



MATHS

NCERT - NCERT Maths(Hinglish)

EXPONENTS AND POWERS

Exercise 12 2

1. In a stack there are 5 books each of thickness 20mm and 5 paper sheets each of

thickness 0.016 mm. What is the total thickness of the stack.



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2. Express the following numbers in usual form. (i) 3.02×10^{-6} (ii) 4.5×10^4 (iii) 3×10^{-8} (iv) 1.0001×10^9 (v) 5.8×10^{12} (vi) 3.61492×10^6



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3. Express the number appearing in the following statements in standard form. (i) 1 micron is equal to $\frac{1}{1000000}$



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4. Express the following numbers in standard form.

(i) 0.00000000000085

(ii) 0.000000000000942

(iii) 6020000000000000

$$(iv) 0.000000000837$$

$$(v) 31860000000$$



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Exercise 12 1

1. Find the value of m for which

$$5^m \div 5^{-3} = 5^5.$$



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2. Find the value of.

(i) $(3^0 + 4^{-1}) \times 2^2$

(ii) $(2^{-1} \times 4^{-1}) \div 2^{-1}$

(iii) $\left(\frac{1}{2}\right)^{-2} + \left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{4}\right)^{-2}$

(iv) $(3^{-1} + 4^{-1} + 5^{-1})^0$

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



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3. Evaluate

(i) $\frac{8^{-1} \times 5^3}{2^{-4}}$

$$(ii) (5^{-1} \times 2^{-1}) \times 6^{-1}$$



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4. Evaluate

$$(i) \left\{ \left(\frac{1}{3} \right)^{-1} - \left(\frac{1}{4} \right)^{-1} \right\}^{-1} \quad (ii)$$
$$\left(\frac{5}{8} \right)^{-7} \times \left(\frac{8}{5} \right)^{-4}$$



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5. Simplify and express the result in power notation with positive exponent. (i)

$$(-4)^5 \div (-4)^8 \quad (\text{ii}) \quad \left(\frac{1}{2^3}\right)^2 \quad (\text{iii})$$

$$(-3)^4 \times \left(\frac{5}{3}\right)^4 \quad (\text{iv}) \quad (3^{-7} \div 3^{-10}) \times 3^{-5} \quad (\text{v})$$

$$2^{-3} \times (-7)^{-3}$$



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6. Simplify. (i) $\frac{25 \times t^{-4}}{5^3 \times 10 \times t^{-8}} (t \neq 0)$ (ii)

$$\frac{3^{-5} \times 10^{-5} \times 125}{5^{-7} \times 6^{-5}}$$

$$\text{A. } (i) = \frac{625t^4}{2} \quad (ii) = 3125$$

$$\text{B. } (i) = \frac{600t^4}{2} \quad (ii) = 3785$$

$$\text{C. } (i) = \frac{705t^4}{2} \quad (ii) = 3075$$

$$\text{D. } (i) = \frac{695t^4}{2} \quad (ii) = 5625$$

Answer: A



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7. Evaluate.

$$(i) 3^{-2} \quad (ii) (-4)^{-2} \quad (iii) \left(\frac{1}{2}\right)^{-5}$$



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Solved Examples

1. Simplify

(i) $(-4)^5 \times (-4)^{-10}$

(ii) $2^5 \div 2^{-6}$



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2. Express 4^{-3} as a power with the base 2



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3. Find the value of

(i) 2^{-3} (ii) $\frac{1}{3^{-2}}$

A. (i) $\frac{1}{8}$

(ii) 19

B. (i) $\frac{7}{8}$

(ii) 9

C. (i) $\frac{1}{8}$

(ii) 9

D. (i) $\frac{1}{9}$

(ii) 27

Answer: C



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4. Find the value of $\left(\frac{2}{3}\right)^{-2}$



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5. Simplify (i)

$$\left\{ \left(\frac{1}{3} \right)^{-2} - \left(\frac{1}{2} \right)^{-3} \right\} \div \left(\frac{1}{4} \right)^{-2} \quad \text{(ii)}$$

$$\left(\frac{5}{8} \right)^{-7} \times \left(\frac{8}{5} \right)^{-5}.$$



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6. Simplify and write the answer in the exponential form. (i) $(2^5 \div 2^8)^5 \times 2^{-5}$ (ii)

$$(-4)^{-3} \times (5)^{-3} \times (-5)^{-3} \quad \text{(iii)} \quad \frac{1}{8} \times (3)^{-3}$$

$$\text{(iv)} \quad (-3)64 \times \left(\frac{5}{3} \right)^4$$



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7. Find m so that

$$(-3)^{m+1} \times (-3)^5 = (-3)^7$$



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8. Express the following numbers in standard

form.(i) 0.000035 (ii) 4050000



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9. Express the following numbers in usual form. (i) 3.52×10^2 (ii) 7.54×10^{-4} (iii) 3×10^{05}



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