ICSE Class 8 Maths Selina Solutions Chapter 2: This is the ICSE Selina Class 8 Maths Solution for the chapter "Exponents (Powers)". The chapter's subjects include an explanation of power, which is defined as the result of multiplying a number by itself. Power is typically expressed using a base number and an exponent. Three laws are discussed in the topic Laws of exponent with integral powers, which are important to remember when working through challenging arithmetic issues. It covers the following laws: division, multiplication, zero exponents, and double exponents.

With the aid of these comprehensive answers, students will be able to understand exponent powers straightforwardly and get rid of all of their misunderstandings. Students should attempt to answer the problems included in the Selina textbooks. Afterward, they can assess their responses by contrasting them with the solutions of ICSE Selina Solutions Class 8 Maths Chapter 2 "Exponents (Powers)" found here.

ICSE Class 8 Maths Selina Solutions Chapter 2 Overview

The ICSE Class 8 Maths Selina Solutions for Chapter 2 on Exponents provide a structured approach to understanding and mastering the concept of exponents. This chapter covers fundamental rules and properties related to exponents, offering step-by-step solutions to a variety of practice problems.

By following these solutions, students can clarify their understanding, practice extensively, and prepare effectively for exams. The solutions also aid in self-assessment, allowing students to identify mistakes and consolidate their learning. Overall, these solutions enhance conceptual clarity, boost confidence in solving exponent-related problems, and demonstrate the practical applications of exponents in mathematical contexts.

ICSE Class 8 Maths Selina Solutions Chapter 2

Here we have provided ICSE Class 8 Maths Selina Solutions Chapter 2 for the ease of students so that they can prepare better for their upcoming exams -

Question 1. Evaluate:

(i)

$$\left(3^{-1} \times 9^{-1}\right) \div 3^{-2}$$

Solution:

$$= \left(\tfrac{1}{3} \times \tfrac{1}{9}\right) \div \tfrac{1}{3} \times \tfrac{1}{3}$$

$$= \tfrac{1}{27} \div \tfrac{1}{9}$$

 (Expressing the equation in fractional form)

$$= \tfrac{1}{27} \times \tfrac{9}{1} = \tfrac{1}{3}$$

(ii)

$$\left(3^{-1} \times 4^{-1}\right) \div 6^{-1}$$

Solution:

$$= \left(\tfrac{1}{3} \times \tfrac{1}{4}\right) \div \tfrac{1}{6}$$

$$= \tfrac{1}{12} \div \tfrac{1}{6}$$

 (Expressing the equation in fractional form)

$$= \tfrac{1}{12} \times \tfrac{6}{1} = \tfrac{1}{2}$$

(iii)

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

Solution:

Solution:

$$= \left(\frac{1}{2} + \frac{1}{3}\right)^3 = \left(\frac{1 \times 3}{2 \times 3} + \frac{1 \times 2}{3 \times 2}\right)^3$$

$$= \left(\frac{3+2}{6}\right)^3 = \left(\frac{5}{6}\right)^3$$

(Expressing the equation in fractional form)

$$= \frac{5 \times 5 \times 5}{6 \times 6 \times 6} = \frac{125}{216}$$

(iv)

$$\left(3^{-1} \div 4^{-1}\right)^2$$

Solution:

$$= \left(\frac{1}{3} \div \frac{1}{4}\right)^2$$

(Expressing the equation in fractional form)

$$= \left(\frac{1}{3} \times \frac{4}{1}\right)^2 = \left(\frac{4}{3}\right)^2$$

(Expressing the equation in mixed fraction)

$$= \frac{16}{9} = 1\frac{7}{9}$$

(v)

$$\left(2^2 + 3^2\right) \times \left(\frac{1}{2}\right)^2$$

Solution:

$$= (2 \times 2) + (3 \times 3) \times \left(\frac{1}{2} \times \frac{1}{2}\right)$$

$$= 4 + 9 \times \frac{1}{4} = \frac{13}{4} = 3\frac{1}{4}$$

(Simplifying the given equation)

(vi)

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

Solution:

