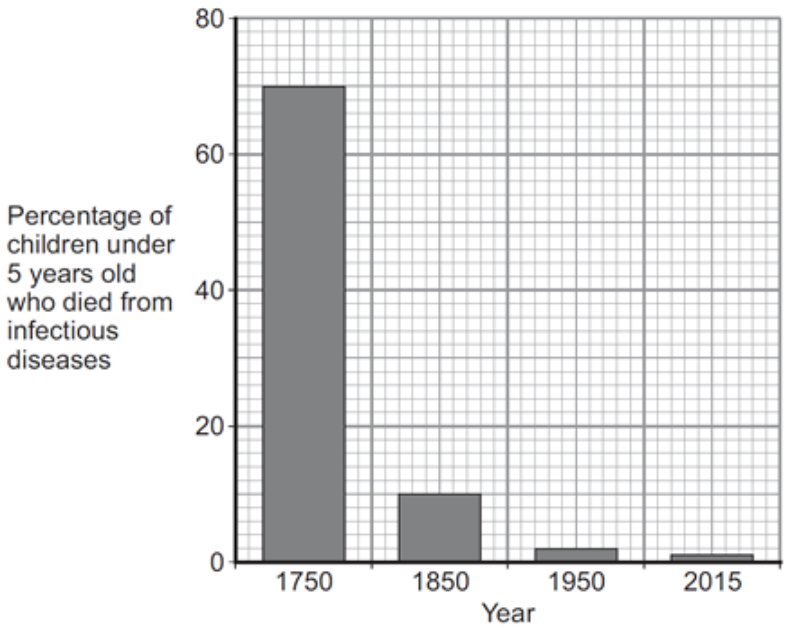
(1)

(Total 10 marks)

Q5.

Pathogens are microorganisms that cause infectious diseases.

(a) The graph shows the percentage of children under 5 years old who died from infectious diseases, in the UK, in four different years.



(i) Between 1750 and 1850 vaccinations were also developed.
What is in a vaccine?

Tick (✓) **one** box.

large amounts of dead pathogens ☐

large amounts of live pathogens ☐

small amounts of dead pathogens ☐

(1)

(ii) The advances in medicine had an effect on death rate.

Describe the effect these advances had between 1750 and 1850.

To gain full marks you should include data from the graph above.

_____

_____

(2)

(b) Antibiotics were developed in the 1940s. Antibiotics kill bacteria.

(i) Which **one** of the following is an antibiotic?

Draw a ring around the correct answer.

cholesterol **penicillin** **thalidomide**

(1)

(ii) The use of antibiotics has **not** reduced the death rate due to all diseases to zero.

Suggest **two** reasons why.

1.

_____

2.

_____

(2)

(c) In school laboratories, bacteria should be grown at a maximum temperature of 25 °C.
Give **one** reason why companies testing new antibiotics grow bacteria at 37 °C.

_____

(1)

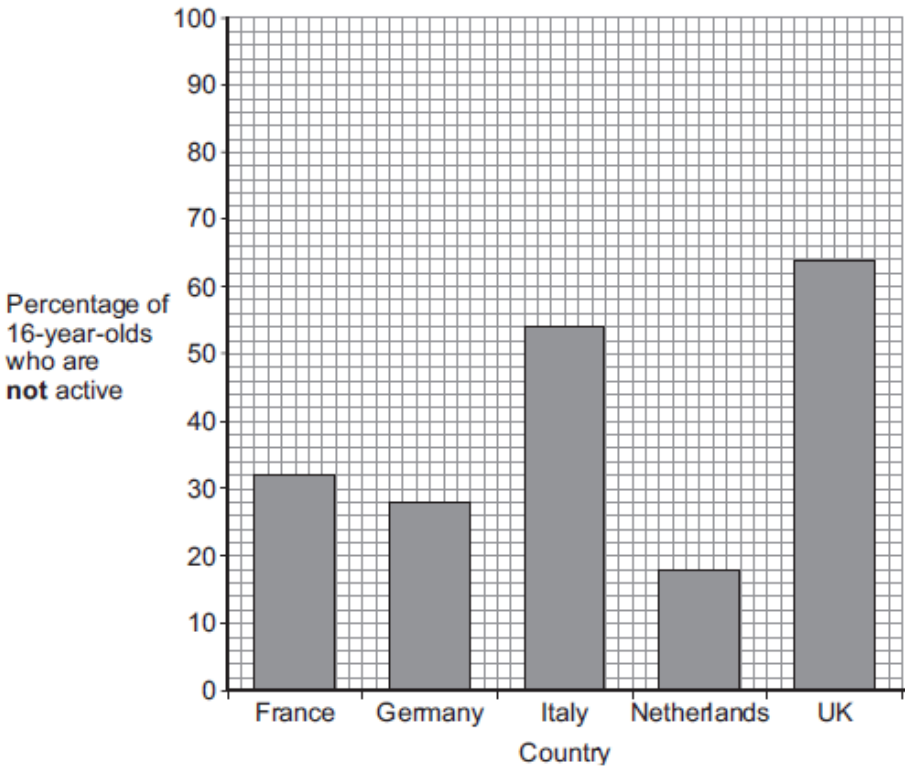
(Total 7 marks)

Q6.

Scientists investigated the effect of different factors on health.

(a) People who are **not** active may have health problems.

The graph shows the percentage of 16-year-olds in some countries who are **not** active.



(i) What percentage of 16-year-olds in the UK are **not** active?

_____ %

(1)

(ii) What percentage of 16-year-olds in the UK are **active**?

_____ %

(1)

(iii) A newspaper headline states:

People in the UK are the laziest in the world.

Information in **Figure 1** does **not** support the newspaper headline.

Suggest **one** reason why the newspaper headline may be wrong.

_____

_____

(1)

(b) Doctors gave a percentage rating to the health of 16-year-olds.
100% is perfect health.

The table shows the amount of exercise 16-year-olds do and their health rating.

Amount of exercise done in minutes every week	**Health rating as %**
Less than 30	72
90	76
180	82
300	92

What conclusion can be made about the effect of exercise on health?

Use information from the table.

_____

_____

(1)

(c) Inherited factors can also affect health.

Give **one** health problem that may be affected by the genes someone inherits.

Draw a ring around the correct answer.

being malnourished **having a high cholesterol level** **having a deficiency disease**

(1)

(d) White blood cells are part of the immune system.

Use the correct answer from the box to complete each sentence.

antibiotics	**antibodies**	**pathogens**	**vaccines**

(i) When we are ill, white blood cells produce _____ to kill microorganisms.

(1)

(ii) Many strains of bacteria, including MRSA, have developed resistance to drugs called

_____

(1)

(Total 7 marks)