St. Andrews Scots Sr. Sec. School

9th Avenue, I.P. Extension, Patparganj, Delhi -110092 Session: 2024-2025

Class: V Subject: | Mathematics **Topic:** unit 4- Factors and Multiples Question to be done:-Introduction of chapter Warm up Properties of Factors and Multiple(n/b) (H.W) **Ex:-4A** Divisibility Test of 2,3,4,5,6,7,8,9,10,11 **Q1**- a, c, e (notebook) Q2- a, c, e(notebook) **Q3**- a, d (notebook) **Q4-** a, c, f, h (notebook) **Q5**- a, d, f, h (notebook) **Q6**- a, c(notebook) **Q7-** a, c, e (notebook) **Q8-** a, d (notebook) **Q9-** a(notebook) (H. W) Q10- a (notebook) (H. W) **Ex:-4B** Introduction of Prime, co-prime and composite no. (notebook) Q1,Q2,Q3 - (notebook) **Q4**- (notebook)(H. W) **Q6-** a, c, e(notebook) **Q7-** a, c, e (notebook) **Q8-** (book) **Ex:-4C Q1-** a, c, f (notebook) **Q2-** b, d, f (notebook) Q3- a, d, f (notebook) Ex:-4D**Q1**- a, c, f (notebook) Q2-b, d, e (notebook) **Ex:-4E** Properties of HCF and LCM(notebook) (H. W) **Q1**- (book) Q3, Q5, Q6, Q7, Q9, Q10(notebook) WORKSHEET

Exercise 4A

- 1. (a) 7, 14, 21, 28 and 35
- (b) 13, 26, 39, 52 and 65
- (c) 19, 38, 57, 76 and 95
- (d) 23, 46, 69, 92 and 115
- (e) 32, 64, 96, 128 and 160
- . (a) Factors of 20 are 1, 2, 4, 5, 10 and 20.
 - (b) Factors of 45 are 1, 3, 5, 9, 15 and 45.
 - (c) Factors of 36 are 1, 2, 3, 4, 6, 9, 12, 18 and 36.
 - (d) Factors of 63 are 1, 3, 7, 9, 21 and 63.
 - (e) Factors of 54 are 1, 2, 3, 6, 9, 18, 27 and 54.
- **3.** (a) 26412

Its ones digit is 2, so it is divisible by 2.

Now, 2 + 6 + 4 + 1 + 2 = 15, which is divisible by 3. So, the given number is also divisible by 3.

The given number is divisible by 2 and 3. So, it is also divisible by 6.



Its ones digit is 6. So it is divisible by 2.

Now, 8 + 3 + 1 + 6 = 18, which is divisible by 3. So, the given number is also divisible by 3.

The given number is divisible by 2 and 3. So, it is also divisible by 6.

(c) 17703

Its ones digit is 3. So, it is not divisible by 2. 1 + 7 + 7 + 0 + 3 = 18, which is divisible by 3. The given number is not divisible by 2. So, it is not divisible by 6.

(d) 23758

Its ones digit is 8. So, the given number is divisible by 2. 2 + 3 + 7 + 5 + 8 = 25, which is not divisible by 3. So, the given number is not divisible by 3.

Since, the given number is not divisible by 2 and 3.

Thus, it is also not divisible by 6.

4. (a) 34156

The digits at tens and ones place is 56 which is divisible by 4. So the given number is divisible by 4.

The last three digits (hundreds, tens, ones) are 156 which is not divisible by 8. So the given number is not divisible by 8.

(b) 82083

The last two digits are 83 which is not divisible by 4. So the number is not divisible by 4.

The last three digits are 083 which is not divisible by 8. So the given number is not divisible by 8 also.

(c) 90432

The last two digits 32 is divisible by 4. So the given number is divisible by 4.

The last three digits 432 is divisible by 8. So the given number is also divisible by 8.

(d) 10568

The last two digits 68 is divisible by 4. So the given number is divisible by 4

The last three digits 568 is divisible by 8. So the given number is divisible by 8.

(e) 63152

The last two digits 52 is divisible by 4. So the given number is divisible by 4.

The last three digits 152 is divisible by 8. So the given number is also divisible by 8.

(f) 796504

The last two digits 04 is divisible by 4. So the given number is also divisible by 4.

The last three digits 504 is divisible by 8. So the given number is divisible by 8.

(g) 97312

The last two digits 12 is divisible by 4. So the given number is divisible by 4.

The last three digits 312 is divisible by 8. So the given number is divisible by 8 also.

