

STD: VI

Ex 11.1

3. Cadets are marching in a parade. There are 5 cadets in a row. What is the rule which gives the number of cadets, given the number of rows? (Use n for the number of rows.)

No. of Cadets in a row $\rightarrow 5$

No. of rows $\rightarrow n$

A: Rule $\rightarrow 5 \times n$

Ans $\rightarrow 5n$

6. A bird flies 1 km in one minute. Can you express the distance covered by the bird in terms of its flying time in minutes? (Use t for flying time in minutes)

Flying time

1 km \rightarrow 1 min

t km \rightarrow ? min

$\rightarrow t \times 1$

$= t$ km

A : t km

7. Radha is drawing a dot Rangoli (a beautiful pattern of lines joining dots) with chalk powder. She has 9 dots in a row. How many dots will her Rangoli have for 9 rows? How many dots are there if there are 8 rows? If there are 10 rows?

★ No. of dots in a row $= 9$

★ No. of rows $= 9$
 $= 9 \times 9$

No. of dots for 9 rows $= 9 \times 9$

★ No. of dots
 8 rows $= 9 \times 8$
 $= 72$

10 rows $= 9 \times 10$
 $= 90$

A : No. of dots

9 rows $= 9 \times 9$

8 rows $= 72$

10 rows $= 90$

8. Leela is Radha's younger sister. Leela (3) is 4 years younger than Radha. Can you write Leela's age in terms of Radha's age? Take Radha's age to be x years

Radha's age $\rightarrow x$

Leela's age $\rightarrow x - 4$

$\Delta \rightarrow (x - 4)$ years.

10. Oranges are to be transferred from larger boxes into smaller boxes. When a large box is emptied, the oranges from it fill two smaller boxes and still 10 oranges remain outside. If the number of oranges in a small box are taken to be x , what is the number of oranges in the larger box?

No. of oranges

small box $\rightarrow x$ [two boxes]

remain $\rightarrow 10$

Larger box $\rightarrow ?$

$\rightarrow x + x + 10$

$\rightarrow 2x + 10$

$\Delta \rightarrow 2x + 10$

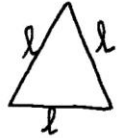
Ex: 11.2

1) The side of an equilateral triangle is shown by l . Express the perimeter of the equilateral triangle using l .

Soln:

* Equilateral triangle = 3 sides

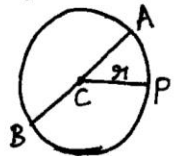
* The side of an equilateral triangle $l = l$



Ans: The perimeter of the equilateral triangle $= 3 \times l$
 $= 3l$

Ans: $3l$

4) The diameter of a circle is a line which joins two points on the circle and also passes through the centre of the circle. (In the adjoining figure AB is a diameter of the circle; C is its centre.) Express the diameter of the circle (d) in terms of its radius (r).



Soln:

Diameter(d) = AB

$= AC + CB$

$= r + r$ [$\because CP = r$]

$= 2r$

Ans: Diameter(d) = $2r$

Ex: 11.3

5)

3. Identify the operations (addition, subtraction, division, multiplication) in forming the following expressions and tell how the expressions have been formed.

(c) $2y+17$; $2y-17$.

Soln: * Operations.

$2y+17 \rightarrow$ Multiplication and addition

$2y-17 \rightarrow$ Multiplication and Subtraction.

$2y+17$, $2y-17 \rightarrow$ Multiplication and addition,
Multiplication and Subtraction.

* Statements

$2y+17 \rightarrow$ First y multiplied by 2, then 17 added to the product.

$2y-17 \rightarrow$ First y multiplied by 2, then 17 subtracted from the product.

(d) $7m$, $-7m+3$, $-7m-3$.

Soln: * Operations.

$7m \rightarrow$ Multiplication

$-7m+3 \rightarrow$ Multiplication and addition

$-7m-3 \rightarrow$ Multiplication and subtraction.

$7m$, $-7m+3$, $-7m-3 \rightarrow$ Multiplication, Multiplication and addition, Multiplication and subtraction.

* Statements.

6)

$7m \rightarrow$ m multiplied by 7

$-7m+3 \rightarrow$ m multiplied by -7 , then 3 added to the product.

$-7m-3 \rightarrow$ m multiplied by -7 , then 3 subtracted from the product.

4) Give expressions for the following cases.

(a) 7 added to P

Ans: $P+7$

(c) P multiplied by 7

Ans: $7P$

(e) 7 subtracted from $-m$

Ans: $-m-7$

(g) $-p$ divided by 5

Ans: $\frac{-p}{5}$

5) Give expressions in the following cases.

(c) 5 times y to which 3 is added

Ans: $5y+3$

(d) 5 times y from which 3 is subtracted.

Ans: $5y-3$

(h) y is multiplied by -5 and the result is 7 added to 16 .

Ans: $-5y + 16$

6.(a) Form expressions using t and 4 . Use not more than one number operation. Every expression must have t in it.

Soln: Expressions $\rightarrow t+4, t-4, 4t, \frac{t}{4}, \frac{4}{t}, 4-t, 4+t$.

Ex: 11.4

1. Answer the following:

(a) Take Savita's present age to be y years.

(i) What will be her age 5 years from now?

(ii) What was her age 3 years back?

(iii) Savita's grandfather is 6 times her age. What is the age of her grandfather?

