

Date - 22/07/19

Page:
 / /

Chapter - 3
Playing with numbers
Exercise - 3.1

Q.2- Find the factors of :

a- 76 - 1, 2, 4, 19, 38, 76

$$1 \times 76$$

$$2 \times 38$$

$$4 \times 19$$

b- 312 - 1, 2, 3, 4, 6, 8, 12, 26, 39, 52, 78,

$$1 \times 312$$

$$104, 156, 312$$

$$2 \times 156$$

$$3 \times 104$$

$$4 \times 78$$

$$6 \times 52$$

$$8 \times 39$$

$$12 \times 26$$

c) 120 - 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24

$$1 \times 120$$

$$30, 40, 60, 120$$

$$2 \times 60$$

$$3 \times 40$$

$$4 \times 30$$

$$5 \times 24$$

$$6 \times 20$$

$$8 \times 15$$

$$10 \times 12$$

d- 356 - 1, 2, 4, 89, 178, 356

$$1 \times 356$$

$$2 \times 178$$



$$4 \times 89$$

Q-3 Find the first five multiples of:

a- 11 - 11, 22, 33, 44, 55

b- 16 - 16, 32, 48, 64, 80

c- 12 - 12, 24, 36, 48, 60

d- 20 - 20, 40, 60, 80, 100

Q-4 State if the result is always odd or always even:

a- Two odd numbers are added.

Ans- Even.

b- Three odd numbers are added.

Ans- Odd

c- One even and two odd numbers are added.

Ans- Even

d- Two prime numbers are greater than 2 are added.

Ans- Even

e- Two even numbers are added.

Ans- Even

f- Three odd numbers are multiplied.

Ans- Odd

g- Two consecutive numbers are multiplied.

Ans- Even

h- Two consecutive odd numbers are added.

Ans- Even

Q-5 Write all the prime numbers and composite numbers between:

a- 70 and 80

~~no~~ Numbers between 70 and 80 are: - 71, 72, 73, 74, 75, 76, 77, 78, 79

Prime Numbers - 71, 73, 79

Composite Numbers - 72, 74, 75, 76, 77, 78

b- 30 and 40

Numbers between 30 and 40 are: -

31, 32, 33, 34, 35, 36, 37, 38, 39

Prime Numbers - 31, 37

Composite Numbers - 32, 33, 34, 35, 36, 38, 39

Q-6 Express the given numbers as:

a) A sum of two odd primes:

(i) 50

$$43 + 7$$

$$= 50$$

ii) 40

$$37 + 3$$

$$= 40$$

b) the difference of two odd primes:

(i) 24

$$37 - 13$$

$$= 24$$

ii) 6

$$23 - 17$$

$$= 6$$

Q-7a) Draw the following numbers, from 12

12 pairs which are not co-prime:

- Ans: (2,4) (4,10) (9,12) (10,12) (12,15)
 (2,10) (4,12) (9,15) (10,22) (12,22)
 (2,12) (4,22)
 (2,22)

Q1) Given the list below, form 17 pairs of co-prime numbers: 3, 5, 6, 7, 12, 18, 24, 25

- Ans: (3,5) (5,6) (6,7) (7,12) (12,18)
 (3,7) (5,7) (6,25) (7,18) €
 (3,25) (5,12) (7,25)
 (5,18) (7,24)
 (18,25) (24,25)

Q2) Match the following:

- | | |
|------|----|
| A1 - | B3 |
| A2 - | B7 |
| A3 - | B5 |
| A4 - | B6 |
| A5 - | B1 |
| A6 - | B3 |
| A7 - | B8 |
| A8 - | B4 |
| A9 - | B2 |

Q3) replace by the largest digit so that:

(i) 346*64 is divisible by 8

Ans: 346*64
 divisible by 8
 = 246*64
 = *64
 = 64
 = 64
 = 64 is divisible by 8.

(ii) 40643* is divisible by 11

Ans: 40643*
 = divisible by 11
 = 40643*
 = 0+4+1*4
 = 4+6+3 = 13
 = 0+4+1*1
 = 0+4+0 = 13
 = 4+6+3 = 13
 = 13-13
 = 0 is divisible by 11

(iii) 54678^* is divisible by 2.

Ans- 54678^*
Divisible by 2

54678^*
= 546780 is divisible by 2.

