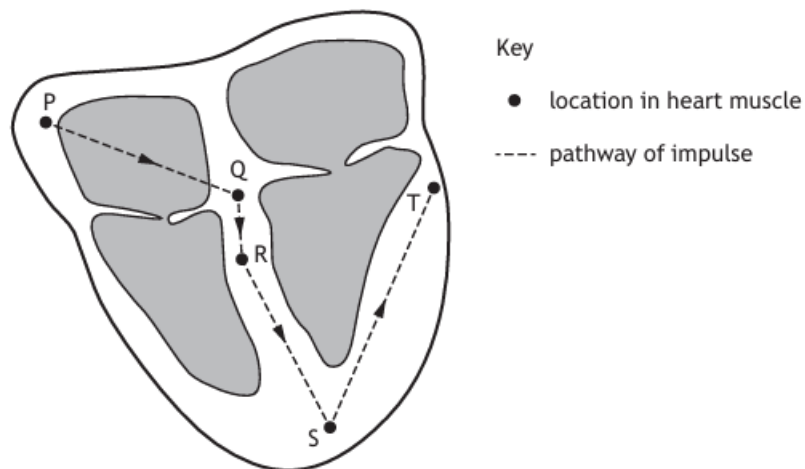


Processing Proportion Calculations

1. The diagram shows a section through a heart and the pathway an impulse takes through the heart muscle.



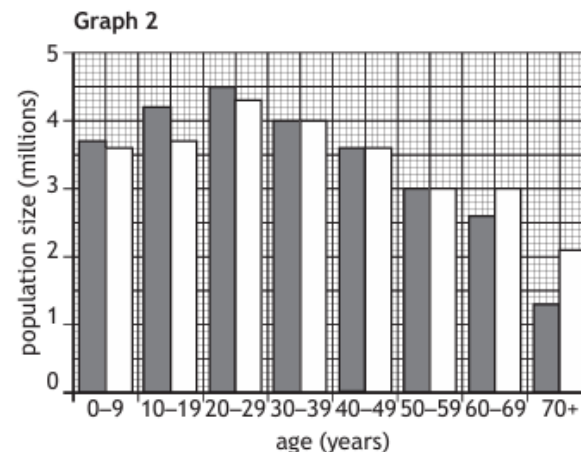
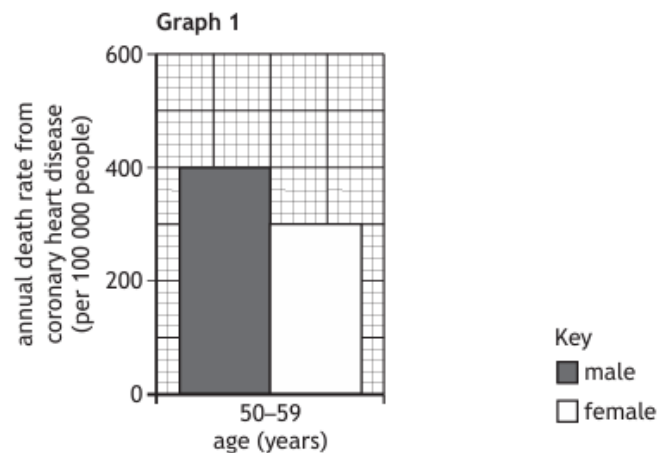
The table shows the distance and the time taken for the impulse to travel through each section of the pathway.

Section of pathway	Distance travelled (mm)	Time taken (s)
P to Q	40	0.07
Q to R	20	0.09
R to S	85	0.04
S to T	115	0.05

Through which section of the pathway does an impulse travel fastest?

- A P to Q
- B Q to R
- C R to S
- D S to T

- 2 The graphs contain information about the population of the United Kingdom.



How many males aged between 50–59 years die from coronary heart disease annually in the United Kingdom?

- A 400
- B 9000
- C 12 000
- D 21 000

Processing Proportion Calculations

3. A drug trial was carried out to study the effect of a drug on mice.
A group of mice, with an average body mass of 20 g, were given 1 mg per kg of their body mass of the drug. The drug was given twice a day for 15 days.

