

Class 7-Mathematics

Instructions for students: The notes provided must be copied to the Maths copy and then do the homework in the same copy.

Chapter 4

EXPONENTS

Exercise 4.2 – Continued

Q9. ii Simplify $\left[\left(\frac{-3}{4}\right)^3 - \left(\frac{-5}{2}\right)^3\right] \times \left(-\frac{2}{3}\right)^3$

$$\begin{aligned}\left[\left(\frac{-3}{4}\right)^3 - \left(\frac{-5}{2}\right)^3\right] \times \left(-\frac{2}{3}\right)^3 &= \left[\frac{(-3)^3}{4^3} - \frac{(-5)^3}{2^3}\right] \times \frac{(-2)^3}{3^3} \\ &= \left[\frac{-27}{64} - \left(\frac{-125}{8}\right)\right] \times \frac{16}{81} \\ &= \left(\frac{-27}{64} + \frac{125}{8}\right) \times \frac{16}{81} \\ &= \frac{(-27 \times 1) + (125 \times 8)}{64} \times \frac{16}{81} \\ &= \frac{-27 + 1000}{64} \times \frac{16}{81} \\ &= \frac{973}{64} \times \frac{16}{81} \\ &= \frac{973 \times 1}{4 \times 81} \\ &= \frac{973}{324} = 3 \frac{1}{324}\end{aligned}$$

12. i. Express as a product of prime factors in the exponential form.

$$108 \times 192$$

2	108
2	54
3	27
3	9
3	3
	1

2	192
2	96
2	48
2	24
2	12
2	6
3	3
	1

$$\begin{aligned}108 \times 192 &= 2 \times 2 \times 3 \times 3 \times 3 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \\ &= 2^8 \times 3^4\end{aligned}$$

14. ii. By what number should we multiply $(-6)^{-1}$ so that the product is 10^{-1} ?

Let the number to be multiplied be 'x'.

$$\begin{aligned}\text{Then, } x \times (-6)^{-1} &= 10^{-1} \\ \Rightarrow x &= \frac{10^{-1}}{(-6)^{-1}} \\ &= \left(\frac{10}{-6}\right)^{-1} \\ &= \left(\frac{5}{-3}\right)^{-1} \\ &= \left(\frac{1}{\frac{5}{-3}}\right)^1 \\ &= \left(\frac{-3}{5}\right)^1 \\ &= \frac{-3}{5}\end{aligned}$$

The required number = $\frac{-3}{5}$

Complete **Exercise 4.2 Questions 9 to 15** in the Maths copy.

Watch the video for more solutions from the exercise.