(iv) 946^*59 is divisible by 3.

Ans- 946^*59
Divisible by 3

946^*59
= 94659 odd.
42 is divisible by 3.

b. Replace * by the smallest digit so that;

(i) 52^*721 is divisible by 9.

Ans- 52^*721
Divisible by 9

52^*721
= 521721 odd
78 is divisible by 9.

(ii) 499^*02 is divisible by 6.

Ans- 499^*02
= 499902
= 499202 is divisible by 2.
= 499202 odd = 21 is divisible by 3.
So, 42 is divisible by 6.

(iii) 9456^*6 is ~~divisible~~ divisible by 4.

Ans- 9456^*6
 945616
= 945616

945616
16 is divisible by 4.
So, 945616 is divisible by 4.

(iv) 6745^* is divisible by 5.

Ans- 6745^*
 67450

67450
0 is divisible by 5.
So, 67450 is divisible by 5.

Q.10- Using the tests of divisibility, find which of the following numbers are;

a- divisible by 3;

(i) 43356
Ans- Sum of digit = $4+3+3+5+6$
= 21

21 is divisible by 3. So, 43356 is divisible by 3.

(ii) 581213

Ans- Sum of digit = $5+8+1+2+1+3$
= 21

21 is divisible by 3. So, 581213 is divisible by 3.

(iii)

Ans- 65936

Sum of digit = $6+5+9+3+6$
 $= 29$

29 is not divisible by 3. $\therefore$, 65936 is not divisible by 3.

(iv)

Ans- 41785

Sum of digit = $4+1+7+8+5$
 $= 25$

25 is not divisible by 3. $\therefore$, 41785 is not divisible by 3.

b)

divisible by 11.

d)

Ans- 59587

Sum of odd place's digit = $7+5+5$
 $= 17$

Sum of even place's digit = $9+9$
 $= 18$

Difference = $17-18$
 $= -1$

$\therefore$, 59587 is divisible by 11.

(ii) 1678036

Ans- Sum of odd place's digit = $6+0+7+1$
 $= 14$

Sum of even place's digit = $3+8+6$
 $= 17$

Difference = $14-17$
 $= -3$

$\therefore$, 1678036 is not divisible by 11.

(iii)

Ans- 1001001001

Sum of odd place's digit = $1+0+0+1+0$
 $= 2$

Sum of even place's digit = $0+1+0+0+1$
 $= 2$

Difference = $2-2$
 $= 0$

$\therefore$, 1001001001 is divisible by 11.

(iv)

Ans- 501358

Sum of odd place's digit = $5+3+0$
 $= 8$

Sum of even place's digit = $0+1+6$
 $= 7$

Difference = $8-7$
 $= 1$

$\therefore$, 501358 is divisible by 11.

c)

divisible by 4.

d)

Ans- 45382

Number formed by tens and one's place = 82

82 is not divisible by 4.

$\therefore$, 45382 is not divisible by 4.

(ii)

Ans- 561204

Number formed by tens and one's place = 04

04 is divisible by 4.

$\therefore$, 561204 is divisible by 4.

(ii) 734956
Ans = Number formed by tens and one's place
= 56
So, 734956 is divisible by 4.
So, 734956 is divisible by 4.

(iv) 353862
Ans = Number formed by tens and one's
place = 62
62 is not divisible by 4.
So, 353862 is not divisible by 4.

(d) Divisible by 8:-

(i) 567816
Ans = Number formed by hundreds,
tens and one's place = 816
816 is divisible by 8.
So, 567816 is divisible by 8.

(ii) 345644

Ans = Number formed by hundreds, tens
and one's place = 644
644 is not divisible by 8.
So, 345644 is not divisible by 8.

(iii) 457400

Ans = Number formed by hundreds, tens
and one's place = 400
400 is divisible by 8.
So, 457400 is divisible by 8.

(iv) 72488
Ans = Number formed by hundreds, tens
and one's place = 488
488 is divisible by 8.
So, 72488 is divisible by 8.

(v) Divisible by 6:

(i) 24502

Ans = There is an even number in ones place.
So this is divisible by 2.
Sum of digit = $2+4+5+0+2$
= 21
21 is divisible by 3. So 24502 is
divisible by 3.
Hence, 24502 is divisible by 6.

