



## Chapter 11

### ALGEBRA

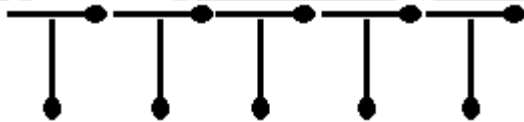
#### NOTES:

##### Exercise 11.1

1. Find the rule which gives the number of matchsticks required to make the following matchsticks patterns. Use a variable to write the rule.

a) A pattern of letter T as T

Ans: Number of matchstick =  $2n$  [n is the number of Ts, a variable]



No of Ts formed	1	2	3	4	-----	8	-----	n
No. of matchstick	2	4	6	8	-----	16	-----	$2n$

b) A pattern of letter z as Z

Ans: Number of matchstick =  $3n$



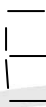
No of Zs formed	1	2	3	4	-----	n
No. of matchstick	3	6	9	12	-----	$3n$

c) A pattern of letter U as U

Ans: Number of matchstick =  $3n$

d) A pattern of letter V as  $\setminus /$

Ans: Number of matchstick =  $2n$

e) A pattern of letter E as 

Ans: Number of matchstick =  $5n$

f) A pattern of letter S as 

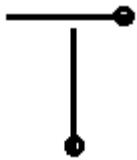
Ans: Number of matchstick =  $5n$

g) A pattern of letter A as 

Ans: Number of matchstick =  $6n$

**2. We already know the rule for the pattern of letters L, C and F. Some of the letters from Q.1 (given above) give us the same rule as that given by L. Which are these? Why does this happen?**

Ans: (a)



and (d)



Here, number of matchstick required = 2.

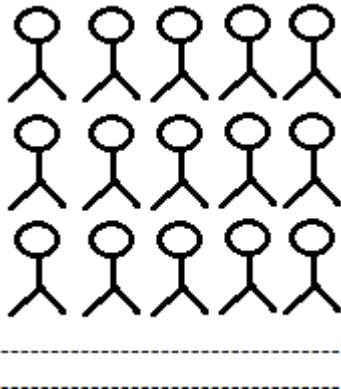


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3. Cadets are marching in a parade. There are 5 cadets in a row. What is the rule which gives the number of cadets, given the number of rows? (Use  $n$  for the number of rows)

Solution:



Number of cadets =  $5n$ , where  $n$  is the number of rows.

4. If there are 50 mangoes in a box, how will you write the total number of mangoes in terms of the number of boxes? (Use  $b$  for the number of boxes.)

Solution:

Total number of mangoes =  $50b$ , where  $b$  is the number of boxes.

5. The teacher distributes 5 pencils per student. Can you tell how many pencils are needed, given the number of students? (Use  $s$  for the number of students.)

Solution:

Number of pencils needed =  $5s$ , where  $s$  is the number of students.

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

Solution:

Distance covered by the bird =  $t$  km, where  $t$  is the time in minute.

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  $r$  rows? How many dots are there if there are 8 rows? If there are 10 rows?

Solution:



Number of dots in a row = 9

Number of rows =  $r$

Number of dots in  $r$  rows =  $9r$

Number of dots in 8 rows =  $9 \times 8 = 72$

Number of dots in 18 rows =  $9 \times 10 = 90$

**8. Leela is Radha's younger sister. Leela 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.**

**Solution:**

Here, taking Radha's age =  $x$  years

$\therefore$  Leela's age =  $x - 4$

**9. Mother has made laddus. She gives some laddus to guests and family members; still 5 laddus remain. If the number of laddus mother gave away is  $l$ , how many laddus did she make?**

**Solution:**

Laddus given away =  $l$

Remaining laddus = 5

$\therefore$  total laddus made =  $l + 5$

**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?**

**Solution:**

Number of oranges in a small box =  $x$

Number of oranges in two small boxes =  $2x$

Number of oranges remained = 10

Number of oranges in large box = number of oranges in two small boxes + number of oranges remained =  $2x + 10$

11. a) Look at the following matchstick pattern of squares (Fig 11.6). The squares are not separate. Two neighbouring squares have a common matchstick. Observe the patterns and find the rule that gives the number of matchsticks in terms of the number of squares. (Hint: If you remove vertical stick at the end, you will get a pattern of Cs)

