B2.3 Cell specialization (HL)

What the Cell · DP Biology · worksheet · HL statements B2.3.7–10

Name _____ **Date** _____ **Total** _____ / 30

About 30 minutes, or one section at a time. The number of marks shows how many separate points to make.

Section A: Recall

7 marks

1 **State** two ways in which the biconcave shape of a red blood cell helps it carry oxygen. B2.3.7 **[2]**

2 **Name** the vesicles in type II pneumocytes that store surfactant. B2.3.8 **[1]**

3 **State** the role of intercalated discs in cardiac muscle. B2.3.9 **[1]**

4 **State** the function of the mid-piece of a sperm cell. B2.3.10 **[1]**

5 **State** two roles of the zona pellucida. B2.3.10 **[2]**

Section B: Understanding

11 marks

6 **Explain** how cells of the proximal convoluted tubule are adapted for reabsorption. B2.3.7 **[3]**

7 **Explain** why the alveolar epithelium needs two types of cell. B2.3.8 **[2]**

8 **Discuss** whether a striated muscle fibre should be called a cell. B2.3.9 **[3]**

9 **Explain** why a human egg is much larger than a sperm cell. B2.3.10 **[3]**

Section C: Working with evidence

8 marks

All data in this section are invented for practice. The patterns are realistic.

10 B2.3.8

The table shows the percentage of premature babies who developed respiratory distress, by length of pregnancy. The L/S ratio is a measure of surfactant phospholipid in the fluid around the baby; a ratio of 2.0 or more usually means the lungs are mature.

Length of pregnancy / weeks	26	28	30	32	34	36
Babies with respiratory distress / %	92	76	55	30	12	4
Mean L/S ratio	0.8	1.1	1.4	1.8	2.2	2.6

a **Describe** the relationship between length of pregnancy and respiratory distress. **[1]**

b **Calculate** the percentage decrease in respiratory distress between 28 and 34 weeks. **[2]**

c **Explain** why babies born very early often have difficulty breathing. **[2]**

d **Deduce** the earliest length of pregnancy in the table at which the lungs are usually mature. **[1]**

e Mothers likely to give birth early are often given a steroid hormone. **Suggest** how this could reduce respiratory distress in the baby. **[2]**

Section D: Longer answer

4 marks

11 **Compare** heart muscle cells with skeletal muscle fibres. B2.3.9 **[4]**