(ii) 35704

Ans = There is an even number in ones place.
So this is divisible by 2.
Sum of digit = $3+5+7+0+4$
= 27
27 is divisible by 3. So 35704 is
divisible by 3.
Hence, 35704 is divisible by 6.

(iii) 24622

Ans = There is an even number in ones place.
So this is divisible by 2.
Sum of digit = $2+4+6+2+2$
= 16
16 is not divisible by 3.
Hence, 24622 is not divisible by 6.

10 is not divisible by 3. So, 21662 is not divisible by 3.
Hence, 21662 is not divisible by 3.

(iv) 723748

Ans - There is an even number in ones place, so, 723748 is divisible by 2.
Sum of digit = $7+2+3+7+4+8 = 31$
31 is not divisible by 3, so, 723748 is not divisible by 3.
Hence, 723748 is not divisible by 3.

(f) Divisible by 9;

(ii) 57320

Ans - Sum of digit = $5+7+3+2+0 = 27$

27 is divisible by 9.
Hence, 57320 is divisible by 9.

(iii) 668735

Ans - Sum of digit = $6+6+8+7+3+5 = 35$

35 is not divisible by 9.
Hence, 668735 is not divisible by 9.

(iv) 1235340

Ans - Sum of digit = $1+2+3+5+3+4+0 = 18$

18 is divisible by 9.
Hence, 1235340 is divisible by 9.

(vi) 33508

Ans - Sum of digit = $3+3+5+0+8 = 27$

27 is divisible by 9.
Hence, 33508 is divisible by 9.

Q.12-

A number is divisible by 28. Find all the other numbers which divide the given number.

Ans - Factors of 28

= 1, 2, 4, 7, 14, 28
= 28. Number is divisible by 28 then it will be divided by 1, 2, 4, 7, 14 and 28.



Date: 27/07/19

Chapter 3
Playing with
Numbers

Exercise - 32

Q.1- Find the common factors of:

a- 42 and 98

Ans- Factors of 42 = 1, 2, 3, 6, 7, 14, 21, 42

Factors of 98 = 1, 2, 7, 14, 49, 98

Common factors = 1, 2, 7, 14

b- 72 and 112

Ans- Factors of 72 = 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72

Factors of 112 = 1, 2, 4, 7, 8, 14, 16, 28, 56, 112

72 112

1 x 72 1 x 112

2 x 36 2 x 56

3 x 24 4 x 28

4 x 18 8 x 14

6 x 12 7 x 16

8 x 9 8 x 14

Common factors = 1, 2, 4, 8, 16

Q.2- Find the prime factorization of:

