GENMATHS RESOURCES

STANDARD FORM OPERATIONS

Task 1 – Complete the following operations. Give your answers in standard form.

1) $(3.2 \times 10^5) + (4.5 \times 10^5)$
2) $(7.1 \times 10^6) - (3.9 \times 10^6)$
3) $(5.6 \times 10^4) + (2.3 \times 10^3)$
4) $(8.9 \times 10^{-3}) + (1.2 \times 10^{-3})$
5) $(4.7 \times 10^{-2}) - (2.8 \times 10^{-2})$
6) $(3 \times 10^4) \times (2 \times 10^3)$
7) $(5.2 \times 10^5) \times (4 \times 10^{-2})$
8) $(6 \times 10^{-3}) \times (7 \times 10^{-6})$
9) $(8.5 \times 10^2) \times (3.2 \times 10^4)$
10) $(9 \times 10^{-5}) \times (2.1 \times 10^3)$
11) $(4.8 \times 10^7) \div (1.2 \times 10^3)$
12) $(6 \times 10^{-2}) \div (3 \times 10^4)$
13) $(9 \times 10^6) \div (3 \times 10^2)$
14) $(2.1 \times 10^{-3}) \div (7 \times 10^{-7})$
15) $(5 \times 10^3) \div (2 \times 10^5)$

Task 2 – Give your answers in standard form.

16) The population of Country A is 3.5×10^7. The population of Country B is 2.2×10^7. Find the total population of the countries.

17) A city has 8.1×10^6 people in 2020. By 2025, the population increased by 4.9×10^5. What is the population in 2025?

18) A scientist measures the mass of a rock as 6.2×10^3 g and the mass of another rock as 4.8×10^3 g. Find their total mass.

19) The Sun's diameter is 1.39×10^6 km and Earth's diameter is 1.28×10^4 km. How much bigger is the Sun's diameter?

20) A microbe is 5×10^{-6} m long. Another microbe is 3×10^{-6} m long. What is their combined length?

21) The speed of light is 3×10^8 m/s. How far does light travel in 2×10^2 seconds?

22) A machine produces 4.5×10^3 screws each hour. How many screws does it produce in 3×10^2 hours?

23) A grain of sand has a mass of 3×10^{-5} g. Find the total mass of 2×10^3 grains of sand.

24) A spacecraft travels 7.2×10^6 kilometres in 1.8×10^3 seconds. What is the speed of the spacecraft in km/s?

25) A car's engine produces 4×10^5 watts of power. A train's engine produces 1.2×10^7 watts of power. How many times more powerful is the train's engine than the car's?

26) Work out the value of $\frac{0.04 \times 0.008}{0.002}$. Give your answer in standard form.

27) Work out the value of $\frac{4.587 \times 10^{-11}}{3.4 \times 10^4}$. Give your answer in standard form to 4 significant figures.

28) A sphere has a radius of 3.5×10^4 mm. Work out the volume of the sphere. Give your answer in standard form to 3 decimal places.

$$V = \frac{4}{3}\pi r^3$$

Challenge

29) The mass of a neutron is 1.675×10^{-27} kg. The mass of a helium nucleus is 6.646×10^{-27} kg. How many neutrons would have the same mass as 50 helium nuclei? Give your answer to the nearest unit.

30) Given that, $a = 2.5 \times 10^{7}$ and $b = 4 \times 10^{-3}$, calculate $\frac{a^2 \times b^3}{5 \times 10^5}$. Give your answer in standard form.

31) The speed of light is 3×10^{8} m/s. A particle travels at 6×10^{-4} times the speed of light for 2.5×10^{6} s. How far does it travel? Give your answer in standard form in kilometres.

32) The product of two quantities is:

$$1.728 \times 10^{5}$$

If one quantity is 4.5×10^{2}, work out the other in standard form. Then check your answer using ordinary numbers.