(h) 69704

The last two digits 04 is divisible by 4. So the given number is divisible by 4.

The last three digits 704 is divisible by 8. So the given number is also divisible by 8.

5. (a) 6251

 $625 - (1 \times 2) = 625 - 2 = 623$, which is divisible by 7. Thus, 6251 is divisible by 7.

- (b) 8036 $803 - (6 \times 2) = 803 - 12 = 791$, which is divisible by 7. Thus, 8036 is divisible by 7.
- (c) 39886 $3988 - (6 \times 2) = 3988 - 12 = 3976$, which is divisible by 7. Thus, 39886 is also divisible by 7.
- (d) 32556 $3255 - (6 \times 2) = 3255 - 12 = 3243$, which is not divisible by 7. Thus, 32556 is not divisible by 7.
- (e) 90381 $9038 - (1 \times 2) = 9038 - 2 = 9036$, which is not divisible by 7. So, 90381 is not divisible by 7.
- (f) 6741 $674 - (1 \times 2) = 674 - 2 = 672$, which is divisible by 7. So, 6741 is divisible by 7.
- (g) 7833 $783 - (3 \times 2) = 783 - 6 = 777$, which is divisible by 7. So, 7833 is divisible by 7.
- (h) 67578 $6757 - (8 \times 2) = 6757 - 16 = 6741$, which is divisible by 7. So, 67578 is divisible by 7.



- 6. (a) 30627 3 + 0 + 6 + 2 + 7 = 18, which is divisible by 9. So, 30627 is divisible by 9.
 - (b) 8146 8+1+4+6=19, which is not divisible by 9. So, 8146 is not divisible by 9.
 - (c) 50211 5+0+2+1+1=9, which is divisible by 9. So, 50211 is divisible by 9.
 - (d) 50795 + 0 + 7 + 9 = 21, which is not divisible by 9. So, 5079 is not divisible by 9.
 - (e) 962019 + 6 + 2 + 0 + 1 = 18, which is divisible by 9. So, 96201 is divisible by 9.
- 7. (a) 950: Its ones digit is 0. So it is divisible by 5 and 10 both.
 - (b) 3040: Its ones digit is 0. So it is divisible by 5 and 10 both.
 - (c) 27505: Its ones digit is 5. So it is divisible by 5 only and not by 10.

(a) 83193

Sum of the digits at odd place = 8 + 1 + 3 = 12Sum of the digits at even place = 3 + 9 = 12Their difference = 12 - 12 = 0Thus, 83193 is divisible by 11.

(b) 202202

Sum of the digits at odd place = 2 + 2 + 0 = 4Sum of the digits at even place = 0 + 2 + 2 = 4Their difference = 4 - 4 = 0Thus, 202202 is divisible by 11.

Sum of the digits at odd place = 1 + 6 + 9 = 16Sum of the digits at even place = 0 + 1 + 4 = 5Their difference = 16 - 5 = 11, which is a multiple of 11. Thus, 106194 is divisible by 11.

(d) 35064

Sum of the digits at odd place = 3 + 0 + 4 = 7Sum of the digits at even place = 5 + 6 = 11Difference = 11 - 7 = 4, which is not a multiple of 11. Thus, 35064 is not divisible by 11.



- (a) 70, 72, 74, 76, 78, 80, 82, 84, 86 and 88.
 - (b) 3120, 3122, 3124, 3126, 3128, 3130, 3132, 3134, 3136 and 3138
- **10.** (a) 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 149
 - (b) 9893, 9895, 9897, 9899, 9901, 9903, 9905, 9907, 9909, 9911, 9913

Exercise 4B

- Prime numbers: 3, 7, 29, 61, 73, 89, 97
- 2. 53, 59, 61, 67, 71, 73, 79, 83, 89, 97
- 3. 41 and 43
- 4. (2, 3), (3, 5), (5, 7), (7, 11), (11, 13)... so on
- 90, 91, 92, 93, 94, 95 and 96 5.
- 6. (a) 900

2	900
2	450
3	225
3	75
5	25
5	5
	1

(b) 216

2	216
2	108
2	54
3	27
3	9
3	3
	1

$$900 = 2 \times 2 \times 3 \times 3 \times 5 \times 5$$

 $216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$

(c)	728	
	2	728
	2	364
	2	182
	7	91
	13	13
		1

(d) 450

2	450
3	225
3	75
5	25
5	5
	1

$$728 = 2 \times 2 \times 2 \times 7 \times 13$$
 $450 = 2 \times 3 \times 3 \times 5 \times 5$