a- 252

2 252

2 126

3 63

3 21

7 7

1 1

252 = 2 x 2 x 3 x 3 x 7

b- 270

2 270

3 135

3 45

3 15

5 5

1 1

270 = 2 x 3 x 3 x 3 x 5

c- 756

2 756

2 378

3 126

3 63

3 21

7 7

756 = 2 x 2 x 3 x 3 x 3 x 7

Q- 3024

2	3024
2	1512
2	756
2	378
3	189
3	63
3	21
7	7
	1

$$3024 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 7$$

E- 504

2	504
2	252
2	126
3	63
3	21
7	7
	1

$$504 = 2 \times 2 \times 2 \times 3 \times 3 \times 7$$

f- 540

2	540
2	270
3	135
3	45
3	15
5	5
	1

$$540 = 2 \times 2 \times 3 \times 3 \times 3 \times 5$$

Q- 5400

2	5400
2	2700
2	1350
3	675
3	225
3	75
5	25
5	5
	1

$$5400 = 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5 \times 5$$

h- 4356

2	4356
2	2178
3	189
3	63
3	21
7	7
	1

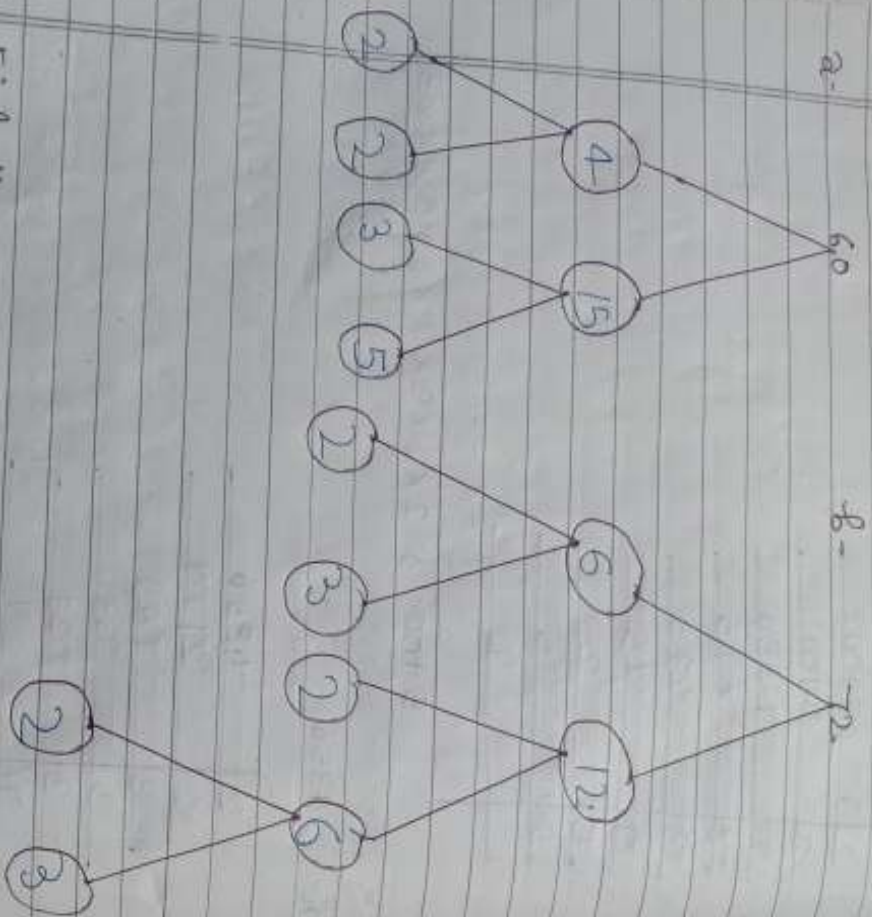
$$4356 = 2 \times 2 \times 3 \times 3 \times 3 \times 7$$

Q3- Will the H.C.F of the following

numbers using?

Q3- Will in the blanks in the factor

Trees given below:



Q4- Find the HCF of the following numbers using

i) Prime factorisation

ii) 144, 234

2	144	2	234
2	72	3	147
2	36	3	39

2	48	13	43
3	9		4
3	3		
4			

$$444 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$$

$$234 = 2 \times 3 \times 3 \times 13$$

$$\text{HCF} = 2 \times 3 \times 3$$

$$= 18$$

iii) 208 and 420

2	208	2	420
2	104	2	210
2	52	3	70
2	26	5	14
2	13		
3	9		
3	3		
4			

$$208 = 2 \times 2 \times 2 \times 2 \times 2 \times 13$$

$$420 = 2 \times 2 \times 3 \times 5 \times 7$$

$$\text{HCF} = 2 \times 2 \times 2$$

$$= 8$$

(iii) 224, 210, 280

2	224	2	210	2	280
2	412	3	45	2	140
2	56	5	5	2	70
2	28	4	58	35	
2	14	7	7	7	
7	7			7	
7					

224 - $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 7$
 210 - $2 \times 3 \times 5$
 280 - $2 \times 2 \times 2 \times 5 \times 7$

HCF - 2

(iv) 312, 272 and 336

2	312	2	272	2	336
2	156	2	136	2	168
2	78	2	68	2	84
3	26	2	34	2	42
13	13	17	17	3	21
1		1	7	7	
				7	

312 - $2 \times 2 \times 2 \times 2 \times 3 \times 13$
 272 - $2 \times 2 \times 2 \times 2 \times 17$
 336 - $2 \times 2 \times 2 \times 2 \times 3 \times 7$
 HCF - $2 \times 2 \times 2$

