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**EXERCISE 13.1 - Question No. 1**

Find the value of : (i)  $2^6$  (ii)  $9^3$  (iii)  $11^2$  (iv)  $5^4$

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**EXERCISE 13.1 - Question No. 2**

Express the following in exponential form : (i)  $6 \times 6 \times 6 \times 6$  (ii)

$t \times t$  (iii)  $b \times b \times b \times b$

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### EXERCISE 13.1 - Question No. 3

Express each of the following numbers using exponential notation:

(i) 512 (ii) 343 (iii) 729 (iv) 3125

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### EXERCISE 13.1 - Question No. 4

Identify the greater number, wherever possible, in each of the

following ? (i)  $4^3$  or  $3^4$  (ii)  $5^3$  or  $3^5$  (iii)  $2^8$  or  $8^2$  (iv)

$100^2$  or  $2^{100}$

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### EXERCISE 13.1 - Question No. 5

Express each of the following as product of powers of their prime factors: (i) 648 (ii) 405 (iii) 540 (iv) 3,600

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### EXERCISE 13.1 - Question No. 6

Simplify : (i)  $2 \times 10^3$  (ii)  $7^2 \times 2^2$  (iii)  $2^3 \times 5$  (iv)  $3 \times 4^4$

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### EXERCISE 13.1 - Question No. 7

Simplify : (i)  $(-4)^3$  (ii)  $(-3) \times (-2)^3$  (iii)  $(-3)^2 \times (-5)^2$   
(iv)  $(-2)^3 \times (-10)^3$

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**EXERCISE 13.1 - Question No. 8**

Compare the following numbers : (i)  $27 \times 10^{12}$ ,  $15 \times 10^8$  (ii)  
 $4 \times 10^{14}$ ,  $3 \times 10^{17}$

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**EXERCISE 13.2 - Question No. 1**

Using laws of exponents, simplify and write the answer in  
exponential form : (i)  $3^2 \times 3^4 \times 3^8$  (ii)  $\frac{6^{15}}{6^{10}}$

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### EXERCISE 13.2 - Question No. 2

Simplify and express each of the following in exponential form: (i)

$$\frac{2^3 \times 3^4 \times 4}{3 \times 32} \quad \text{(ii) } (5^2)^3 \times 5^4 5^7$$

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### EXERCISE 13.2 - Question No. 3

Say true or false and justify your answer : (i)  $10 \times 10^{11} = 100^{11}$

(ii)  $2^3$  If  $5^2$  (iii)  $2^3 \times 3^2 = 6^5$

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### EXERCISE 13.2 - Question No. 4

Express each of the following as a product of prime factors only in exponential form: (i)  $108 \times 192$  (ii) 1270 (iii)  $729 \times 64$  (iv) 768

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### EXERCISE 13.2 - Question No. 5

Simplify: (i)  $\frac{(2^5)2 \times 7^3}{8^3 \times 7}$  (ii)  $\frac{25 \times 5^2 \times t^8}{10^3 \times t^4}$

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### EXERCISE 13.3 - Question No. 1

Write the following numbers in the expanded forms: 279404,  
3006194, 2806196, 120719, 20068

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**EXERCISE 13.3 - Question No. 2**

Find the number from each of the following expanded forms : (a)

$$8 \times 10^4 + 6 \times 10^3 + 0 \times 10^2 + 4 \times 10^1 + 5 \times 10^0 \text{ (b)}$$

$$4 \times 10^5 + 5 \times 10^3 + 3 \times 10^2 + 2 \times 10^0 \text{ (c)}$$

$$3 \times 10^4 + 7 \times 10^2 + 5 \times 10^0$$

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**EXERCISE 13.3 - Question No. 3**

Express the following numbers in standard form: (i) 5,00,00,000

(ii) 70,00,000 (iii) 3,18,65,00,000 (iv) 3,90,878 (v) 39087.8 (vi)

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**EXERCISE 13.3 - Question No. 4**

Express the number appearing in the following statements in standard form. (a) The distance between Earth and Moon is 384,000,000 m. (b) Speed of light in vacuum is 300,000,000 m/s. (c) Diameter of the Earth is 1,27,56,000 m. (d) Diameter of the Sun is 1,400,000,000 m. (e) In a galaxy there are on an average 100,000,000,000 stars. (f) The universe is estimated to be about 12,000,000,000 years old. (g) The distance of the Sun from the centre of the Milky Way Galaxy is estimated to be



300,000,000,000,000,000,000 m. (h)

60,230,000,000,000,000,000,000 molecules are contained in a drop of water weighing 1.8 gm. (i) The earth has 1,353,000,000 cubic km of sea water. (j) The population of India was about 1,027,000,000 in March, 2001.

