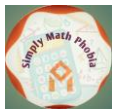


## Exponents and Powers worksheet

Questions: Solve the following :

- 1) Find the base and exponents of  $(-17)^6$ .
- 2) Give exponential form for  $3 \times 3 \times 3 \times 3 \times 4 \times 4 \times 4$ .
- 3) Write  $(-5) \times (-5) \times (-5) \times (-5)$  in exponential form.
- 4) What is the cube of -9?
- 5) Find the value of  $(-1)^{900}$ .
- 6) If  $(5)^{4^2} = 5^x$ , then find the value of  $x$ .
- 7)  $(64)^3 = 4^x$ , find  $x$ .
- 8) 1 million =  $10^{(\dots)}$
- 9)  $729 = 3^{(\dots)}$
- 10)  $432 = 2^4 \times 3^{(\dots)}$
- 11)  $53700000 = \text{---} \times 10^7$
- 12) Find the value of  $(7^0 + 9^0 + 6^0) \times (2^0 - 3^0)$
- 13) Fill in the blanks with  $<$ ,  $>$  or  $=$  sign.
  - (a)  $3^4$  [ ]  $3^0$
  - (b)  $10,000$  [ ]  $10^5$
- 14)  $x^0 \times x^0 = x^0 \div x^0$  is true for all non-zero values of  $x$ .
- 15) Find  $x$  so that  $\left(\frac{3}{2}\right)^5 \times \left(\frac{3}{2}\right)^{11} = \left(\frac{3}{2}\right)^{2x}$
- 16) The standard form of the number 34567 is .....
- 17) Express each of the following numbers using exponential notations,
  - (a) 1024
  - (b)  $\frac{144}{875}$
- 18) Identify the greater number, in each of the following.
  - (a)  $2^6$  or  $6^2$
  - (b)  $2^9$  or  $9^2$
- 19) Write 34 billion in standard form.



20) The speed of light in vacuum is  $3 \times 10^8$  m/s. Sunlight takes about 8 minutes to reach the Earth. Express distance of Sun from Earth in standard form.

**Simplify and express each of the following in exponential form.**

21)  $\left[ \left(\frac{4}{7}\right)^4 \times \left(\frac{4}{7}\right)^5 \div \left(\frac{4}{7}\right)^7 \right]$

22)  $\left[ \left(\frac{7}{11}\right)^5 \div \left(\frac{7}{11}\right)^2 \right] \times \left(\frac{7}{11}\right)^2$

23)  $(3^9 \div 3^5)^4$

24)  $\left(\frac{a^6}{a^4}\right) \times a^5 \times a^0$

25)  $(5^{20} \div 5^{10}) \times 5^{10}$

Ans. 1) base -17 , exponent 6

2)  $3^4 4^3$

3)  $(-5)^4$

4) -729

5) 1

6) 16

7)  $x=9$

8) 6

9) 6

10) 3

11) 5.37

12) 0

13) a. >    b. <

14) True

15)  $x=8$

16)  $3.4567 \times 10^4$

17) a)  $2^{10}$     b)  $\frac{2^4 \times 3^2}{5^3 \times 7}$

18) a)  $2^6$     b)  $2^9$

19)  $34 \times 10^9$

20)  $1.44 \times 10^{11}$  m

21)  $\left(\frac{4}{7}\right)^2$

22)  $\left(\frac{7}{11}\right)^5$

23)  $3^{16}$

24)  $a^7$

25)  $5^{20}$