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

$$= 25 - 9 \times \left(\frac{3}{2} \times \frac{3}{2} \times \frac{3}{2}\right)$$
(Simplifying the given equation)

$$= 16 \times \frac{27}{8} = 54$$

(vii)

$$\left[\left(\frac{1}{4}\right)^{-3} - \left(\frac{1}{3}\right)^{-3}\right] \div \left(\frac{1}{6}\right)^{-3}$$

Solution:

$$= \left[\left(\frac{4}{1}\right)^3 - \left(\frac{3}{1}\right)^3\right] \div \left(\frac{6}{1}\right)^3$$

$$= \left(\frac{4}{1} \times \frac{4}{1} \times \frac{4}{1} - \frac{3}{1} \times \frac{3}{1} \times \frac{3}{1}\right) \div \left(\frac{6}{1}\right)^3$$

$$= 64 - 27 \times \left(\frac{1}{6} \times \frac{1}{6} \times \frac{1}{6}\right)$$
(Simplifying the given equation)

$$= 37 \times \frac{1}{216} = \frac{37}{216}$$

(viii)

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

Solution:

$$\left[\left(-\tfrac{3}{4}\right)^{-2}\right]^{2} = \left(-\tfrac{3}{4}\right)^{-2\times2} = \left(-\tfrac{3}{4}\right)^{-4}$$

$$= \left(\tfrac{4}{3}\right)^{4} = \frac{4\times4\times4\times4}{3\times3\times3\times3}$$

$$= \frac{256}{81} = 3\tfrac{13}{81}$$

(Simplifying the given equation)

(ix)

$$\left(\left(\tfrac{3}{5}\right)^{-2}\right)^{-2}$$

Solution:

$$\left\{\left(\tfrac{3}{5}\right)^{-2}\right\}^{-2} = \left(\tfrac{3}{5}\right)^{-2\times(-2)} = \left(\tfrac{3}{5}\right)^{4}$$

$$= \frac{3\times3\times3\times3}{5\times5\times5\times5} = \frac{81}{625}$$

(Simplifying the given equation)

(x)

$$\left(5^{-1} \times 3^{-1}\right) + 6^{-1}$$

Solution:

$$= \left(\tfrac{1}{5} \times \tfrac{1}{3}\right) + \tfrac{1}{6}$$

$$= \tfrac{1}{15} \div \tfrac{1}{6}$$

(Simplifying the given equation)

$$= \tfrac{1}{15} \times \tfrac{6}{1} = \tfrac{2}{5}$$

Question 2.

$1125 = 3^m \times 5^n$

; find m and n

Solution:

$1125 = 3^2 \times 5^3$

The factors of 1125 are 3×3×5×5×5

3	1125
3	375
5	125
5	25
5	5
	1

therefore

$1125 = 3 \times 3 \times 5 \times 5 \times 5$

Now comparing,

$3^2 \times 5^3 = 3^m \times 5^n$

therefore m=2, n=3

Question 3. Find x, if

$9 \times 3^x = (27)^{2x-3}$

Solution:

$9 \times 3^x = (27)^{2x-3}$

$3^2 \times 3^x = (3 \times 3 \times 3)^{2x-3}$
(Simplifying the given equation)

$\Rightarrow 3^{x+2} = (3)^{3(2x-3)}$

$\Rightarrow 3^{x+2} = (3)^{6x-9}$
Since bases are same, compare them,
x+2=6x-9
6x-x=9+2

$\Rightarrow 5x = 11$

$\Rightarrow x = \frac{11}{2}$
(Shifting the terms)

$\Rightarrow x = 2\frac{1}{5}$

ICSE Class 8 Maths Selina Solutions Chapter 2 Exercise 2B

Question 1. Compute:

(i)

$$1^8 \times 3^0 \times 5^3 \times 2^2$$

Solution:

$$1^8 \times 3^0 \times 5^3 \times 2^2$$

$$= 1 \times 1 \times 5 \times 5 \times 5 \times 2 \times 2$$

$$= 125 \times 4$$
(Simplifying the given equation)

$$= 500$$

(ii)

$$\left(4^7\right)^2 \times \left(4^{-3}\right)^4$$

Solution:

$$\left(4^7\right)^2 \times \left(4^{-3}\right)^4$$

$$= 4^{14} \times 4^{-12}$$

$$= 4^{14-12} = 4^2$$
(Simplifying the given equation)

$$= 4 \times 4 = 16$$

(iii)

$$\left(2^{-9} \div 2^{-11}\right)^3$$

Solution:

$$= \left(2^{-9+11}\right)^3$$

$$= \left(2^2\right)^3 = 2^6$$

(Simplifying the given equation)

$$= 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 64$$

(iv)

$$\left(\tfrac{2}{3}\right)^{-4} \times \left(\tfrac{27}{8}\right)^{-2}$$

Solution:

$$\left(\tfrac{2}{3}\right)^{-4} \times \left(\tfrac{27}{8}\right)^{-2} = \left(\tfrac{2}{3}\right)^{-4} \times \left(\tfrac{3^3}{2^3}\right)^{-2}$$

$$= \frac{2^{-4}}{3^{-4}} \times \frac{3^{-6}}{2^{-6}} = \frac{2^{-4}}{2^{-6}} \times \frac{3^{-6}}{3^{-4}}$$

$$= 2^{-4+6} \times \frac{1}{3^{-4+6}} = \frac{2^2}{3^2} = \frac{4}{9}$$

(v)

$$\left(\tfrac{56}{28}\right)^0 \div \left(\tfrac{2}{5}\right)^3 \times \tfrac{16}{25}$$

Solution:

$$\left(\tfrac{56}{28}\right)^0 \div \left(\tfrac{2}{5}\right)^3 \times \tfrac{16}{25}$$

$$= 1 \div \frac{2^3}{5^3} \times \frac{2 \times 2 \times 2 \times 2}{5 \times 5}$$

$$\left[\left(\tfrac{56}{28}\right)^0 = 1\right]$$

$$= 1 \times \frac{5^3}{2^3} \times \frac{2^4}{5^2} = 5^{3-2} \times 2^{4-3}$$

$$= 5^1 \times 2^1 = 10$$

(vi)

$(12)^{-2} \times 3^3$

Solution:

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

$= \left(2^2 \times 3\right)^{-2} \times 3^3$

$= 2^{-2\times2} \times 3^{-2} \times 3^3$

$= 2^{-4} \times 3^{-2+3} \times 3^3$

$= 2^{-4} \times 3^1$

$= \frac{3}{2^4} = \frac{3}{2\times2\times2\times2} = \frac{3}{16}$

(vii)

$(-5)^4 \times (-5)^6 \div (-5)^9$

Solution:

$= (-5)^4 \times (-5)^6 \times \frac{1}{(-5)^9}$

$= (-5)^{4+6-9}$

$= (-5)^1 = -5$

(viii)

$\left(-\frac{1}{3}\right)^4 \div \left(-\frac{1}{3}\right)^8 \times \left(-\frac{1}{3}\right)^5$

Solution:

Solution:

$$= \left(-\frac{1}{3}\right)^4 \times \frac{1}{\left(-\frac{1}{3}\right)^8} \times \left(-\frac{1}{3}\right)^5$$

$$= \left(-\frac{1}{3}\right)^{4+5-8} = \left(-\frac{1}{3}\right)^{9-8}$$

$$= -\frac{1}{3}$$

(ix)

$$9^0 \times 4^{-1} \div 2^{-4}$$

Solution:

$$9^0 \times 4^{-1} \div 2^{-4} = 1 \times \frac{1}{4^1} \times \frac{1}{2^{-4}}$$

$$= 1 \times \frac{1}{4} \times 2^4 = 1 \times \frac{1}{2^2} \times 2^4$$

$$= 2^{4-2} = 2^2 = 4$$

Question 3. Evaluate:

(i)

$(-5)^0$

Solution:

$(-5)^0 = 1 \ (a^0 = 1)$

(ii)

$8^0 + 4^0 + 2^0$

Solution:

$8^0 + 4^0 + 2^0 = 1 + 1 + 1 = 3$
$(a^0 = 1)$

(iii)

$(8 + 4 + 2)^0$

Solution:

$(8 + 4 + 2)^0 = (14)^0 = 1$
$(a^0 = 1)$

(iv)

