

**SUBJECT : MATHEMATICS**  
**CHAPTER NUMBER: 05**  
**CHAPTER NAME :EXPONENTS**

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**CHANGING YOUR TOMORROW**

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# LEARNING OUTCOME

- Students will be able to express a given number in exponential form.

## PREVIOUS CONNECT

- Prime factorise 625

$$625 = 5 \times 5 \times 5 \times 5$$

- Repeated multiplication of the same number can be expressed in the form of exponents.
- Example:  $625 = 5 \times 5 \times 5 \times 5$  or  $5^4$ .

Here '5' is the base raised to the power of 4, where 4 is the exponent and  $5^4$  is the exponential form of 625.

## EVALUATION QUESTION

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1. Find the value of:

(i)  $6^2$

(ii)  $7^3$

(iii)  $4^4$

(iv)  $5^5$

(v)  $8^3$

(vi)  $7^5$

**Solution:**

(i)  $6^2$

It can be written as

$$= 6 \times 6$$

$$= 36$$

(ii)  $7^3$

It can be written as

$$= 7 \times 7 \times 7$$

$$= 343$$

(iii)  $4^4$

It can be written as

$$= 4 \times 4 \times 4 \times 4$$

$$= 256$$

(iv)  $5^5$

It can be written as

$$= 5 \times 5 \times 5 \times 5 \times 5$$

$$= 3125$$

## 2. Evaluate:

(i)  $2^3 \times 4^2$

(ii)  $2^3 \times 5^2$

(iii)  $3^3 \times 5^2$

(iv)  $2^2 \times 3^3$

(v)  $3^2 \times 5^3$

(vi)  $5^3 \times 2^4$

2.

**Solution:**

(i)  $2^3 \times 4^2$

It can be written as

$$= 2 \times 2 \times 2 \times 4 \times 4$$

On further calculation

$$= 8 \times 16$$

$$= 128$$

(ii)  $2^3 \times 5^2$

It can be written as

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

On further calculation

$$= 8 \times 25$$

$$= 200$$



(iii)  $3^3 \times 5^2$

It can be written as

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

On further calculation

$$= 27 \times 25$$

$$= 675$$

(iv)  $2^2 \times 3^3$

It can be written as

$$= 2 \times 2 \times 3 \times 3 \times 3$$

On further calculation

$$= 4 \times 27$$

$$= 108$$

3. Evaluate:

(i)  $(3/4)^4$

(ii)  $(-5/6)^5$

(iii)  $(-3/-5)^3$

**Solution:**

(i)  $(3/4)^4$

It can be written as

$$= (3/4) \times (3/4) \times (3/4) \times (3/4)$$

On further calculation

$$= (3 \times 3 \times 3 \times 3) / (4 \times 4 \times 4 \times 4)$$

$$= 81/256$$

(ii)  $(-5/6)^5$

It can be written as

$$= (-5/6) \times (-5/6) \times (-5/6) \times (-5/6) \times (-5/6)$$

On further calculation

$$= [(-5) \times (-5) \times (-5) \times (-5) \times (-5)] / (6 \times 6 \times 6 \times 6 \times 6)$$

$$= -3125/776$$

(iii)  $(-3/-5)^3$

It can be written as

$$= (-3/-5) \times (-3/-5) \times (-3/-5)$$

On further calculation

$$= [(-3) \times (-3) \times (-3)] / [(-5) \times (-5) \times (-5)]$$

$$= 27/125$$

#### 4. Evaluate:

(i)  $(\frac{2}{3})^3 \times (\frac{3}{4})^2$

(ii)  $(-\frac{3}{4})^3 \times (\frac{2}{3})^4$

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

**Solution:**

(i)  $(\frac{2}{3})^3 \times (\frac{3}{4})^2$

It can be written as

$$= (\frac{2}{3}) \times (\frac{2}{3}) \times (\frac{2}{3}) \times (\frac{3}{4}) \times (\frac{3}{4})$$

On further calculation

$$= \frac{8}{27} \times \frac{9}{16}$$

$$= \frac{1}{6}$$

(ii)  $(-\frac{3}{4})^3 \times (\frac{2}{3})^4$

It can be written as

$$= (-\frac{3}{4}) \times (-\frac{3}{4}) \times (-\frac{3}{4}) \times (\frac{2}{3}) \times (\frac{2}{3}) \times (\frac{2}{3}) \times (\frac{2}{3})$$

On further calculation

$$= -\frac{27}{64} \times \frac{16}{81}$$

$$= -\frac{1}{12}$$

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

It can be written as

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

On further calculation

$$= \frac{9}{25} \times (-\frac{8}{27})$$

$$= -\frac{8}{75}$$

**THANKING YOU**  
**ODM EDUCATIONAL GROUP**