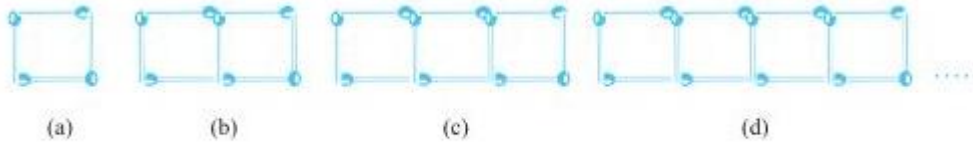


Fig 11.6

**Solution:**

(a) 4 (b) 7 (c) 10 (d) 13



Number of patterns	1	2	3	4	-----	n
Number of matchsticks	4	7	10	13	-----	$3n + 1$

Number of matchsticks =  $3n + 1$

n = number of squares.

b) Fig 11.7 gives a matchstick pattern of triangles. As in Exercise 11 (a) above, find the general rule that gives the number of matchsticks in terms of the number of triangles.

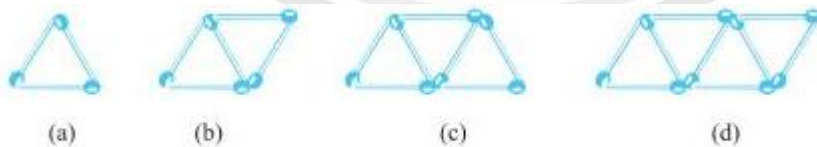


Fig 11.7

**Solution:**

Number of patterns	1	2	3	4	-----	n
Number of matchsticks	3	5	7	9	-----	$2n + 1$

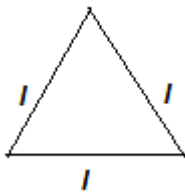
Number of matchsticks =  $2n + 1$

n = number of triangles.

### Exercise 11.2

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

Solutions:



$$\text{Perimeter of equilateral triangle} = 3l$$

2. The side of the regular hexagon (Fig 11.10) is denoted by  $l$ . Express the perimeter of the hexagon using  $l$ .

(Hint: A regular hexagon has all its six sides equal in length.)

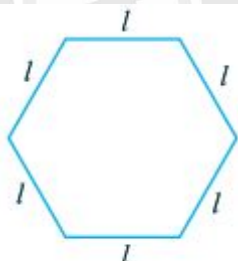


Fig 11.10

Solution:

$$\text{Given, side of a regular hexagon} = l$$

$$\therefore \text{Perimeter of the hexagon} = l + l + l + l + l + l = 6l$$

3. A cube is three dimensional figure as shown in Fig 11.11. It has six faces and all of them are identical squares. The length of an edge of the cube is given by  $l$ . Find the formula for the total length of the edges of a cube.

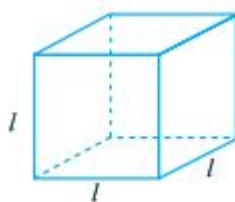


Fig 11.11

Solution:

Length of an edge of the cube =  $l$

Number of edges = 12

$\therefore$  Total length of the edges = Number of edges  $\times$  length of an edge =  $12 \times l = 12l$

**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 (Fig 11.2) AB is a diameter of a circle; C is its centre.) Express the diameter of the circle (d) in terms of its radius (r).**

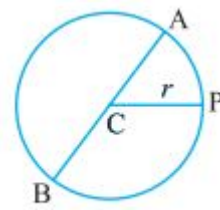


Fig 11.12

Solution:

Diameter of the circle = AB

$$AB = AC + CB$$

$$= r + r$$

$$= 2r$$

$\therefore$  the diameter of the circle in terms of its radius is  $2r$ .

**5. To find sum of three numbers 14, 27 and 13 we can have two ways:**

a) We may first add 14 and 27 to get 41 and then add 13 to it to get the total sum 54 or

b) We may add 27 and 13 to get 40 and then add 14 to get the sum 54. Thus,  $(14 + 27) + 13 = 14 + (27 + 13)$

This can be done for any three numbers. This property is known as the associativity of addition of numbers. Express this property which we have already studied in this chapter on whole numbers, in a general way, by using variable  $a$ ,  $b$  and  $c$ .

Solution:

$$(a + b) + c = a + (b + c)$$

$$a = 14, b = 27, c = 41.$$

### Exercise 11.3

1. Make up as many expressions with numbers (no variables) as you can from three numbers 5, 7 and 8. Every number should be used not more than once. Use only addition, subtraction and multiplication.