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#### **SOLVED EXAMPLES - Question No. 1**

Express 256 as a power 2.

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#### **SOLVED EXAMPLES - Question No. 2**

Which one is greater  $2^3$  or  $3^2$  ?

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**SOLVED EXAMPLES - Question No. 3**

which one is greater  $8^2$  or  $2^8$  ?

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**SOLVED EXAMPLES - Question No. 4**

Expand .  $a^3b^2$ ,  $a^2b^3$ ,  $b^2a^3$ ,  $b^3a^2$  Are they all same ?

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**SOLVED EXAMPLES - Question No. 5**

Express the following numbers as a product of powers of prime factors: (i) 72 (ii) 432 (iii) 1000 (iv) 16000

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**SOLVED EXAMPLES - Question No. 6**

Work out  $(1)^5$ ,  $(-1)^3$ ,  $(-1)^4$ ,  $(-10)^3$ ,  $(-5)^4$

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**SOLVED EXAMPLES - Question No. 7**

Can you tell which one is greater  $(5^2) \times 3$  or  $(5^2)63$  ?

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**SOLVED EXAMPLES - Question No. 8**

Example 7. Can you tell which one is greater  $(5^2) \times 3$  or  $(5^2)^5$  ?

Example 8. Express the following terms in the exponential form : (i)

$(2 \times 3)^5$  (ii)  $(2a)^4$  (iii)  $(-4m)^3$

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**SOLVED EXAMPLES - Question No. 9**

Expand : (i)  $\left(\frac{3}{5}\right)^4$  (ii)  $\left(\frac{4}{7}\right)^5$

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## SOLVED EXAMPLES - Question No. 10

Write exponential form for  $8 \times 8 \times 8 \times 8$  taking base as 2.

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## SOLVED EXAMPLES - Question No. 11

Simplify and write the answer in the exponential form. (i)

$$\left(\frac{3^7}{3^2}\right) \times 3^5 \quad \text{(ii)} \quad 2^3 \times 2^2 \times 5^5$$

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## SOLVED EXAMPLES - Question No. 12

Simplify : (i)  $\frac{12^4 + 9^3 \times 4}{6^3 \times 8^2 \times 27}$  (ii)  $2^3 \times a^3 \times 5a^4$

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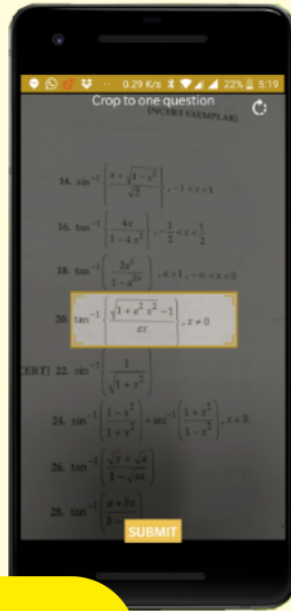
**SOLVED EXAMPLES - Question No. 13**

Express the following numbers in the standard form: (i) 5985.3 (ii)

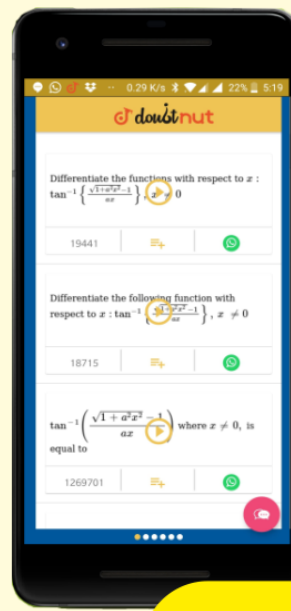
65,950 (iii) 3,430,000 (iv) 70,040,000,000

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