(e) 432

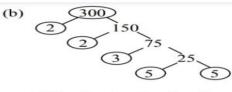
2	432
2	216
2	108
2	54
3	27
3	9
3	3
	1

$$432 = 2\times2\times2\times2\times3\times3\times3$$



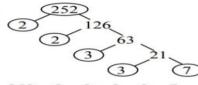


$$420 = 2 \times 2 \times 3 \times 5 \times 7$$

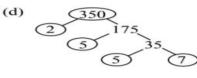


$$300 = 2 \times 2 \times 3 \times 5 \times 5$$

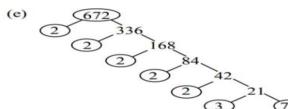




$$252 = 2 \times 2 \times 3 \times 3 \times 7$$



$$350 = 2 \times 5 \times 5 \times 7$$



$$672 = 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 7$$

Exercise 4C

$$\begin{array}{c|c}
16 & 24 & 1 \\
-16 & 8 & 16 & 2 \\
\hline
 & & & & \\
\hline
 & & & & \\
 & & & & \\
\hline
 & & & & \\
 & & & & \\
\hline
 & & & & \\
\end{array}$$

HCF of 16 and 24 is 8.



(c) 33 and 44

HCF of 33 and 44 is 11.

(e) 38, 57 and 76

Let us take 38 and 57

$$\begin{array}{c}
38) 57 & (1 \\
-38 \\
\hline
19) 38 & (2 \\
-38 \\
\hline
0
\end{array}$$

HCF of 38 and 57 is 19.

Now, we will find HCF of

19 and 76

Hence, HCF of 38, 57 and 76 is 19.

(d) 64 and 80

HCF of 64 and 80 is 16.

(f) 54, 72 and 90

Let us take 54 and 72

$$\begin{array}{c|c}
54 & 72 & 1 \\
-54 & & \\
\hline
18) & 54 & 3 \\
-54 & & \\
\hline
0
\end{array}$$

HCF of 54 and 72 is 18.

Now, we will find HCF of

18 and 90

Hence, HCF of 54, 72 and 90 is 18.

2	72	2	126	
2	36	3	63	$72 = 2 \times 2 \times 2 \times 3 \times 3$
2	18	3	21	$126 = 2 \times 3 \times 3 \times 7$
3	9	7	7	$HCF = 2 \times 3 \times 3$
3	3		1	
	1			= 18

2	40	2	80	2	96	
2	20	2	40	2	48	
2	10	2	20	2	24	$40 = 2 \times 2 \times 2 \times 5$
5	5	2	10	2	12	$80 = 2 \times 2 \times 2 \times 2 \times 5$
	1	5	5	2	6	$96 = 2 \times 2$
			1	3	3	$HCF = 2 \times 2 \times 2 = 8$



(c) 66 and 198

2	66	2	198	
3	33	3	99	$66 = 2 \times 3 \times 1$
11	11	3	33	$198 = 2 \times 3 \times 3 \times 11$
	1	11	11	$HCF = 2 \times 3 \times 11 =$
			1	

(d) 24, 40 and 56

2	24	2	40	2	56	
2	12	2	20	2	28	$24 = 2 \times 2 \times 2 \times 3$
2	6	2	10	2	14	$40 = 2 \times 2 \times 2 \times 5$
3	3	5	5	7	7	$56 = 2 \times 2 \times 2 \times 7$
,	1		1		1	$HCF = 2 \times 2 \times 2 = 8$

(e) 54 and 114

2	54	2	114	
3	27	3	57	$54 = 2 \times 3 \times 3 \times 3$
3	9	19	19	$114 = 2 \times 3 \times 19$
3	3		1	
	1		50	$HCF = 2 \times 3 = 6$

(f) 130 and 208

2	130	2	208	
5	65	2	104	$130 = 2 \times 5 \times 13$
13	13	2	52	$208 = 2 \times 2 \times 2 \times 2 \times 13$
	1	2	26	$208 = 2 \times 2 \times 2 \times 2 \times 13$
		13	13	$HCF = 2 \times 13 = 26$
			1	

3. (a) 132, 154

$$\begin{array}{r}
132)154 & (1 \\
-132 \\
\hline
22) 132 & (6 \\
-132 \\
\hline
0
\end{array}$$

HCF of 132 and 154 is 22.

(b) 84, 120
84) 120 (1

$$-84$$

 $\overline{}$ 84 (2
 -72
 $\overline{}$ 12) 36 (3
 $\overline{}$ 36

HCF of 84 and 120 is 12.

