

Class / Sec: VIII

Subject : MATHEMATICS

Topic: EXPONENTS & POWERS

1. If $\frac{5^m \times 5^3 \times 5^{-2}}{5^{-5}} = 5^{12}$, then find the value of m .

2. If $5^{3x-1} \div 25 = 125$, then find the value of x .

3. Express $\frac{1.5 \times 10^6}{2.5 \times 10^4}$ in standard form.

4. Find the value of :

(a) $\left(\frac{2}{3}\right)^{-2} \times \left(\frac{2}{3}\right)^5$

(b) $(2^{-1} \times 3^{-1})^{-1}$

(c) $(5^{-1} - 2^{-1}) - (2^{-1} - 5^{-1})$

(d) $\left(\frac{1}{2}\right)^{-2} \div \left(\frac{1}{2}\right)^{-3}$

5. Express as a power of a rational number with negative exponent:

(a) $\left\{\left(\frac{-3}{2}\right)^{-2}\right\}^{-3}$

(b) $(2^5 \div 2^8) \times 2^{-7}$

6. Express 9^{-3} as power with base 3 with :

(a) Negative exponent

(b) Positive exponent

7. Find the value of :

(a) $\left[\left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{2}\right)^{-3}\right] \div \left(\frac{1}{4}\right)^{-2}$

$$(b) \left[\left(\frac{9}{5} \right)^{-8} \times \left(\frac{5}{9} \right)^{-5} \right]$$

$$(c) (9^2 - 4^3) \times \left(\frac{-3}{17} \right)^2 \times \frac{34}{9}$$

8. Write each of the following numbers in usual form:

$$(a) 7.36 \times 10^5$$

$$(b) 3.517 \times 10^{-6}$$

9. Simplify:

$$(a) (125 \times m^{-5} \times p^4) \div (5^{-2} \times 5 \times m^{-6} \times p^{-4})$$

$$(b) (625 \times m^9) \div \{ (5)^3 \times m^4 \times 10 \}$$

10. Find the value of x in each case:

$$(a) 9^{x-4} = 1$$

$$(b) \left(\frac{1}{2} \right)^{-2} \div \left(\frac{1}{2} \right)^{-3} = \left(\frac{1}{2} \right)^{2x-1}$$

11. Express the following numbers in standard form:

$$(a) 5463$$

$$(b) 7000$$

$$(c) 32500000000$$

$$(d) 0.0000056789$$

$$(e) \text{ The product of } 3.2 \times 10^6 \text{ and } 4.1 \times 10^{-1}$$

12. Convert 5 hectares in m^2 and express it in standard form.

ANSWERS

1. 6

2. 2

3. 6.0×10^1

4. (a) $\frac{8}{27}$ (b) 6 (c) $\frac{-3}{5}$ (d) $\frac{1}{2}$

5. (a) $\left(\frac{-2}{3}\right)^{-6}$ (b) 2^{-10}

6. (a) 3^{-6} (b) $\left(\frac{1}{3}\right)^6$

7. (a) $\frac{17}{16}$ (b) $\frac{125}{729}$ (c) 2

8. (a) 736000 (b) 0.000003517

9. (a) $625mp^8$ (b) $\frac{m^5}{2}$

10. (a) 4 (b) 1

11. (a) 5.463×10^3 (b) 7.0×10^3 (c) 3.25×10^{10} (d) 5.6789×10^{-6} (e) 1.312×10^6

12. $5 \times 10^4 \text{ m}^2$