

MATHS REVIEW

$$1. 1.61 \times 10^6 + 1.9 \times 10^5$$

$$= 1800\ 000$$

$$= \underline{\underline{1.8 \times 10^6}}$$

$$2. 1.61 \times 10^6 - 1.9 \times 10^5$$

$$= \underline{\underline{1.42 \times 10^6}}$$

$$34. 1.91 \times 10^{-5} - 1.6 \times 10^{-6}$$

$$= \underline{\underline{1.75 \times 10^{-5}}}$$

$$43) 1.91 \times 10^{-5} + 1.6 \times 10^{-6}$$

$$= \underline{\underline{2.07 \times 10^{-5}}}$$

$$5) (2.6 \times 10^{-8}) (6.02 \times 10^{23})$$

solution

$$\Rightarrow 2.6 \times 6.02 \times 10^{23-8}$$

$$= \underline{\underline{1.5652 \times 10^{16}}}$$

$$6) (2.6 \times 10^{-8}) / (0.52 \times 10^{-9})$$

solution

$$\frac{2.6}{0.52} \times 10^{(-8 - (-9))} = \underline{\underline{5 \times 10^1}}$$

$$= \underline{\underline{5.0 \times 10^1}}$$

$$\textcircled{7} (2.6 \times 10^{-8}) (0.25 \times 10^{17}) / (4.6 \times 10^{-9})$$

Solution

$$\Rightarrow (2.6 \times 0.25 \times 10^{-8+17}) = 0.65 \times 10^9$$

$$\Rightarrow \frac{0.65 \times 10^9}{4.6 \times 10^{-9}} = \frac{0.65}{4.6} \times 10^{9-(-9)}$$

$$\Rightarrow \cancel{0.41} \Rightarrow 0.1413 \times 10^{18}$$

$$\Rightarrow \underline{\underline{1.413 \times 10^{18}}}$$

$$\textcircled{8} (2.46)(1.98) / (0.82)(2.73) =$$

Solution.

$$\frac{4.8708}{2.2386} = \underline{\underline{2.1758}}$$

$$\textcircled{9} (3.2)^{\frac{1}{2}} =$$

Solution

Find the square root

$$\sqrt{3.2} = \underline{\underline{1.7889}}$$

$$\textcircled{10} (4.0 \times 10^{-6})^{\frac{1}{2}}$$

Solution

Find the square root of the expression

$$\Rightarrow \sqrt{4.0 \times 10^{-6}} = \sqrt{4.0} \times \sqrt{10^{-6}}$$

$$= \underline{\underline{2.0 \times 10^{-3}}}$$

11. $(4.0 \times 10^7)^{\frac{1}{2}} = (\text{Find square root})$
Solution

$$\Rightarrow \sqrt{4.0 \times 10^7} = \sqrt{4.0} \times \sqrt{10^7}$$

$$\Rightarrow \underline{\underline{2.0 \times 10^{\frac{7}{2}}}}$$

12. $(4.0 \times 10^{-7})^{\frac{1}{2}}$
Solution.

Find the square root.

$$\begin{aligned} \sqrt{4.0 \times 10^{-7}} &= \sqrt{4.0} \times \sqrt{10^{-7}} \\ &= \underline{\underline{2.0 \times 10^{-\frac{7}{2}}}} \end{aligned}$$

13. $(4.0 \times 10^{-7})^2$ Soln: Square the expression

$$\Rightarrow (4.0 \times 10^{-7})(4.0 \times 10^{-7})$$

$$\Rightarrow 16.0 \times 10^{-14}$$

$$= \underline{\underline{1.60 \times 10^{-13}}}$$

14. $(3.0 \times 10^{-4})^3 =$ soln: cube the function

$$\Rightarrow (3.0 \times 10^{-4})(3.0 \times 10^{-4})(3.0 \times 10^{-4})$$

$$\Rightarrow 27.000 \times 10^{-4+-4+-4}$$

$$\Rightarrow 27.000 \times 10^{-12}$$

$$= \underline{\underline{2.7 \times 10^{-11}}}$$

15 $(3.0 \times 10^3)^4$ soln

$$= (3.0 \times 10^3)(3.0 \times 10^3)(3.0 \times 10^3)(3.0 \times 10^3)$$

$$= 81 \times 10^{12}$$

$$= \underline{\underline{8.1 \times 10^{13}}}$$

16 $(12.35)^{-2}$ soln.