(Hint: Three possible expressions are  $5 + (8 - 7)$ ,  $5 - (8 - 7)$ ,  $(5 \times 8) + 7$ ; make the other expressions)

**Solution:**

Make expressions using numbers 5, 7, 8.

- a)  $5 + (7 + 8)$
- b)  $(5 + 7) - 8$
- c)  $5 + (7 \times 8)$
- d)  $5 \times (7 + 8)$
- e)  $(5 + 7) \times 8$
- f)  $(5 + 7) + 8$  etc.

Which one of the following are expressions with numbers only?

- a)  $y + 3$
- b)  $(7 \times 20) - 8z$
- c)  $5(21 - 7) + 7 \times 2$
- d)  $5$
- e)  $3x$
- f)  $5 - 5n$
- g)  $(7 \times 20) - (5 \times 10) - 45 + p$

**Solution:**

- c)  $5(21 - 7) + 7 \times 2$
- d)  $5$

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

- a)  $z + 1, z - 1, y + 17, y - 17$
- b)  $17y, y / 17, 5z$
- c)  $2y + 17, 2y - 17$
- d)  $7m, -7m + 3, -7m - 3$



**Solutions:**

Identify the operations

a)  $z + 1$ ,  $z - 1$ ,  $y + 17$ ,  $y - 17$

**Addition, Subtraction, Addition, Subtraction.**

b)  $17y$ ,  $y / 17$ ,  $5z$

**Multiplication, Division, Multiplication**

c)  $2y + 17$ ,  $2y - 17$

**Multiplication and addition, Multiplication and subtraction.**

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

**Multiplication, Multiplication and addition, Multiplication and subtraction.**

**4. Give expressions for the following cases.**

- a) **7 added to p**
- b) **7 subtracted from p**
- c) **p multiplied by 7**
- d) **p divided by 7**
- e) **7 subtracted from -m**
- f) **-p multiplied by 5**
- g) **-p divided by 5**
- h) **p multiplied by -5**

**Solutions:**

a) **7 added to p**

**$P + 7$**

b) **7 subtracted from p**

**$P - 7$**

c) **p multiplied by 7**

**$7P$**

d) **p divided by 7**

**$P/7$**

e) **7 subtracted from -m**

**$-m - 7$**



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f)  $-p$  multiplied by 5

$-5P$

g)  $-p$  divided by 5

$-P/5$

h)  $p$  multiplied by  $-5$

$-5P$

5. Give expressions in the following cases.

a) 11 added to  $2m$

b) 11 subtracted from  $2m$

c) 5 times  $y$  to which 3 is added

d) 5 times  $y$  from which 3 is subtracted

e)  $y$  is multiplied by  $-8$

f)  $y$  is multiplied by  $-8$  and then 5 is added to the result

g)  $y$  is multiplied by 5 and the result is subtracted from 16

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

Solutions:

