

SCIENTIFIC NOTATION CALCULATIONS

Show all calculations and the unrounded answers.

Write the answers in scientific notation, correct to 3 significant figures.

1. One **millilitre** of blood contains 5.1×10^9 red blood cells.
Calculate the number of red blood cells in 5.5 **litres** of blood.
2. Every **second** 2.435×10^6 red blood cells are created .
Calculate the number of red blood cells created in 2 **minutes**.
3. One **millilitre** of hydrogen gas has a mass of 8.9995×10^{-5} grams.
Calculate the mass, in grams, of 3 **litres** of hydrogen gas.
4. One **milligram** of hydrogen gas contains 2.988×10^{20} molecules.
Calculate the number of molecules in 4 **grams** of hydrogen gas.
5. There are 2.689×10^{19} atoms in 1 **millilitre** of argon gas.
Calculate the number of atoms in 1.2 **litres** of argon gas.
6. One cubic centimetre of helium gas has a mass of 1.786×10^{-4} grams.
Calculate the volume, in cubic centimetres, of 3 grams of helium gas.
7. One atom of silver has a mass of 1.791×10^{-22} grams.
Calculate the number of atoms in 4 grams of silver.
8. A colony of ants has a total mass of 1.25 kg.
Each ant has a mass of 4.25×10^{-6} kilograms.
Calculate the number of ants in the colony.
9. UK farms produced 6.581×10^6 tonnes of barley.
On average one hectare of farmland produces 5.6 tonnes of barley.
Calculate the area of farmland producing barley.
10. There are 6.6×10^9 two pence coins in circulation.
Calculate the total value of all the two pence coins in circulation.

ANSWERS

$$\begin{aligned} 1. \quad & 5.1 \times 10^9 \times 5500 \\ & = 2.805 \times 10^{13} \\ & = 2.81 \times 10^{13} \end{aligned}$$

$$\begin{aligned} 2. \quad & 2.435 \times 10^6 \times 120 \\ & = 2.922 \times 10^8 \\ & = 2.92 \times 10^8 \end{aligned}$$

$$\begin{aligned} 3. \quad & 8.9995 \times 10^{-5} \times 3000 \\ & = 2.69985 \times 10^{-1} \\ & = 2.70 \times 10^{-1} \end{aligned}$$

$$\begin{aligned} 4. \quad & 2.988 \times 10^{20} \times 4000 \\ & = 1.1952 \times 10^{24} \\ & = 1.20 \times 10^{24} \end{aligned}$$

$$\begin{aligned} 5. \quad & 2.689 \times 10^{19} \times 1200 \\ & = 3.2268 \times 10^{22} \\ & = 3.23 \times 10^{22} \end{aligned}$$

$$\begin{aligned} 6. \quad & 3 \div 1.786 \times 10^{-4} \\ & = 1.679... \times 10^4 \\ & = 1.68 \times 10^4 \end{aligned}$$

$$\begin{aligned} 7. \quad & 4 \div 1.791 \times 10^{-22} \\ & = 2.233... \times 10^{22} \\ & = 2.23 \times 10^{22} \end{aligned}$$

$$\begin{aligned} 8. \quad & 1.25 \div 4.25 \times 10^{-6} \\ & = 2.941... \times 10^5 \\ & = 2.94 \times 10^5 \end{aligned}$$

$$\begin{aligned} 9. \quad & 6.581 \times 10^6 \div 5.6 \\ & = 1.175... \times 10^6 \\ & = 1.18 \times 10^6 \end{aligned}$$

$$\begin{aligned} 10. \quad & 6.6 \times 10^9 \times 2 \div 100 \\ & = \text{£ } 1.32 \times 10^8 \end{aligned}$$