HCF of 594 and 792 is 198.

(c)
$$105 \text{ and } 230$$
 $105) 230 (2$
 -210
 $20) 105 (5$
 -100
 $5) 20 (4$
 -20
 0

HCF of 105 and 230 is 5.

HCF of 216 and 630 is 18.

(f) 275 and 525
275)
$$525$$
 (1
 $-\frac{275}{250}$) 275 (1
 $-\frac{250}{25}$) 250 (10
 $-\frac{250}{0}$

HCF of 275 and 525 is 25.

Exercise 4D

1. (a) 120, 180 and 280

2	120	2	180	2	280
2	60	2	90	2	140
2	30	3	45	2	70
3	15	3	15	5	35
5	5	5	5	7	7
	1		1		1

$$180 = 2 \times 2 \times 3 \times 3 \times 5$$

 $280 = 2 \times 2 \times 2 \times 5 \times 7$
 $LCM = 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 7$
 $LCM = 2520$

 $120 = 2 \times 2 \times 2 \times 3 \times 5$

(b) 30, 150 and 210

2	30	2	150	2	210
3	15	3	75	3	105
5	5	5	25	5	35
	1	5	5	7	7
2.5			1		1

(c) 75, 125 and 375

$$30 = 2 \times 3 \times 5$$

$$150 = 2 \times 3 \times 5 \times 5$$

$$210 = 2 \times 3 \times 5 \times 7$$

$$LCM = 2 \times 3 \times 5 \times 5 \times 7 = 1050$$

$$75 = 3 \times 5 \times 5$$

$$125 = 5 \times 5 \times 5$$

$$375 = 3 \times 5 \times 5 \times 5$$

$$LCM = 3 \times 5 \times 5 \times 5 = 375$$

$$102 = 2 \times 3 \times 17$$

$$102 = 2 \times 3 \times 17$$
$$136 = 2 \times 2 \times 2 \times 17$$

$$170 = 2 \times 5 \times 17$$

$$LCM = 2 \times 2 \times 2 \times 3 \times 5 \times 17$$

$$= 2040$$

10)	06	144	and	102
(0)	20.	144	and	172

	2	96	2	144	2	192	$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$	
	2	48	2	72	2	96	$5 144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$	
	2	24	2	36	2	48	$\overline{3} 192 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3$;
	2	12	2	18	2	24		3
	2	6	3	9	2	12	2)
	3	3	3	3	2	6	= 576	
	25	1		1	3	3	3	
(f)	60, 7	72, 90 a	and 1	80		1		
	2	60	2	72		2	90 2 180	

2	00	2	12	2	90	2	180	
2	30	2	36	3	45	2	90	
3	15	2	18	3	15	3	45	
5	5	3	9	5	5	3	15	
	1	3	3		1	5	5	
			1				1	
60 =	2 × 2 >	$<3\times5$			72	$= 2 \times$	$2 \times 2 \times$	3×3
90 =	$2 \times 3 >$	$< 3 \times 5$	i.		180	0=2	\times 2 \times 3	\times 3 \times 5
LCM	$1 = 2 \times$	2×2	\times 3 \times 3	\times 5 = 3	360			



2. (a) 108, 120 and 132 (b) 56, 140 and 210

2	108,	120,	132
2	54,	60,	66
3	27,	30,	33
3	9,	10,	11
3	3,	10,	11
2	1,	10,	11
5	1,	5,	11
11	1,	1,	11
	1,	1.	1

| 1, 1. 1

$$LCM = 2 \times 2 \times 3 \times 3 \times 3 \times 2 \times 5 \times 11 = 11880$$

(c) 21, 27 and 30

3	21,	27,	30
3	7,	9,	10
3	7,	3,	10
2	7,	1,	10
5	7,	1,	5
7	7,	1,	1
	1,	1,	1

2	56,	140,	210
2	28,	70,	105
2	14,	35,	105
5	7,	35,	105
7	7,	7,	21
3	1,	1,	3
	1,	1,	1

$$LCM = 2 \times 2 \times 2 \times 3 \times 5 \times 7 = 840$$

(d) 75, 125 and 150

3	75,	125,	150
5	25,	125,	50
5	5,	25,	10
5	1,	5,	2
2	1,	1,	2
	1,	1,	1

$$LCM = 2 \times 3 \times 5 \times 5 \times 5 = 750$$

$$LCM = 2 \times 3 \times 3 \times 3 \times 5 \times 7 = 1890$$

715,	810,	100
715,	405,	50
715,	405,	25
715,	135,	25
143,	27,	5
143,	27,	1
143,	9,	1
143,	3,	1
143,	1,	1
13,	1,	1
1,	1.	1
	715, 715, 715, 143, 143, 143, 143, 143,	715, 405, 715, 135, 143, 27, 143, 27, 143, 9, 143, 3, 143, 1, 13, 1,