a) 11 added to  $2m$

$$2m + 11$$

b) 11 subtracted from  $2m$

$$2m - 11$$

c) 5 times  $y$  to which 3 is added

$$5y + 3$$

d) 5 times  $y$  from which 3 is subtracted

$$5y - 3$$

e)  $y$  is multiplied by  $-8$

$$-8y$$

f)  $y$  is multiplied by  $-8$  and then 5 is added to the result

$$-8y + 5$$

g)  $y$  is multiplied by 5 and the result is subtracted from 16

$$16 - 5y$$

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

$$16 + (-5y)$$

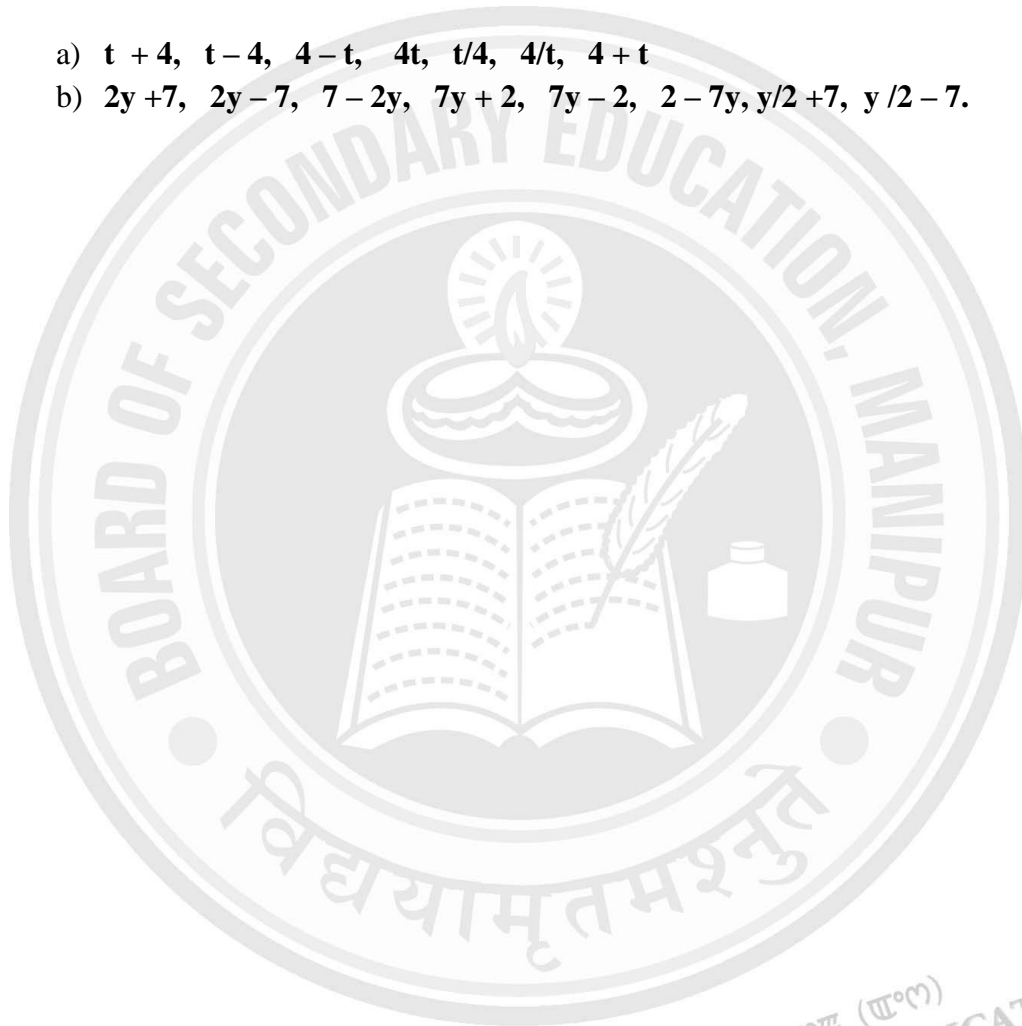
6 (a) Form expressions using  $t$  and  $4$ . Use not more than one number operation. Every expression must have  $t$  in it.

(b) Form expressions using  $y$ ,  $2$  and  $7$ . Every expression must have  $y$  in it. Use only two number operations. These should be different.

**Solutions:**

a)  $t + 4$ ,  $t - 4$ ,  $4 - t$ ,  $4t$ ,  $t/4$ ,  $4/t$ ,  $4 + t$

b)  $2y + 7$ ,  $2y - 7$ ,  $7 - 2y$ ,  $7y + 2$ ,  $7y - 2$ ,  $2 - 7y$ ,  $y/2 + 7$ ,  $y/2 - 7$ .



### Exercise 11.4

1. Answer the following:

(a) Take Sarita'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) Sarita's grandfather is 6 times her age. What is the age of her grandfather?

(iv) Grandmother is two year younger than grandfather. What is grandmother's age?

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

(b) The length of a rectangular hall is 4 meters less than three times the breadth of the hall. What is the length, if the breadth is  $b$  meters?

(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.

(d) Meena, Beena and Reena are climbing the steps to the hill top. Meena is at step  $S$ , Beena is 8 steps ahead and Leena 7 steps behind. Where are Beena and Meena? The total number of steps to the hill top is 10 less than 4 times what Meena has reached. Express the total number of steps using  $s$ .

(e) A bus travels at  $v$  km per hour. It is going from Daspur to Beespur. After the bus has travelled 5 hours, Beespur is still 20 km away. What is the distance from Daspur to Beespur? Express it using  $v$ .

