

## Revision (Exponents & Powers: HW for Thursday)

1) Find  $x$  so that  $(-5)^{x+1} \times (-5)^5 = (-5)^7$

2) Find the value of  $\left[(216)^{\frac{2}{3}}\right]^{\frac{1}{2}}$

3) Evaluate  $\frac{a^{-3} \times b^{-4}}{a^{-2} \times b^{-3}}$

4) Evaluate  $(3^2)^3 + \left(\frac{2}{3}\right)^0 + 3^5 \times \left(\frac{1}{3}\right)^4$

5) Evaluate  $9^{\frac{3}{2}} - 3 \times 5^0 - \left(\frac{1}{81}\right)^{-\frac{1}{2}}$

6) Simplify:  $\frac{4^{-3} \times a^{-5} \times b^{-4}}{4^{-5} \times a^{-8} \times b^3}$

7) Simplify:  $\frac{49 \times t^{-5}}{7^{-3} \times 10 \times t^{-9}}$

## Revision (Exponents & Powers: HW for Friday)

1) Simplify: (a)  $\frac{(-2)^3 \times (-2)^7}{3 \times 4^6}$  ; (b)  $\frac{4^{-3} \times a^{-5} \times b^{-4}}{4^{-5} \times a^{-8} \times b^3}$

(c)  $\frac{49 \times t^{-5}}{7^{-3} \times 10 \times t^{-9}}$

2) Express in Standard form: (i) 0.0000000015

(ii) 0.00000001425

(iii) 1020000000000000000

3) Express in usual form: (i)  $3.402 \times 10^5$

(ii)  $9.5 \times 10^5$

(iii)  $9 \times 10^4$

(iv)  $2.0001 \times 10^8$

4) Mass of earth is  $(5.97 \times 10^{24})$  kg, and mass of moon is  $7.35 \times 10^{22}$  kg. What is the total mass of the two?

## Revision (Exponents and Powers: HW for Saturday)

- 1) Find the value of (i)  $2^6$  (ii)  $9^3$  (iii)  $11^2$  (iv)  $5^4$
- 2) Express each of the following numbers using exponential notation:  
(i) 512 (ii) 343 (iii) 729 (iv) 3125
- 3) Express  $4^{-3}$  as a power with base 2
- 4) Find the value of  $(4^0 + 4^{-1}) \times 2^2$
- 5) Evaluate  $a^2 \times a^3 \times a^{-5}$
- 6) Find the value of  $(4^{20} \div 8^5) \times 4^3$
- 7) If  $3^b \times 3^{b+1} = 3^{25}$ , find the value of  $b$ .
- 8) Find the value of  $x$  for which  $2^x \div 2^{-4} = 4^5$
- 9) Simplify and write in exponential form  
(a)  $(3^3 \times 3^7) \div 3^9$  (b)  $11^5 \times 121^2 \times 1331^2$
- 10) Find the value of 'a' if  $[(-3)^3]^5 = (-3)^{3a}$



### VIII Exponents and Powers (Answers) Revision-1

$$1) (-5)^{x+1} \times (-5)^5 = (-5)^7$$

$$\Rightarrow (-5)^{x+6} = (-5)^7$$

$$\therefore x+6 = 7$$

$$x = 1 //$$

$$2) \left[ (216)^{\frac{2}{3}} \right]^{\frac{1}{2}}$$

$$= 6^{3 \times \frac{2}{3} \times \frac{1}{2}} = 6^1 = \underline{\underline{6}}$$