2		650, 325,	920
2	_	325,	230
5	65,	325,	115
5	13,	65,	23
13	13,	13,	23
23	1,	1,	23
	1,	1,	1

$$LCM = 2 \times 2 \times 2 \times 5 \times 5 \times 13 \times 23$$
$$= 59800$$

$$LCM = 2 \times 2 \times 3 \times 3 \times 3 \times 3 \times 5 \times 5 \times 11 \times 13 = 1158300$$

Exercise 4E

- 1. (a) 224
- (b) 156 (c) Yes
- (d) product (e) 56
- 2. Product of two numbers = 756

$$HCF = 6$$
, $LCM = ?$

LCM of two numbers =
$$\frac{1^{\text{st}} \text{ number} \times 2^{\text{nd}} \text{ number}}{\text{HCF of given numbers}}$$

$$LCM = \frac{756}{6} = 126$$

Thus, LCM of two given numbers = 126

3. HCF = 15, LCM = 315, 1^{st} number = 45, 2^{nd} number = ?

$$1^{st}$$
 number \times 2^{nd} number = LCM \times HCF

$$45 \times 2^{\text{nd}} \text{ number} = 315 \times 15$$

$$2^{\text{nd}} \text{ number} = \frac{\cancel{315} \times \cancel{15}}{\cancel{45}} = 105$$

$$2^{nd}$$
 number = 105

4. LCM of 15, 20, 25

3	15,	20,	25
5	5,	20,	25
5	1,	4,	5
2	1,	4,	1
2	1,	2,	1
	1,	1,	1

$$LCM = 2 \times 2 \times 3 \times 5 \times 5 = 300$$

Thus, least number of roses
$$= 300$$

5. LCM of 3, 4, 5

$$LCM = 3 \times 4 \times 5$$

$$LCM = 60$$

Thus, they all ring together after 60 minutes or 1 hour Hence, they all ring together again at 9 a.m.

6. The greatest number that divides 47, 77 and 89 leaving the

It means HCF of
$$47 - 5 = 42$$
, $77 - 5 = 72$, $89 - 5 = 84$

Let us take 42 and 72

$$\begin{array}{c|c}
-42 & 1 \\
-42 & 30 & 42 & 1 \\
\hline
-30 & 12 & 30 & 2 \\
\hline
-24 & 6 & 12 & 2 \\
\hline
-12 & 2
\end{array}$$



HCF of 42 and 72 is 6.

Now we will find the HCF of 6 and 84

So, the HCF of 42, 72 and 84 is 6.

Hence, the required number = 6

7. Smallest number divisible by 24, 48 and 64, i.e.,

LCM of 24, 48 and 64

2	24,	48,	64
2	12,	24,	32
2	6,	12,	16
2	3,	6,	8
2	3,	3,	4
2	3,	3,	2
3	3,	3,	1
	1,	1,	1

 $LCM = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 = 192$

Thus, required number = 192 + 2 = 194

$$\begin{array}{r}
56 \overline{\smash{\big)}\,140} \ (2 \\
-112 \\
28 \overline{\smash{\big)}\,56} \ (2 \\
\underline{-56} \\
0
\end{array}$$

HCF of 56 and 140 is 28.

So, required length of tape = 28 cm

9. HCF of 28, 42 and 56

Let us take 28 and 42 $\frac{1}{28}\sqrt{42}$

HCF of 28 and 42 = 14

Now, we will find the HCF of 14 and 56

$$\begin{array}{r}
14) 56 (4) \\
-56 \\
\hline
0
\end{array}$$

So, the HCF of 28, 42 and 56 is 14.

Hence greatest length of each plank = 14 m

10. HCF of 36, 48 and 60

Let us take 36 and 48

$$\begin{array}{r}
36 \overline{\smash{\big)}\ 48} \ (1 \\
-36 \\
\hline
12 \) 36 \ (3 \\
\underline{-36} \\
0
\end{array}$$

HCF of 36 and 48 = 12

Now, we will find the HCF of 12 and 60

$$12 \int 60 (5 - 60)$$

So, the HCF of 36, 48 and 60 is 12.

Hence the required number of pots is 12.