6. Division method :

Q1) 224, 144, 234
 Ans. $144 \nmid 234$

$90 \nmid 144$
 $54 \nmid 90$
 $36 \nmid 54$

HCF - 18

$18 \nmid 36$
 XX

Q2) 208 and 420

Ans. $208 \nmid 420$
 $132 \nmid 208$
 $24 \nmid 132$
 $12 \nmid 24$
 XX

HCF - 12

$12 \nmid 24$
 XX

Q.iii) 224, 240, 280
Ans: 210

$$\begin{array}{r} 210 \overline{) 224, 240, 280} \\ -210 \\ \hline 14 \end{array}$$

$$\begin{array}{r} 210 \overline{) 210} \\ -210 \\ \hline 0 \end{array}$$

HCF = 14

$$\begin{array}{r} 210 \overline{) 210} \\ -210 \\ \hline 0 \end{array}$$

Q.ii) 312, 272 and 336
Ans: 272

$$\begin{array}{r} 272 \overline{) 312} \\ -272 \\ \hline 40 \end{array}$$

$$\begin{array}{r} 272 \overline{) 272} \\ -272 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 272 \overline{) 336} \\ -272 \\ \hline 64 \end{array}$$

$$\begin{array}{r} 272 \overline{) 272} \\ -272 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 272 \overline{) 336} \\ -272 \\ \hline 64 \end{array}$$

$$\begin{array}{r} 272 \overline{) 336} \\ -272 \\ \hline 64 \end{array}$$

HCF = 8

Q.5 Find the LCM of the following numbers using:

a. Prime factorisation.

Q.ii) 84, 90 and 252

2	84	2	90	2	252
2	42	3	45	2	126
3	21	3	15	3	63
7	7	5	5	3	21
	1	1	1	1	1

$$\begin{array}{l} 84 = 2 \times 2 \times 3 \times 7 \\ 90 = 2 \times 3 \times 3 \times 5 \\ 252 = 2 \times 2 \times 3 \times 3 \times 7 \end{array}$$

$$\text{LCM} = 2 \times 3 \times 2 \times 3 \times 2 \times 7 \times 5 \times 3 \times 7 = 540$$

Q.iii) 64, 84 and 18

2	64	2	84	2	18
2	32	2	42	3	9
2	16	3	21	3	3
2	8	7	7	1	1
2	4				
2	2				
	1				

$$64 - 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$84 - 2 \times 2 \times 3 \times 7$$

$$180 - 2 \times 3 \times 3 \times 5$$

$$LCM = 2 \times 2 \times 2 \times 3 \times 3 \times 2 \times 2 \times 2 \times 7$$

$$= 4032$$

(iv) 45, 78 and 15

3	45	2	78	3	15
3	15	3	39	5	5
5	5	13	13	4	4
4	4		4		

$$45 - 3 \times 3 \times 5$$

$$78 - 2 \times 3 \times 13$$

$$15 - 3 \times 5$$

$$LCM = 3 \times 3 \times 2 \times 5 \times 13$$

$$= 1170$$

(v) 64, 84 and 180

2	64	2	84	2	180
2	32	2	42	2	90
2	16	3	21	3	45
2	8	7	7	3	15
2	4	7	7	5	5
2	2	4	4	5	5

$$64 - 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$84 - 2 \times 2 \times 3 \times 7$$

$$180 - 2 \times 2 \times 3 \times 3 \times 5$$

$$LCM = 2 \times 2 \times 3 \times 3 \times 5 \times 7 \times 2 \times 2 \times 2 \times 2$$

$$= 20160$$

Q. 6 = Given two numbers.

B) Common division

(i)

2	84, 90, 252
2	42, 45, 126
3	21, 15, 63
3	7, 5, 21
5	7, 5, 7
7	7, 4, 7
	1, 1, 1

$$LCM = 2 \times 2 \times 3 \times 3 \times 5 \times 7$$

$$= 1260$$

(ii) 64, 84 and 180

2	64, 84, 180
2	32, 42, 90
2	16, 21, 45
2	8, 21, 9
2	4, 21, 9
2	2, 21, 9

3	1, 21, 9
3	1, 7, 3
7	1, 7, 1
	1, 1, 1

$$\text{Lcm} - 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 7$$

$$= 4032$$

(iii) 45, 78 and 15

2	45, 78, 15
3	45, 30, 15
3	15, 13, 5
5	5, 13, 5
13	1, 13, 1
	1, 13, 1

$$\text{Lcm} - 2 \times 3 \times 3 \times 5 \times 13$$

$$= 1170$$