3)

$$\frac{a^{-3} \times b^{-4}}{a^{-2} \times b^{-3}} = a^{-3+2} \times b^{-4+3} = a^{-1} \times b^{-1}$$

$$= \frac{1}{ab}$$

$$4) (3^2)^3 + \left(\frac{2}{3}\right)^0 + 3^5 \times \frac{1}{3^4} = 3^6 + 1 + 3^{5-4} = 729 + 1 + 3 = \underline{\underline{733}}$$

$$5) 3^{2 \times \frac{3}{2}} - 3 \times 1 - 8^{\frac{1}{2}}$$

$$= 3^3 - 3 - \sqrt{81} = 27 - 3 - 9 = \underline{\underline{15}}$$

6)

$$4^{-3+5} \times a^{-5+8} \times b^{-4-3}$$

$$= 4^2 \times a^3 \times b^{-7} = \underline{\underline{\frac{16a^3}{b^7}}}$$

$$7) \frac{7^2 \times t^{-5}}{7^{-3} \times 2 \times 5 \times t^{-9}} = \frac{7^{2+3} \times t^{-5+9}}{10} = \frac{7^5 \times t^4}{10} = \frac{7^5 t^4}{10}$$

### Revision - 2

$$1) (a) \frac{(-2)^{3+7}}{3 \times 2^{2 \times 6}} = \frac{(-2)^{10}}{3 \times 2^{12}} = \frac{2^{10-12}}{3} = \frac{2^{-2}}{3} = \frac{1}{3 \times 2^2} = \frac{1}{3 \times 4} = \frac{1}{12}$$

$$(b) 4^{-3+5} \times a^{-5+8} \times b^{-4-3} = 4^2 \times a^3 \times b^{-7} = \frac{16a^3}{b^7}$$

$$(c) \frac{7^2 \times t^{-5}}{7^3 \times 10 \times t^{-9}} = \frac{7^{2+3} \times t^{-5+9}}{10} = \frac{7^5 \times t^4}{10} = \frac{7^5 t^4}{10}$$

$$2) (i) 1.5 \times 10^9 \quad (ii) 1.425 \times 10^8 \quad (iii) 1.02 \times 10^7$$

$$3) (i) \frac{3.402}{100000} = 0.00003402$$

$$(ii) 9.5 \times 100000 = 950000$$

$$(iii) \frac{9}{10000} = 0.0009$$

$$(iv) 2.0001 \times 10^8 = 200010000$$

$$4) 5.97 \times 10^{24} + 7.35 \times 10^{22} = 5.97 \times 10^2 \times 10^{22} + 7.35 \times 10^{22} = 597 \times 10^{22} + 7.35 \times 10^{22} = 604.35 \times 10^{22} = 6.0435 \times 10^{24} \text{ kg}$$

### Revision - 3

$$1) (i) 2^6 = 64 \quad (ii) 9^3 = 729 \quad (iii) 11^2 = 121 \quad (iv) 5^4 = 625$$

$$2) (i) 512 = 8^3 \quad (ii) 343 = 7^3 \quad (iii) 729 = 3^6$$

$$(iv) 3125 = 5^5$$

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



$$4) \left(1 + \frac{1}{4}\right) \times 2^2 = \frac{5}{4} \times 4 = \underline{\underline{5}}$$

$$5) a^2 \times a^3 \times a^{-5} = a^{2+3-5} = a^0 = 1 //$$

$$6) (4^{20} \div 8^5) \times 4^3$$

$$= \frac{2^{2 \times 20}}{2^{3 \times 5}} \times 2^{2 \times 3} = \frac{2^{40}}{2^{15}} \times 2^6 = 2^{40+6-15} = \underline{\underline{2^{31}}}$$

$$7) 3^{b+b+1} = 3^{25}$$

$$\Rightarrow 3^{2b+1} = 3^{25}$$

$$\therefore 2b+1 = 25$$

$$2b = 24$$

$$b = 12 //$$

$$8) 2^{x+4} = 2^{2 \times 5}$$

$$\therefore x+4 = 10 \Rightarrow x = 6 //$$

$$9) (a) \frac{3^{3+7}}{3^9} = 3^{10-9} = 3 //$$

$$(b) 11^5 \times 11^{2 \times 2} \times 11^{3 \times 2}$$

$$= 11^{5+4+6} = 11^5 //$$

$$10) (-3)^{3 \times 5} = (-3)^{3a}$$

$$\therefore 15 = 3a$$

$$a = 5 //$$