$$12.35^{-2} = \frac{1}{12.35^2} = \frac{1}{12.35 \times 12.35}$$

$$= \underline{\underline{6.5564 \times 10^{-3}}}$$

17 $(1.5)^{-3} / (2.5)^{-2}$
solution

$$\Rightarrow \frac{1}{1.5^3} \div \frac{1}{2.5^2} \text{ or } \frac{1}{1.5^3} \times \frac{2.5^2}{1}$$

$$= \frac{50}{27} \text{ or } \underline{\underline{1.8519 \times 10^0}}$$

18 $(2.5)^3 (1.5)^{-2}$
solution

$$\Rightarrow 2.5^3 \times \frac{1}{1.5^2} = \underline{\underline{6.9444 \times 10^0}}$$

19 $(50 \text{ cm})^3 / (2.0) \text{ cm} = \underline{\underline{2.5 \text{ cm}^2}}$

20 $(4.0 \text{ cm})^2 / (3.0 \text{ cm})^3 (2.0)^4$
 $= \underline{\underline{0.6667 \text{ cm}^{-1}}}$

21. $(4.0 \text{ cm})^2 = \underline{\underline{16.00 \text{ cm}^2}}$

22. $(7.5 \text{ cm}) / (1.5 \text{ cm})^{-3} =$

Solution

$$= 7.5 \text{ cm} / 1.5 \text{ cm}^{-3}$$

$$\Rightarrow 7.5 \text{ cm} \div \frac{1}{(1.5 \text{ cm})^{-3}}$$

$$\Rightarrow 7.5 \text{ cm} \times (1.5 \text{ cm})^3$$

$$\Rightarrow \underline{\underline{25.3125 \text{ cm}^4}}$$

23. 4521.3 in scientific notation.

Solution

$$\underline{\underline{4.5213 \times 10^3}}$$

24. Express 0.0000456700 in scientific notation.

Solution

$$0.\overbrace{0000}^4 456700$$

$$\Rightarrow \underline{\underline{4.5670 \times 10^{-5}}}$$

25. Express 6.72123×10^4 without exponents.

Solution

$$6.72123 \times 10^4 = \underline{\underline{67212.3}}$$

26. Express 78.7654×10^{-3} without exponents.

Solution

$$\overbrace{78}^2 7654 \times 10^{-3} = \underline{\underline{0.0787654}}$$

27 Find A where $2A + 2 = 25$

solution

$$2A + 2 = 25$$

$$2A = 25 - 2 \quad \text{so} \quad \frac{2A}{2} = \frac{23}{2}$$

$$\underline{\underline{A = 11.5}}$$

28 Find X where $xy = 16$ and $y^2 = 225$; $x =$

solution

$$xy = 16 \quad \text{and} \quad y^2 = 225 \quad \text{so} \quad y = \sqrt{225}$$

$$\underline{\underline{y = 15}}$$

Substitute $y = 15$ in $xy = 16$

$$\Rightarrow \frac{15x}{15} = \frac{16}{15}$$

$$\underline{\underline{x = \frac{16}{15}}}$$

29 $(0.070)(0.6023 \times 10^{23}) / (22)$

solution

$$\underline{\underline{= 1.9164 \times 10^{20}}}$$

30 $77.777 - 44 =$

solution

$$\begin{array}{r} 77.777 \\ - 44.000 \\ \hline \end{array}$$

$$\underline{\underline{33.777}}$$

$$\} = \underline{\underline{33.777}}$$

31 Significant Figures in 6.040×10^2 ?

8 significant figures.

32 $(-2.2 \times 10^4)^2 =$

Solution

$$(-2.2 \times 10^4)(-2.2 \times 10^4)$$

$$= \underline{\underline{4.8400 \times 10^8}}$$

33 $(-1.3 \times 10^3)^3$. soln:

$$= (-1.3)^3 \times (10^3)^3 = \underline{\underline{2.197 \times 10^9}}$$

34 $(-2.0 \times 10^{-2})^4$

soln.

$$\Rightarrow (-2.0)^4 \times (10^{-2})^4$$

$$= 16 \times 10^{-8}$$

$$= \underline{\underline{1.6 \times 10^{-7}}}$$

35 $(4.5)(-2.0) = \underline{\underline{-9.0}}$

36 $-(-2.5)(-3.0)$

soln

$$= -(7.5)$$

$$= \underline{\underline{-7.5}}$$