

A: Using Exponents to Describe Numbers Continued

Examples:

1. The volume of a cube with an edge length of 5 cm is 125 cm^3 . Write the volume in repeated multiplication form and exponential form.

$$\begin{aligned} V &= A_{\text{base}} \times h \\ &= l \times w \times h \\ &= 5 \times 5 \times 5 \\ &= 5^3 \end{aligned}$$



5cm

If you don't have the formula you will lose a mark!

repeated multiplication
exponential form

2. Arrange the following powers from least to greatest value: 1^{23} , 3^5 , 4^4 , 2^6 , 7^3

$$1^{23} = 1$$

1 Raised to any exponent will always be 1!

$$3^5 = 243$$

You should use your exponent button to solve the remaining powers.

$$4^4 = 256$$

$$2^6 = 64$$

$$7^3 = 343$$

Least to Greatest: 1^{23} , 2^6 , 3^5 , 4^4 , 7^3

3. Express 16 as a power where the exponent is 4 and the base is

- a. Positive
b. Negative

16 is the number, (answer), you get when you have solved the power!

$$X^4 = 16$$

$$1^4 = 1$$

$$2^4 = 16$$

- a. positive: $2^4 = 16$

- b. Negative $(-2)^4 = 16$

you have to include the negative sign in brackets to get the negative sign to cancel $(-2 \times -2 \times -2 \times -2)$!

4. A single bacterium doubles in number every hour.

a. How many bacteria are present after 8h?

Time	0	1	2	3	4	5	6	7	8
Bacteria	1	2	4	8	16	32	64	128	256

b. How could you represent this using a power?

Doubling requires multiples of 2 so 2 is the base!

This happens over a period of 8 hours so 8 becomes the exponent!

$$2^8 = 256$$

Assignment: Page 97 #14 - 21