

FA - 4  
Class - VI  
Mathematics

MATHS CLASS - VI Sr. Leo V.

FA - 4 Chapter : 8 (Introduction to Algebra) (Ex 8.1) ①

Q. 1

a) A Pattern of number 3 as  $\exists$   
 No. of 3 is = 1  
 No. of sticks used = 5  
 The required Pattern is =  $5n$ .

b) A Pattern of number 2 as  $\exists$   
 No. of 2 is = 1  
 No. of sticks used = 5  
 The required Pattern =  $5n$

Q. 3 No. of flats in each block = 32  
 Take the number of block as = 'b'  
 Total no. of flats =  $32 \times b = 32b$ .

Q. 5 Sarita's daughter's age =  $x$   
 Her daughter was born when she was = 28  
 Sarita's Present age =  $28 + x$

Q. 9. Ramya arranges flowers in = 10 Vases  
 She uses =  $x$  flowers.  
 Flowers in 1 vase =  $\frac{x}{10}$

(Exercise 8.2)

Q. 1



A regular Pentagon has 5 sides.  
 The side of a regular Pentagon =  $l$   
 The perimeter of a regular Pentagon =  $5 \times l = 5l$ .

Q3 Write a general rule to find the Perimeter of.

a) an isosceles triangle :-

In this triangle two sides are equal and third side is different, so,

Perimeter of an isosceles triangle = sum of all sides.

$$= a + a + b = 2a + b$$

Q4. The required property is associative Property, given that the variables are a, b and c.

$$\Rightarrow a \times (b \times c) = (a \times b) \times c$$

### [Exercise 8.3]

Q1.

i)  $4 + 7 - 9$

iv)  $9 - 7 \times 4$

ii)  $9 \times 7 - 4$

v)  $4 \times 9 - 7$

iii)  $9 \times 7 + 4$

vi)  $7 \times 4 + 9$

Q3.	Expression	operation	Expression formed.
1.	$30x$	Multiplication	$x$ is multiplied by 30
2.	$x - 30$	Subtraction	$x$ is subtracted by 30
3.	$30 + x$	Addition	30 is added to $x$
4.	$\frac{x}{30}$	Division	$x$ is divided by 30.

Q6.

height of Rohan	=	$x$
height of Sunil	=	$x+5$
height of Ravita	=	$(x+5)-3 = x+2$
height of Vicky	=	$2(x+5)-100$
	=	$2x+10-100$
	=	$2x+90$

Q8. The speed of a car from Patel Nagar to Gandhi Nagar } =  $x$  km/h

Time taken to reach Indra nagar to Patel Nagar = 1 hr.  
 Time taken to reach Nehru Nagar from Patel Nagar = 4 hrs  
 Distance between Nehru and Gandhi Nagar = 25 km.

a) Distance between Patel Nagar and Indra Nagar } =  $x$  km.

b) Distance between Indra and Nehru Nagar =  $(4-1)x = 3x$  km.

c) Distance between Patel Nagar and Nehru Nagar =  $4x$  km.

d) Distance between Patel & Gandhi Nagar =  $(4x+25)$  km.

Q12.

a)  $4x - 2$ ,  $x = 11$   
 $4 \times 11 - 2 = 44 - 2 = 42$

b)  $4x - 2 \Rightarrow x = 55$   
 $4 \times 55 - 2 = 220 - 2 = 218$

15<sup>th</sup> term,  $x = 15$

$20 - 3x = 20 - 3 \times 15 \Rightarrow 20 - 45 = -25$

20<sup>th</sup> term,  $x = 20$

$$20 - 3x = 20 - 3 \times 20 \Rightarrow 20 - 60 = -40$$

(Exercise 8.4)

- Q1. a) Terms are  $= 14x, 23$   
b) Terms are  $= 22, -15x$   
c) Terms are  $= \frac{x}{12}, 11$

Q3. a) Algebraic expressions are:-

$$-3a + 4b, -3a - 4b, -3a \times 4b, \frac{-3a}{4b}, \frac{4b}{-3a}$$

b)  $4b + 5, 4b - 5, 4b \times 5, \frac{4b}{5}, \frac{5}{4b}, 5 - 4b$

Q4. Numerical co-efficient of variable.

a)  $7x + 1 = 7$ , b)  $1 - 6c = -6$

c)  $-15x - 3 = -15$ , d)  $\frac{x}{4} + 10 = \frac{1}{4}$

Chapter: 9 [Algebraic equation]  
[Exercise 9.1]

