

**EXPONENTS****17 FEBRUARY 2014****Lesson Description**

In this lesson we:

- Simplify expressions and solve equations using the laws of exponents

**Summary****Exponent Laws**

1.  $x^m \times x^n = x^{m+n}$
2.  $x^m \div x^n = x^{m-n}$
3.  $(xy)^m = x^m y^m$
4.  $\left(\frac{x}{y}\right)^n = \frac{x^n}{y^n}$
5.  $(x^m)^n = x^{mn}$
6.  $x^{\frac{m}{n}} = \sqrt[n]{x^m}$

**Test Yourself****Question 1**Simplify  $(2.3)^m$ 

- A  $2^m 3$   
B  $2.3^m$   
C  $6^{-m}$   
D  $2^m \cdot 3^m$

**Question 2** $5x^{-1}y =$ 

- A  $\frac{1}{5xy}$   
B  $\frac{5y}{x}$   
C  $\frac{5}{xy}$   
D  $\frac{xy}{5}$

**Question 3**The HCF of  $\frac{(2.3)^{2m+2^m} \cdot 2^m}{4^m}$  is:

- A  $2^m$   
B  $m$   
C  $2^{2m}$   
D There is no common factor

**Question 4**

$\frac{1}{2} \cdot \frac{1}{5}$  in exponential form is:

- A  $\left(\frac{1}{2} \cdot \frac{1}{5}\right)^{-1}$
- B  $\frac{2^{-1}}{5}$
- C  $\frac{1}{10}$
- D  $(10)^{-1}$

**Question 5**

If  $\frac{1}{2^x} = 8$  then  $x =$

- A -3
- B 1
- C 3
- D -1

**Question 6**

$3^5 + 3^2$  factorised is:

- A  $3^5 \cdot 3^2$
- B  $3^{5+2}$
- C  $3(5 + 2)$
- D  $3^2(3^3 + 1)$



**Improve your Skills**

**Question 1**

Simplify:

$$\frac{20^{x+1} \times 4^x}{16^{x-1} \times 5^x}$$

**Question 2**

Simplify:

$$\frac{2^{x+1} + 4^x}{2^x - 2^{x-1}}$$

**Question 3**

Solve:

- a.)  $2^{x-3} = \frac{1}{4}$
- b.)  $3^{2x} - 2 \cdot 3^{x+1} - 27 = 0$
- c.)  $4^{-x} - 16 = 0$