

**GCSE Biology B (Twenty First Century Science)**  
**J257/04** Depth in biology (Higher Tier)

**Question Set 15**

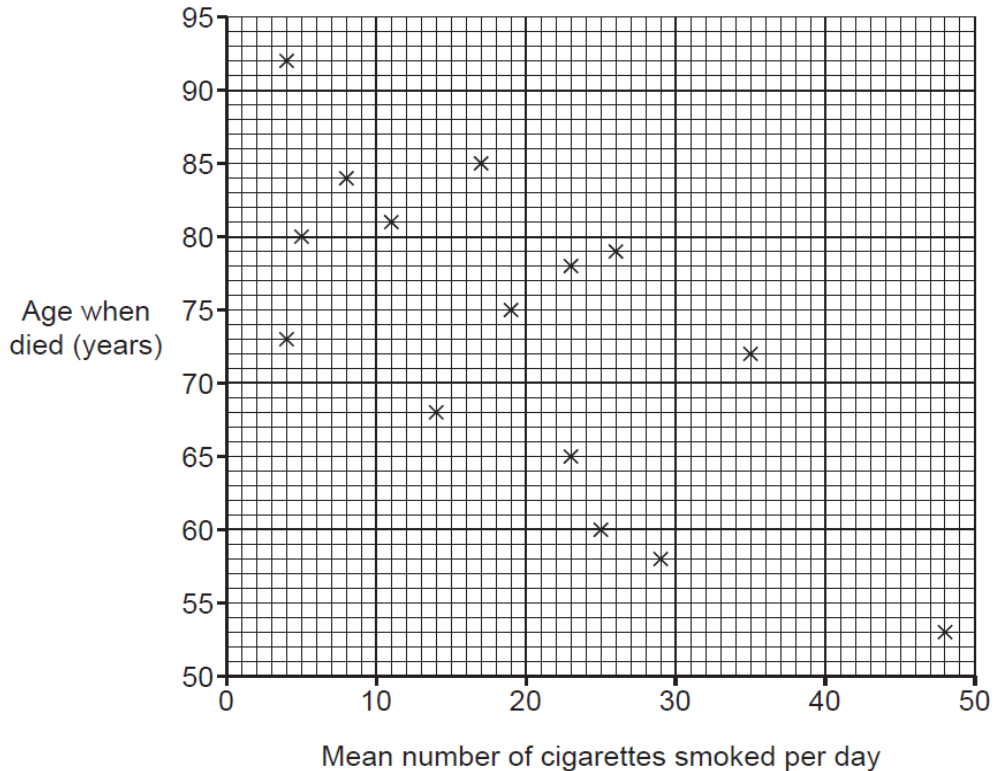
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Smoking cigarettes has effects on the human body.

- (a) Scientists studied 15 men from one town. The men were all 50 years old when the study began.

The men recorded how many cigarettes they smoked per day. The scientists recorded the age at which the men died.

The scatter diagram shows the results of the study.



- (i) Describe the trend shown on the scatter diagram.

The less cigarettes smoked, the longer the person lives. [2]

- (ii) Smoking cigarettes is a risk factor for cardiovascular disease, which can be life-threatening. This is one possible explanation for the trend shown in the scatter diagram.

Name **one** other disease caused by smoking that may help to explain the trend.

Cancer (e.g. lung cancer) [1]

- (iii) Suggest **two** reasons why some of the results do not fit the trend

(e.g. car accident or alcoholic so got liver disease) → May die at a younger age for a different reason [2]

- (iv) Suggest why the findings from this study may **not** apply to the rest of the population.

They are all from one town so it can not be representative. Because people from different region could be more or less affected even though they smoked the same number. Perhaps due to passive smoking, genetics, lifestyle... etc. Many factors affect how long someone can live. [3]

- (b) Jack is a man in his 30s.  
He smokes, is overweight and has high blood pressure.

Jack is already showing signs of cardiovascular disease. Cardiovascular disease can block an artery in the heart, which can cause a heart attack.

A doctor suggests that Jack should change his lifestyle.

- (i) Describe **two** ways Jack could change his lifestyle to reduce his risk of a heart attack. *Quit smoking, exercise more.* [2]
- (ii) Using medicines is an alternative way to treat Jack's cardiovascular disease.

Evaluate the advantages of making changes to Jack's lifestyle rather than him taking medicines.

- It is a more long term solution, less expensive.* [2]
- (iii) State one **other** way to treat Jack's cardiovascular disease. *Surgery (eg. heart transplant)* [1]

**Total Marks for Question Set 15: 13**

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