Solutions:

a)

(i)  $y + 5$

(ii)  $y - 3$

(iii)  $6y$

(iv)  $6y - 2$

(v)  $3y + 5$

b) Here, breadth =  $b$  m

$$\therefore \text{length} = (3b - 4)m$$



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c) Here, height = h cm

∴ length = 5 hcm

Breadth = (5h – 10)cm

d) Beena is at (S + 8) Step

Leena is at (S – 7) step

And total number of steps to the top

= (4S – 10) steps.

e) Here, distance travelled by the bus in 5 hours

= 5vKm [distance = speed x time]

∴ total distance from Daspur to Beespur = (5v + 20) km

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

(For example, Given Salim scores r runs in a cricket match, Nalin scores (r + 15) runs. In ordinary language – Nalin scores 15 runs more than Salim.)

(a) A notebook costs ₹ p. A book costs ₹ 3p

(b) Tony put q marbles on the table. He has 8 q marbles in his box.

(c) Our class has n students. The school has 20 n students.

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

(e) In an arrangement of dots there are r rows. Each row contains 5 dots

**Solutions:**

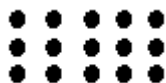
a) A Book costs three times the cost of a notebook.

b) Tony has in his box eight times the marbles he put on the table.

c) Our school has 20 times the number of students in our class.

d) Jaggu's uncle is 4 times his age and his aunt is 3 years younger than his uncle.

e) In an arrangement .....



The number of dots is 5 times the number of rows.

3 (a) Given Munnu's age to be  $x$  years, can you guess what  $(x - 2)$  may show? (Hint: Think of Munnu's younger brother)

Can you guess what  $(x + 4)$  may show? What  $(3x + 7)$  may show?

b) Given Sara's age today to be  $y$  years. Think of her age in the future or in the past.

What will the following expression indicate?  $Y + 7$ ,  $y - 3$ ,  $y + 4\frac{1}{2}$ ,  $y - 2\frac{1}{2}$

c) Given  $n$  students in the class like football, what may  $2n$  shows? What may  $n / 2$  show?

(Hint: Thinks of games other than football)

**Solutions:**

a) Munnu's younger brother is 2 years younger than him. His elder brother is 4 years older than him and his father is 7 years more than 3 times his age.

b)  $Y + 7$  indicates Sara's age after 7 years

$Y - 3$  indicates Sara's age before 3 years

$y + 4\frac{1}{2}$  indicates Sara's age after four and half years

$y - 2\frac{1}{2}$  indicates Sara's age before two and half years

c) The number of students who like hockey is twice the number of students who like football. And the number of students who like basketball is half the number of students who like football.



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### Exercise 11.5

1. State which of the following are equations (with a variable). Give reason for your answer. Identify the variable from the equations with a variable.

- a)  $17 = x + 17$
- b)  $(t - 7) > 5$
- c)  $4 / 2 = 2$
- d)  $(7 \times 3) - 19 = 8$
- e)  $5 \times 4 - 8 = 2x$
- f)  $x - 2 = 0$
- g)  $2m < 30$
- h)  $2n + 1 = 11$
- i)  $7 = (11 \times 5) - (12 \times 4)$
- j)  $7 = (11 \times 2) + p$
- k)  $20 = 5y$
- l)  $3q / 2 < 5$
- m)  $z + 12 > 24$
- n)  $20 - (10 - 5) = 3 \times 5$
- o)  $7 - x = 5$

**Solutions:**

- a)  $17 = x + 17$  is an equation with variable  $x$ .
- b)  $(t - 7) > 5$  is not an equation
- c)  $4 / 2 = 2$  is not an equation
- d)  $(7 \times 3) - 19 = 8$  is not an equation
- e)  $5 \times 4 - 8 = 2x$  is an equation with variable  $x$ .
- f)  $x - 2 = 0$  is an equation with variable  $x$
- g)  $2m < 30$  is not an equation
- h)  $2n + 1 = 11$  is an equation with variable  $n$ .
- i)  $7 = (11 \times 5) - (12 \times 4)$  is not an equation
- j)  $7 = (11 \times 2) + p$  is an equation with variable  $p$ .
- k)  $20 = 5y$  is an equation with variable  $y$
- l)  $3q / 2 < 5$  is not an equation
- m)  $z + 12 > 24$  is not an equation
- n)  $20 - (10 - 5) = 3 \times 5$  is not an equation
- o)  $7 - x = 5$  is an equation with variable  $x$

