ANSWER KEY.

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Cellular Respiration

Biology | ANSWER KEY

Answer in complete sentences. Show your work for calculations.

1. Cellular respiration: $C_6H_{12}O_6$ + ___ O_2 → ___ CO_2 + ___ H_2O + energy

(a) Write the missing coefficients to balance the equation.

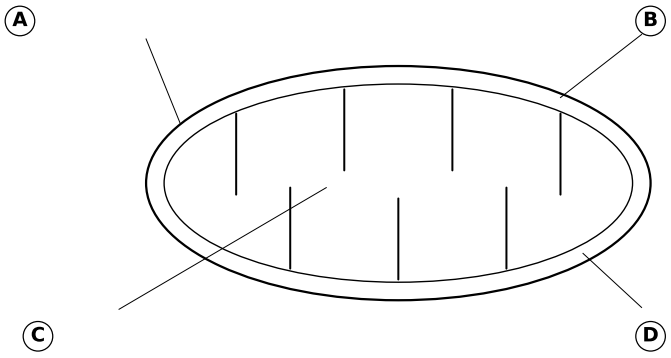
(b) How many CO_2 are made when 7 glucose are respired?

(a) **6 O_2; 6 CO_2; 6 H_2O**

(b) 7 × 6 = **42 CO_2**

2. The drawing shows a mitochondrion. Name the parts labeled A to D.

Choose from: outer membrane, inner membrane, matrix, space between the membranes.



(a) A: _____ (b) B: _____

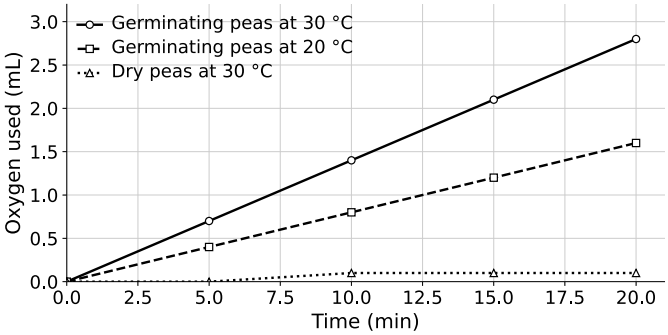
(c) C: _____ (d) D: _____

(a) **A: outer membrane** (b) **B: inner membrane** (folded into cristae)

(c) **C: matrix** (d) **D: space between the two membranes**

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3. Peas were sealed in respirometers, and the oxygen used was measured (sample data).



(a) Find the rate of O_2 use for the germinating peas at 30 °C, in mL/min.

(b) Why did the dry peas use almost no O_2?

(a) 2.8 mL ÷ 20 min = **0.14 mL/min**

(b) **Dry peas are barely active** and are not growing, so they need little ATP and carry out almost no cellular respiration.

4. In the model, about 32% of the energy in one mole of glucose (2,870 kJ) is captured in ATP and the rest is released as heat. How much energy is released as heat?

100% − 32% = 68%. 0.68 × 2,870 kJ = 1,951.6 kJ, so about **1,950 kJ**.

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