- 1 A person's heart beats approximately 10⁵ times each day. A person lives for approximately 81 years.
 - (a) Work out an estimate for the number of times a person's heart beats in their lifetime. Give your answer in standard form correct to 2 significant figures.

- 2×10^{12} red blood cells have a total mass of 90 grams.
- (b) Work out the average mass of 1 red blood cell. Give your answer in standard form.

Average mass of 1 red blood cell
$$\frac{909}{2 \times 10^{12}}$$

$$= 4.5 \times 10^{-11}9$$

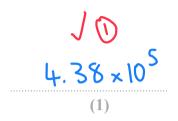
$$4.5 \times 10$$
 grams (2)

2 (a) Write 1.63×10^{-3} as an ordinary number.



(b) Write 438000 in standard form.





(c) Work out $(4 \times 10^3) \times (6 \times 10^{-5})$ Give your answer in standard form.

collect like terms
$$4 \times 6 \times 10^{3} \times 10^{-5} \text{ J O}$$

$$24 \times 10^{2} \text{ add powers}$$

$$24 \times 10^{2} \text{ J O}$$

(Total for Question 2 is 4 marks)

3 (a) Write 6.75×10^{-4} as an ordinary number.

10-4 > more decimal place 4 places to the left

$$6.75 \times 10^{-9} = 0.000675$$

(b) Work out
$$\frac{2.56 \times 10^6 \times 4.12 \times 10^{-3}}{1.6 \times 10^{-2}}$$

Give your answer in standard form.

multiply front numbers, add power of 10:

$$(2.56 \times 4.12) \times 10^{6-3}$$

 10.5472×10^{3}

divide front numbers, subtract powers of 10

$$\left(\frac{10.5472}{1.6}\right) \times \left(0^{3-(-2)} = 6.592 \times 10^{5}\right)$$

6.592×10⁵
(2)

(Total for Question 3 is 3 marks)