2. Complete the entries in the third column of the table.

S.No.	Equation	Value of variable	Equation satisfied Yes/No
(a)	$10y = 80$	$y = 10$	
(b)	$10y = 80$	$y = 8$	
(c)	$10y = 80$	$y = 5$	
(d)	$4l = 20$	$l = 20$	
(e)	$4l = 20$	$l = 80$	
(f)	$4l = 20$	$l = 5$	
(g)	$b + 5 = 9$	$b = 5$	
(h)	$b + 5 = 9$	$b = 9$	
(i)	$b + 5 = 9$	$b = 4$	
(j)	$h - 8 = 5$	$h = 13$	
(k)	$h - 8 = 5$	$h = 8$	
(l)	$h - 8 = 5$	$h = 0$	
(m)	$p + 3 = 1$	$p = 3$	
(n)	$p + 3 = 1$	$p = 1$	
(o)	$p + 3 = 1$	$p = 0$	
(p)	$p + 3 = 1$	$p = -1$	
(q)	$p + 3 = 1$	$p = -2$	

Solution:

S.No.	Equation	Value of variable	Equation satisfied Yes/No
(a)	$10y = 80$	$y = 10$	No
(b)	$10y = 80$	$y = 8$	Yes
(c)	$10y = 80$	$y = 5$	No
(d)	$4l = 20$	$l = 20$	No
(e)	$4l = 20$	$l = 80$	No
(f)	$4l = 20$	$l = 5$	Yes
(g)	$b + 5 = 9$	$b = 5$	No
(h)	$b + 5 = 9$	$b = 9$	No
(i)	$b + 5 = 9$	$b = 4$	Yes
(j)	$h - 8 = 5$	$h = 13$	Yes
(k)	$h - 8 = 5$	$h = 8$	No
(l)	$h - 8 = 5$	$h = 0$	No
(m)	$p + 3 = 1$	$p = 3$	No
(n)	$p + 3 = 1$	$p = 1$	No
(o)	$p + 3 = 1$	$p = 0$	No
(p)	$p + 3 = 1$	$p = -1$	No
(q)	$p + 3 = 1$	$p = -2$	Yes



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)
- b)  $n + 12 = 20$  (12, 8, 20, 0)
- c)  $p - 5 = 5$  (0, 10, 5, -5)
- d)  $q / 2 = 7$  (7, 2, 10, 14)
- e)  $r - 4 = 0$  (4, -4, 8, 0)
- f)  $x + 4 = 2$  (-2, 0, 2, 4)

solutions:

a)  $5m = 60$

For  $m = 10, 5, 12, 15$

$$5m = 5 \times 10 = 50$$

$$5m = 5 \times 5 = 25$$

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

$$5m = 5 \times 15 = 75$$

$\therefore m = 12$  is a solution for this equation.

b)  $n + 12 = 20$

For  $n = 12, 8, 20, 0$

$$n + 12 = 12 + 12 = 24$$

$$n + 12 = 8 + 12 = 20$$

$$n + 12 = 20 + 12 = 32$$

$$n + 12 = 0 + 12 = 12$$

$\therefore n = 8$  is a solution for this equation.

c)  $p - 5 = 5$

For  $p = 0, 10, 5, -5$

$$p - 5 = 0 - 5 = -5$$

$$p - 5 = 10 - 5 = 5$$

$$p - 5 = 5 - 5 = 0$$

$$p - 5 = -5 - 5 = -10$$

$\therefore p = 10$  is a solution for this equation.

d)  $q / 2 = 7$

For  $q = 7, 2, 10, 14$

$$q / 2 = 7 / 2$$

$$q / 2 = 2 / 2 = 1$$

$$q / 2 = 10 / 2 = 5$$

$$q / 2 = 14 / 2 = 7$$

$\therefore q = 14$  is a solution for this equation.

e)  $r - 4 = 0$

For  $r = 4, -4, 8, 0$

$$r - 4 = 4 - 4 = 0$$

$$r - 4 = -4 - 4 = -8$$

$$r - 4 = 8 - 4 = 4$$

$$r - 4 = 0 - 4 = -4$$

$\therefore r = 4$  is a solution for this equation.

f)  $x + 4 = 2$

For  $x = -2, 0, 2, 4$

$$x + 4 = -2 + 4 = 2$$

$$x + 4 = 0 + 4 = 4$$

$$x + 4 = 2 + 4 = 6$$

$$x + 4 = 4 + 4 = 8$$

$\therefore x = -2$  is a solution for this equation.