$4x^0$

Solution:

$4x^0 = 4 \times 1 = 4$

(v)

$(4x)^0$

Solution:

$(4x)^0 = 1$

(vi)

$$\left[\left(10^3 \right)^0 \right]^5$$

Solution:

$$\left[\left(10^3 \right)^0 \right]^5 = 10^{3 \times 0 \times 5} = 10^0 = 1$$

(vii)

$$\left(7x^0 \right)^2$$

Solution:

$$\left(7x^0 \right)^2 = 7^2 \times x^{0 \times 2} = 49 \times 1 = 49$$

(viii)

$$9^0 + 9^{-1} - 9^{-2} + 9^{\frac{1}{2}} - 9^{-\frac{1}{2}}$$

Solution:

$$9^0 + 9^{-1} - 9^{-2} + \frac{1}{9^{\frac{1}{2}}} - 9^{-\frac{1}{2}}$$

$$= 1 + \tfrac{1}{9} - \tfrac{1}{9^2} + \left(3^2\right)^{\frac{1}{2}} - \left(3^2\right)^{-\frac{1}{2}}$$

$$= 1 + \tfrac{1}{9} - \tfrac{1}{81} + 3^{2\times\frac{1}{2}} - 3^{2\times\left(-\frac{1}{2}\right)}$$

$$= 1 + \tfrac{1}{9} - \tfrac{1}{81} + 3 - 3^{-1}$$

$$= 1 + \tfrac{1}{9} - \tfrac{1}{81} + \tfrac{3}{1} - \tfrac{1}{3}$$

$$= \frac{81 + 9 - 1 + 243 - 27}{81} = \frac{333 - 28}{81}$$

$$= \frac{305}{81} = 3\frac{62}{81}$$

Question 4. Simplify:

(i)

$$\frac{a^5 b^2}{a^2 b^{-3}}$$

Solution:

$$\frac{a^5 b^2}{a^2 b^{-3}} = a^{5-2} \cdot b^{2+3} = a^3 b^5$$

(ii)

$$15y^8 \div 3y^3$$

Solution:

$$15y^8 \div 3y^3 = \frac{15y^8}{3y^3}$$

$$= 5y^{\{8-3\}}$$

$$= 5y^5$$

(iii)

$$x^{10}y^6 \div x^3y^{-2}$$

Solution:

$$x^{10}y^6 \div x^3y^{-2} = \frac{x^{10}y^6}{x^3y^{-2}}$$

$$= x^{10-3} \cdot y^{6+2}$$

$$= x^7y^8$$

(iv)

$$5z^{16} \div 15z^{-11}$$

Solution:

$$5z^{16} \div 15z^{-11} = \frac{5z^{16}}{15z^{-11}}$$

$$= \frac{5}{15}z^{16+11}$$

$$= \frac{1}{3}z^{27}$$

Benefits of ICSE Class 8 Maths Selina Solutions Chapter 2

The ICSE Class 8 Maths Selina Solutions for Chapter 2 on Exponents offer several benefits:

Concept Clarity: The solutions provide clear explanations of fundamental concepts related to exponents, ensuring students understand the basic rules and properties thoroughly.

Step-by-Step Solutions: Each problem is solved step-by-step, which helps students grasp the methodology and reasoning behind each solution.

Practice: The solutions include a variety of practice problems that cover different types of questions related to exponents. This allows students to apply their understanding and practice extensively.

Preparation for Exams: By solving these exercises, students can prepare effectively for exams. The solutions often include tips on how to approach exam-style questions and strategies for solving them efficiently.

Self-Assessment: After attempting problems independently, students can use the solutions to self-assess their work. They can compare their answers and methods with the provided solutions to identify any mistakes and understand where they need improvement.

Consolidation of Learning: Going through the solutions helps in consolidating learning. Students can revise key concepts and ensure they have a solid foundation before moving on to more advanced topics.

Increased Confidence: As students become more familiar with solving problems using the solutions provided, their confidence in tackling math problems, especially those involving exponents, tends to increase.

Understanding Application: The solutions often include real-world applications or contexts where exponents are used, helping students understand the relevance and practical utility of these mathematical concepts.