B3.2 Transport

What the Cell · DP Biology · worksheet · animal statements B3.2.1–6

Name _____ **Date** _____ **Total** _____ / 53

About 50 minutes, or one section at a time. A calculator is allowed. The number of marks shows how many separate points to make. Look at the bold command term: "state" needs a brief answer, while "explain" needs reasons.

Section A: Recall

9 marks

1 **State** two features of capillaries that make exchange efficient. B3.2.1 **[2]**

2 **State** the function of valves in veins. B3.2.5 **[1]**

3 **Identify** the artery felt when a pulse is taken at the wrist. B3.2.4 **[1]**

4 **State** what is meant by occlusion of an artery. B3.2.6 **[1]**

5 **State** the tissue in an artery wall that stretches and then recoils. B3.2.3 **[1]**

6 **State** why no pulse can be felt in a vein. B3.2.5 **[1]**

7 **State** two possible consequences of a blocked coronary artery. B3.2.6 **[2]**

Section B: Understanding

15 marks

8 **Explain** how capillaries are adapted for the exchange of materials with tissues. B3.2.1 **[4]**

9 **Explain** how the wall of an artery helps it to withstand and maintain high blood pressure. B3.2.3 **[3]**

10 **Explain** how blood returns to the heart in veins, despite the low pressure. B3.2.5 **[3]**

11 **Compare and contrast** the structure of arteries and veins. B3.2.2 **[3]**

Arteries	Veins

12 **Suggest** why capillaries in the small intestine have fenestrations, while those in most muscle do not. B3.2.1 **[2]**

Section C: Working with data

20 marks

All data in this section are invented for practice. The patterns are realistic, but they do not describe real people or countries.

13 B3.2.2

A student measured two blood vessels on a micrograph of a cross-section.

Vessel	Wall thickness / mm	Lumen diameter / mm	Wall : lumen ratio
X	1.2	4.0	
Y	0.4	5.0	

a **Calculate** the two missing ratios of wall thickness to lumen diameter. **[2]**

b **Deduce** which vessel is the artery, giving a reason. **[2]**

14 B3.2.4

A student counted their resting pulse for 30 s on three occasions: 36, 38 and 37 beats. They then exercised for three minutes and measured their heart rate each minute during recovery.

Minutes after exercise	**0**	**1**	**2**	**3**	**4**	**5**
Heart rate / beats per minute	140	118	100	88	78	74

a **Calculate** the mean resting heart rate in beats per minute. **[2]**

b **Calculate** the percentage change in heart rate from the resting value to 0 minutes after exercise. **[2]**

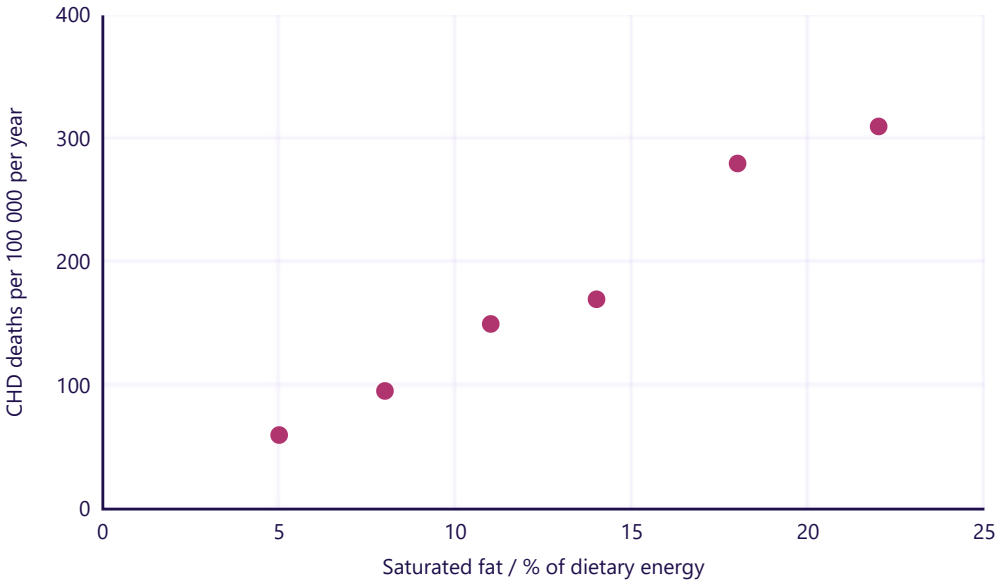
c **Describe** the pattern of recovery. **[2]**

d **Explain** why the pulse is taken with the fingertips, at a point where an artery passes over bone. **[2]**

e **Compare** this method with using a fitness watch, giving one advantage of each. **[2]**

15 B3.2.6

The graph shows mean saturated fat intake and deaths from coronary heart disease (CHD) in six fictional countries.



a **Describe** the relationship shown. **[1]**

b **Evaluate** the claim that these data prove saturated fat causes CHD. **[3]**

c **Suggest** two other variables that could differ between these countries and affect CHD deaths. **[2]**

Section D: Longer answers

9 marks

16 **Explain** what makes coronary arteries become blocked, and what follows. B3.2.6 **[6]**

17 **Suggest** why a thrombus in a coronary artery can damage only part of the heart, and why that can still be fatal. B3.2.6 **[3]**