Q3  $7m = 21$  (1, 2, 3, 4)  $\therefore 3$

when  $m = 1 \Rightarrow 7 \times 1 = 21$

$$7 \neq 21$$

when  $m = 2 \Rightarrow 7 \times 2 = 21$

$$14 \neq 21$$

when  $m = 3 \Rightarrow 7 \times 3 = 21$

$$21 = 21$$

when  $m = 4 \Rightarrow 7 \times 4 = 21$

$$28 \neq 21$$

3 is the solution  
of the equation.

b)  $y - 11 = 9$  (20, 19, 9, 11)

when  $y = 20 \Rightarrow 20 - 11 = 9$   
 $9 = 9$

when  $y = 19 \Rightarrow 19 - 11 = 9$   
 $8 \neq 9$

when  $y = 9 \Rightarrow 9 - 11 \neq 9$   
 $-2 \neq 9$

when  $y = 11 \Rightarrow 11 - 11 = 9$   
 $0 \neq 9$

20 is the solution of the equation.

Q4. a)  $6x - 2 = 16$  ,  $x = 3$

$6 \times 3 - 2 = 16 \Rightarrow 16 = 16$

Yes, 3 is the solution of the equation  $6x - 2 = 16$

b) -1 is the solution of  $5y + 1 = 4$

$5 \times -1 + 1 = 4$

$-5 + 1 = 4$

$-4 = 4$

NO, -1 is not the solution of the equation  $5y + 1 = 4$ .

(Exercise 9.2)

Q2. a)  $x - 15 = -1$

$x - 15 + 15 = -1 + 15$  [Add 15 both the sides]

$x = -1 + 15$

$x = 14$

c)

$7x = -63$

$\frac{7x}{7} = \frac{-63}{7}$

[Dividing both the sides by 7]

d)  $\frac{x}{21} = -7$

$\frac{21 \times x}{21} = -7 \times 21$  [multiplying both the sides by 21]

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(Exercise 9.3)

Q1. a) Let the number be  $x$

Eight subtracted from a no. given 21  $\Rightarrow x - 8 = 21$

Solve :-  $x - 8 = 21$

$$x - 8 + 8 = 21 + 8$$

$$\boxed{x = 29}$$

b) 11 added to a number gives 30

Let the number be  $a$

$$a + 11 = 30$$

Solve :-  $a + 11 - 11 = 30 - 11$

$$\boxed{a = 19}$$

c) Let the number be  $x$

7 added to 3 times of no is 28  $\Rightarrow 7 + 3x = 28$

$$7 + 3x = 28$$

$$3x = 28 - 7$$

$$x = \frac{21}{3}$$

$$\boxed{x = 7}$$

Q2. Let the price of 1 pen be  $x$

No. of pens = 7

Total amount paid = £ 50

Balance amount = £ 8

The equation is  $7x = 50 - 8$

$$7x = 42$$

$$x = \frac{42}{7}$$

$$7$$

$$\boxed{x = 6}$$

Q4. Let the no. of blue marbles be  $x$

the no. of red marbles  $x + 6$

7

Blue marbles + Red marble = 60

$$x + x + 6 = 60$$

$$2x + 6 = 60$$

$$2x = 60 - 6$$

$$x = 54 / 2$$

$$x = 27$$

No. of blue marbles  $\Rightarrow x = 27$

No. of red marbles  $x + 6 = 27 + 6 = 33$

## Chapter - 10 [Ratio and Proportion]

(Exercise 10.1)

Q.1 a) No. of blue beads = 45

No. of red beads = 18

Total No. of beads =  $45 + 18 = 63$

The ratio of the no. of blue beads to the no. of red beads =  $45 : 18 = 5 : 2$

b) The ratio of the red beads to the total no. of beads =  $18 : 63 = 2 : 7$

c) The ratio of the blue beads to total no of beads =  $45 : 63 = 5 : 7$

Q4. a) 75 to 90

$$75 : 90 = \frac{75}{90} \div \frac{15}{15} = \frac{5}{6}$$

b) 36 to 144

$36 : 144$

$$\frac{36}{144} \div \frac{36}{36} = \frac{1}{4}$$

Q5:

a) 3.5m to 140cm

$$3.5 \times 100 = 350 \text{ cm}$$

350cm to 140cm

$350 : 140$

$$\frac{350}{140} \div \frac{70}{70} = \frac{5}{2}$$

Ratio 5:2

8

a) 2km to 720m.

