

01

If $2r = 5s$ and $5s = 6t$, what does r equal in terms of t ?

$$2r = 5s$$

$$\Rightarrow 2r = 6t$$

$$\Rightarrow r = 3t$$

02

A total of k passengers went on a bus trip. Each of the n buses that were used to transport the passengers could seat a maximum of x passengers. If one bus had 3 empty seats and the remaining buses were filled, what is the relationship among n , x and k ?

The relation among n , x and k

$$k = nx - 3$$

03

Answer each of the following

- (a) For any positive integer n , $0^n = 0$ and $1^n = 1$. Explain.
- (b) Study the given figure. Explain why the second and third powers of x are called “ x squared” and “ x cubed.”
- (c) Find a value of x and a value of y for which $x + y = x - y$ is a true statement. Make a generalization about the statement $x + y = x - y$.

(a) $0^n = 0 \times 0 \times 0 \times \dots \times 0$ ('n' times) = 0

$1^n = 1 \times 1 \times 1 \times \dots \times 1$ ('n' times) = 1

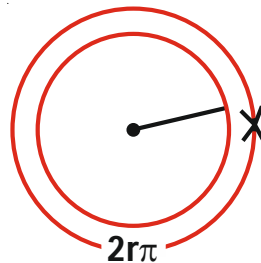
(b) Area = x^2 & volume = x^3

(c) Take any value of ' x ' but take only $y = 0$ then the given statement becomes true

04

Answer each of the following

- (a) What are the steps in evaluating an algebraic expression for a quantity when you know the values of the variables involved ?
- (b) To evaluate an expression with the variables a and b , how many number would you have to substitute ? Could you substitute the same value for both a and b ?
- (c) The circumference and area of a circle of radius r are given by $2\pi r$ and πr^2 , respectively. Use 3.14 for the constant π .
- (i) What is the circumference of a circle with a radius of 2m ?
- (ii) What is the area of a circle with a radius of 2m ?
- (iii) The earth has a radius of 3960 miles.
Approximately how long is the equator ?



- (d) Mona bought 70 bottles of lotion at Rs. 50 per bottle for her boutique. The regular price at her boutique is 40% over her cost. Write an expression that gives the value of each quantity.
- (i) The regular price of a bottle of lotion at Mona's boutique
- (ii) The amount Mona spent in buying the 70 bottles of lotion.
- (iii) How much money will Mona make from selling three-fifths of the total number of bottles of lotion ?

- (a) Substitute the values instead of variables and simplify
- (b) We have to substitute two numbers
If $a \neq b$ then we have to substitute different values
- (c)
- (i) $c = 2\pi r = 2 \times 3.14 \times 2 \text{ mts} = 12.56 \text{ mts}$
- (ii) $A = \pi r^2 = 3.14 \times (2 \text{ mts})^2 = 12.56 \text{ mts}^2$
- (iii) length of equator $= 2\pi r = 2 \times 3.14 \times 3960 \text{ miles}$
 $= 24,868.8 \text{ miles}$

(d)

(i) $50 \times \frac{(100 + 40)}{100} = 70$

(ii) $70 \times ₹ 50 = ₹ 3500$

(iii) $\frac{3}{5} \times 70 \times ₹ 70 = ₹ 2940$