(iv) Grandmother is 2 years younger than grandfather. What is grandmother's age?

(v) Savita's father's age is 5 years more than 3 times Savita's age. What is her father's age?

Soln:

(i) $(y+5)$ years

(ii) $(y-3)$ years

(iii) $(6y)$ years

(iv) $(6y-2)$ years

(v) $(3y+5)$ years

(c) A rectangular box has height h cm. Its length is 5 times the height and breadth is 10 cm less than the length. Express the length and the breadth of the box in terms of the height.

Soln:

$$\text{height} = h \text{ cm}$$

$$\text{length} = 5h \text{ cm}$$

$$\text{Breadth} = 5h - 10 \text{ cm}$$

2. Change the following statements using expressions into statements in ordinary language.

(a) A notebook costs $\text{₹} p$. A book costs $\text{₹} 3p$.

Soln: A book costs three times the cost of a notebook.

(d) Jaggu is z years old. His uncle is $4z$ years old and his aunt is $(4z-3)$ years old.

Soln: Jaggu's uncle is four times older than Jaggu and Jaggu's aunt is 3 years younger than his uncle.

Ex: 11.5

3. Pick out the solution from the values given in the bracket next to each equation. Show that the other values do not satisfy the equation.

(a) $5m = 60$ (10, 5, 12, 15)

Soln: $m = 10$, $5 \times 10 = 60$
 $50 \neq 60$

$$m=5, 5 \times 5 = 60$$

$$25 \neq 60$$

$$m=12, 5 \times 12 = 60$$

$$60 = 60$$

$$m=15, 5 \times 15 = 60$$

$$75 \neq 60$$

$$\therefore \text{Ans: } \boxed{m=12}$$

$$d) \frac{q}{2} = 7 \quad (7, 2, 10, 14)$$

Soln:

$$q=7, \frac{q}{2} = \frac{7}{2} = 3.5 \neq 7$$

$$q=2, \frac{q}{2} = \frac{2}{2} = 1 \neq 7$$

$$q=10, \frac{q}{2} = \frac{10}{2} = 5 \neq 7$$

$$q=14, \frac{q}{2} = \frac{14}{2} = 7 = 7$$

$$\text{Ans: } \boxed{q=14}$$

$$e) x-4=0 \quad (4, -4, 8, 0)$$

Soln:

$$x=4, x-4 = 4-4 = 0 = 0$$

$$x=-4, x-4 = -4-4 = -8 \neq 0$$

$$x=8, x-4 = 8-4 = 4 \neq 0$$

$$x=0, x-4 = 0-4 = -4 \neq 0$$

$$\text{Ans: } \boxed{x=4}$$

4) b) Complete the table and by inspection of the table, find the solution to the equation

$$5t = 35.$$

t	3	4	5	6	7	8	9	10	11	—	—
5t	—	—	—	—	—	—	—	—	—	—	—

Soln:

$$* 5t = 35$$

$$t=3,$$

$$5t = 5 \times 3 = 15 \neq 35$$

$$t=4, 5t = 5 \times 4 = 20 \neq 35$$

$$t=5, 5t = 5 \times 5 = 25 \neq 35$$

$$t=6, 5t = 5 \times 6 = 30 \neq 35$$

$$t=7, 5t = 5 \times 7 = \boxed{35} = 35$$

$$t=8, 5t = 5 \times 8 = 40 \neq 35$$

$$t=9, 5t = 5 \times 9 = 45 \neq 35$$

$$t=10, 5t = 5 \times 10 = 50 \neq 35$$

$$t=11, 5t = 5 \times 11 = 55 \neq 35.$$

t	3	4	5	6	7	8	9	10	11
5t	15	20	25	30	35	40	45	50	55

$$\text{Ans: } \boxed{t=7}$$

HOTS:

1. Pintu is 3 times as old as Chintu and Chintu is 5 years older than Jimmy. If Chintu is x years old, write in algebraic form:

(a) Pintu's age is 5 years from now.

* Chintu's age $\rightarrow x$

Pintu's age $\rightarrow 3x$

Pintu's age 5 years from now $\rightarrow (3x + 5)$

Ans $\rightarrow (3x + 5)$ years.

(b) The sum of Pintu's and Chintu's ages 2 years from now.

* Pintu's age $\rightarrow 3x + 2$

Chintu's age $\rightarrow x + 2$

Sum $\rightarrow (3x + 2) + (x + 2)$

$\rightarrow 3x + 2 + x + 2$

$\rightarrow (4x + 4)$

Ans $\rightarrow (4x + 4)$ years

(c) The sum of Chintu's and Jimmy's ages 4 years ago

* Chintu's age $\rightarrow x - 4$

Jimmy's age $\rightarrow (x - 5 - 4)$

Sum $\rightarrow (x - 4) + (x - 5 - 4)$

$\rightarrow x - 4 + x - 5 - 4$

$\rightarrow (2x - 13)$

Ans $\rightarrow (2x - 13)$ years

(d) Ruchika buys 5 copies for Maths, $2x$ copies for English and y^2 copies for Hindi. Express the total number of copies she buys as an algebraic expression.

* Number of copies

Maths $\rightarrow 5$

English $\rightarrow 2x$

Hindi $\rightarrow y^2$

Total $\rightarrow 5 + 2x + y^2$

Ans Total no. of copies $\rightarrow 5 + 2x + y^2$