What was the total mass of drug given to each mouse over the 15 days?

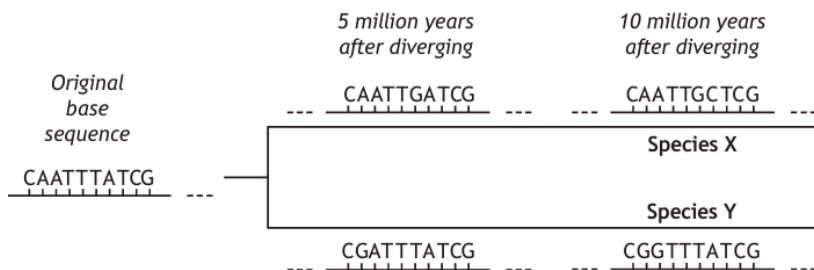
- A 0.02 mg
- B 0.04 mg
- C 0.30 mg
- D 0.60 mg

4. A 40 g serving of a breakfast cereal contains 2 mg of iron. Only 25% of this iron is absorbed into the bloodstream.

If a pregnant woman requires a daily uptake of 6 mg of iron, how much cereal would she have to eat each day to meet this requirement?

- A 60 g
- B 120 g
- C 240 g
- D 480 g

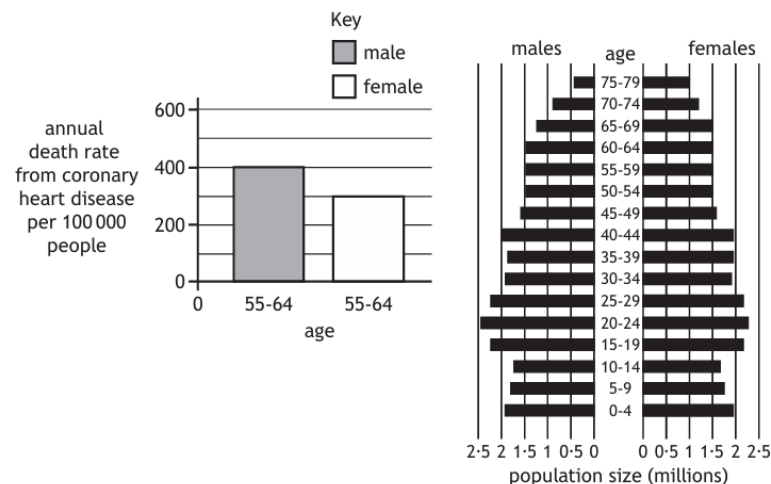
5. Over millions of years of evolution, mutations occur at a broadly constant rate within a gene. This allows genes to be used as molecular clocks. The diagram below shows how the base sequence in part of a gene changed as two evolutionary lineages diverged from an original base sequence. The base sequence in the gene has changed at a rate of 1 base per 5 million years as shown.



Assuming this rate of mutation continued, by how many bases would this part of the gene differ in Species X compared with Species Y 20 million years after diverging from the original base sequence?

- A 4
- B 8
- C 16
- D 20

6. The graphs contain information about the population of Britain.



The number of British women between 55 and 64 years of age who die from coronary heart disease annually is

- A 300
- B 4500
- C 9000
- D 12 000.

7. When the population of the UK was 67 620 000, one in every 4600 people had sickle cell disease.

Calculate how many people had sickle cell disease.

Space for calculation

Processing Proportion Calculations

8

Day	Cell count (thousand cells per cm ³)	
	Medium only	Medium + cytokines
2	22	36
4	50	130
6	330	760
8	520	1800
10	13	8200

Calculate how many cells would be present in a 0.01 cm³ sample taken from the culture containing cytokines after 10 days.

1

Space for calculation

_____ thousand cells

Processing Answers

1. D
2. C
3. D
4. D
5. B
6. C
7. 1470
8. 82