$$2\text{ km} = 2 \times 1000 = 2000\text{ m}$$

2000m to 720m

$$2000 : 720$$

$$\frac{2000}{720} \div \frac{80}{80} = \frac{25}{9} = 25 : 9$$

Q8. A car covers in 1 hour = 60 km

A train covers in 1 hour = 90 km

The car covers 50 km in 1 hour speed

$$\text{of the car} = \frac{D}{T} = \frac{50}{1} = 50$$

A train covers 90 km in 1 hr speed of a train =  $\frac{90}{1}$

The ratio between the speed of car } = 50 : 90  
to speed to the speed of train }  
Ratio = 5 : 9

Q14. The ratio of their ages = 5 : 8

Sum of their ages = 26

The sum of their ratios = 5 + 8 = 13

Ambita's age =  $\frac{\text{I part} \times \text{sum of their ages}}{\text{sum of ratios}}$

$$= \frac{5}{13} \times 26 = \frac{130}{13} = 10 \text{ yrs.}$$

Esha's age =  $\frac{\text{II part} \times \text{sum of their ages}}{\text{sum of ratios}}$

$$= \frac{8 \times 26}{13} = 16 \text{ yrs.}$$



[Exercise 10.2]

Q1 a) 12, 4, 3, 1

12 : 4 :: 3 : 1

Extreme terms = Middle terms

Product of Extreme terms = Product of middle terms

12 x 1 = 4 x 3

12 = 12 [∴ They are in proportion]

d) 88, 110, 22, 55

Extreme terms = Middle terms

88 x 55 = 110 x 22

4840 ≠ 2420

(∴ So, they are not in proportion.)

Q3 a) 3 : 6 :: 15 : x

Product of Extreme terms = Pro. of middle terms

3 : 6 :: 15 : x

3x x = 6 x 15 ⇒ x = 90 / 3 ⇒ x = 30

∴ 3 : 6 :: 15 : 30

b) 11 : 14 :: x : 56

Product of Extreme Terms = Product of Middle terms

11 x 56 = 14 x x

616 = 14x

x = 616 / 14 = 44

∴ 11 : 14 :: 44 : 56

Q5 a) 20 men : 14 women and 50cm : 35cm

Product of extreme terms = Product of middle terms

20 : 14 = 50 : 35

20 x 35 = 50 x 14

700 = 700 [They are in Proportion]

Extreme terms = 20 . 35

Middle terms = 14 . 20

10

[Exercise 10.3]

Q1. length of cloth required for stitching 5 tops = 6m  
length of cloth required to stitch 18 tops =  $6 \times \frac{18}{5}$   
 $= 21.6m$ .

$\therefore 21.6m$  is required for stitching 18 tops.

Q4. a) Cost of 8kg basmati rice = ₹444  
Cost of 1kg basmati rice =  $\frac{444}{8} = ₹55.5$

Cost of 15 kg basmati rice =  $55.5 \times 15$   
 $= ₹832.5$

b) Cost of 8kg basmati rice = ₹444  
Cost of 1kg basmati rice =  $\frac{444}{8} = ₹55.5$

Quantity of basmati rice that can be purchased with } = ₹1176  
 $= \frac{₹1176}{55.5} = 32 \text{ kg.}$

Q10 a) Time required for the car to travel 130km =  $2\frac{1}{2}$  hr  
 $2\frac{1}{2}$  hrs = 150 min.

Time required to travel 130 km = 150 min.

Time required for car to travel 240 km =

$$= \frac{240 \times 150}{130} = \frac{60}{13} = 4\frac{8}{13}$$

b) Time required for the car to travel 130km =  $2\frac{1}{2}$  hr

Distance covered by car to in 1hr =  $2\frac{1}{2} = 2.5$  hr.

$$= \frac{130}{2.5} = 52 \text{ km.}$$

Distance travelled in 3 hours by car =  $52 \times 3$   
 $= 156 \text{ km.}$

Q.1. No. of pairs of uniform stitched } = 2 pairs.  
in 3 hrs

No. of pairs of uniform stitched in 1 hr =  $\frac{2}{3}$  pairs.  
Time taken to stitch 12 pairs =  $\frac{12}{\frac{2}{3}} \times 3$   
 $= 6 \times 3 = 18$  hrs.

Q.8. Cost of 5 mineral water bottles = £ 70  
Cost of 1 mineral water bottle =  $\frac{70}{5} = 14$

No. of bottles in 1 crates = 24 bottles  
Cost of 1 crate of mineral water bottle =  $24 \times 14 = £ 336$   
cost of 12 crates of mineral water bottle =  $336 \times 12$   
 $= £ 4032$

∴ cost of 12 crates of mineral water }  
bottle is } = £ 4032