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4. (a) Complete the table and by inspection of the table find the solution to the equation  $m + 10 = 16$ .

$m$	1	2	3	4	5	6	7	8	9	10	—	—	—
$m + 10$	—	—	—	—	—	—	—	—	—	—	—	—	—

Solution:

$m$	1	2	3	4	5	6	7	8	9	10	11	12	13
$m + 10$	11	12	13	14	15	16	17	18	19	20	21	22	23

$\therefore m = 6$ , is the solution.

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	—	—	—
$5t$	—	—	—	—	—	—	—	—	—	—	—	—

Solution:

$t$	3	4	5	6	7	8	9	10	11	12	13	14	15	16
$5t$	15	20	25	30	35	40	45	50	55	60	65	70	75	80

$\therefore t = 7$ , is the solution.

c). Complete the table and find the solution of the equation  $z / 3 = 4$  using the table.

$z$	8	9	10	11	12	13	14	15	16	—	—	—
$\frac{z}{3}$	$2\frac{2}{3}$	3	$3\frac{1}{3}$	—	—	—	—	—	—	—	—	—

Solution:

$z$	8	9	10	11	12	13	14	15	16	17	18	19	20
$z/3$	$2\frac{2}{3}$	3	$3\frac{1}{3}$	$3\frac{2}{3}$	4	$4\frac{1}{3}$	$4\frac{2}{3}$	5	$5\frac{1}{3}$	$5\frac{2}{3}$	6	$6\frac{1}{3}$	$6\frac{2}{3}$

$\therefore z = 12$ , is the solution.

d). Complete the table and find the solution to the equation  $m - 7 = 3$ .

$m$	5	6	7	8	9	10	11	12	13	—	—
$m - 7$	—	—	—	—	—	—	—	—	—	—	—

**Solution:**

$m$	5	6	7	8	9	10	11	12	13	14	15
$m - 7$	-2	-1	0	1	2	3	4	5	6	7	8

$\therefore m = 10$ , is the solution.

5. Solve the following riddles, you may yourself construct such riddles.

**Who am I?**

(i) **Go round a square**

**Counting every corner**

**Thrice and no more!**

**Add the count to me**



**To get exactly thirty four!**

**Solution:**

There are 4 corners in a square.

Thrice the number of corners in the square =  $3 \times 4 = 12$

When 12 is added to the number it becomes 34

So, the number will be the difference of 34 and 12

i.e.  $34 - 12 = 22$

- (ii) For each day of the week  
 Make an upcount from me  
 If you make no mistake  
 You will get twenty three!

**Solution:**

Let  $x$  be the required number.

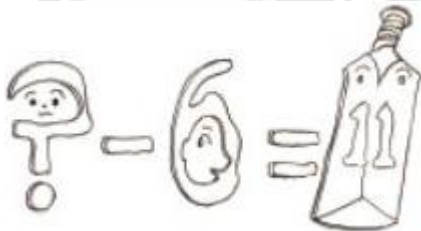
If 7 is added to the number we will get 23

i.e.  $x + 7 = 23$

$$x = 23 - 7 = 16$$

$\therefore$  16 is the required number.

- (iii) I am a special number  
 Take away from me a six!  
 A whole cricket team  
 You will still be able to fix!



**Solution:**

Let  $x$  be the required number.

There are 11 players in a cricket team

If 6 is subtracted from a required number it will be 11

i.e.  $x - 6 = 11$

$$\therefore x = 11 + 6 = 17$$

Hence, the required number is 17.

(iv) Tell me who I am

I shall give a pretty clue!

You will get me back

If you take me out of twenty two!

**Solution:**

**Let x be the required number.**

If x is subtracted from 22 the result will be x.

$$\text{i.e. } 22 - x = x$$

$$\Rightarrow 22 = x + x$$

$$\Rightarrow 22 = 2x$$

$$\Rightarrow 22/2 = x$$

$$\Rightarrow x = 22/2$$

$$\therefore x = 11$$

Hence, the required number is 11.



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DEPARTMENT OF EDUCATION (S)

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