STANDARD FORM

Answer all of these questions. Remember to show your working out in all questions.

MAIN QUESTIONS

1.

Write 4500 in standard form

> 4.5×10^3

2.

Write 0.0072 in standard form

> 7.2×10^{-3}

3.

Convert 6.3×10^4 to an ordinary number

> 63000

4.

Convert 8.1×10^{-5} to an ordinary number

> 0.000081

5.

Calculate $(3 \times 10^2) \times (4 \times 10^3)$

> 1.2×10^6

6.

Calculate $(9 \times 10^5) \div (3 \times 10^2)$

> 3×10^3

7.

Calculate $(2.5 \times 10^4) + (3.5 \times 10^4)$

> 6.0×10^4

8.

Calculate $(7.2 \times 10^6) - (2.2 \times 10^6)$

> 5.0×10^6

9.

Simplify $(4 \times 10^3) \times (5 \times 10^{-2})$

> 2×10^2

10.

Simplify $(6 \times 10^8) \div (2 \times 10^{-3})$

> 3×10^{11}

11.

Calculate $(2.4 \times 10^5) + (3.6 \times 10^4)$

> 2.76×10^5

12.

Calculate $(8.5 \times 10^7) - (1.5 \times 10^6)$

> 8.35×10^7

13.

Calculate $(3.2 \times 10^{-4}) \times (4 \times 10^{-3})$

> 1.28×10^{-6}

14.

Calculate $(9.6 \times 10^{-5}) \div (3.2 \times 10^{-2})$

> 3×10^{-3}

15.

Simplify $(2.5 \times 10^6)^2$

6.25×10^{12}

16.

Simplify $\sqrt{(1.6 \times 10^8)}$

4×10^4

17.

Calculate $(4.8 \times 10^5) + (7.2 \times 10^4) - (3.6 \times 10^4)$

5.04×10^5

18.

Calculate $(3.6 \times 10^{-3}) \times (2.5 \times 10^4) \div (1.2 \times 10^2)$

7.5×10^{-1}

19.

Simplify $(2.7 \times 10^9) \div (9 \times 10^4) \times (3 \times 10^{-2})$

9×10^2

20.

Calculate $(5.4 \times 10^{12}) \div (1.8 \times 10^8) + (2 \times 10^3)$

3.2×10^4

21.

Simplify $(8.1 \times 10^{-6}) \times (4 \times 10^9) \div (1.2 \times 10^4)$

2.7×10^0

22.

Calculate $(6.4 \times 10^7) - (8 \times 10^6) + (1.6 \times 10^7)$

7.2×10^7

23.

Simplify $(1.44 \times 10^{10}) \div (2.4 \times 10^5) \times (5 \times 10^{-3})$

3×10^2

24.

Calculate $(3.2 \times 10^{-8}) \times (2.5 \times 10^{12}) \div (4 \times 10^4)$

2×10^0

25.

Simplify $(7.29 \times 10^{16}) \div (2.7 \times 10^8)^2$

1×10^0

26.

Calculate $(4.9 \times 10^{14}) \div (7 \times 10^8) - (3 \times 10^4)$

4×10^5

27.

Simplify $(6.25 \times 10^{12}) \times (1.6 \times 10^{-9}) \div (2 \times 10^2)$

5×10^1

28.

Calculate $(8.1 \times 10^{-5}) + (2.7 \times 10^{-6}) - (4.5 \times 10^{-6})$

7.92×10^{-5}

29.

Simplify $(1.6 \times 10^{-4}) \times (6.25 \times 10^8) \div (2 \times 10^3)$

5×10^1

30.

Calculate $(2.56 \times 10^{18}) \div (6.4 \times 10^{12}) \times (5 \times 10^{-4})$

2×10^2

MASTER QUESTIONS

M1.

The distance from Earth to the Moon is approximately 3.84×10^8 metres. A spacecraft travels this distance in 3 days. Calculate its average speed in metres per second.

1.48×10^3 m/s

M2.

A bacterial culture doubles every hour. Starting with 5×10^6 bacteria, how many will there be after 8 hours?

1.28×10^9 bacteria

M3.

Light travels at 3×10^8 m/s. How far does it travel in 2.5×10^{-5} seconds?

7.5×10^3 metres

M4.

The mass of Earth is 5.97×10^{24} kg. If the mass of the Moon is 7.35×10^{22} kg, how many times heavier is Earth than the Moon?

81.2 times

M5.

A computer processes 4.5×10^9 instructions per second. How many instructions can it process in 3.6×10^3 seconds?

1.62×10^{13} instructions

M6.

The population of a city is 8.4×10^6 people. If each person produces 2.5×10^{-2} tonnes of waste per day, what is the total daily waste production?

2.1×10^5 tonnes

M7.

A star is 4.2×10^{16} metres from Earth. If light travels at 3×10^8 m/s, how long does its light take to reach us?

1.4×10^8 seconds

M8.

A company earns £3.6×10^8 annually. If it has 1.2×10^4 employees, what is the average earnings per employee?

£3×10^4

M9.

A water droplet has a volume of 5×10^{-8} m^3. How many droplets are needed to make 1 litre (1×10^{-3} m^3) of water?

2×10^4 droplets

M10.

The area of a forest is 2.5×10^7 m^2. If each tree needs 6.25 m^2 of space, how many trees can the forest support?

4×10^6 trees