

**Solution**

**CLASS 6 MATHEMATICS WORKSHEET - PLAYING WITH NUMBERS**

**Class 06 - Mathematics**

**Section A**

1. (c) 33  
**Explanation:** 33 is a composite number as it has factors other than 1 and itself. Factors of 33 are 1,3,11,33.
2. (a)  $3 \times 3 \times 11$   
**Explanation:**  $3 \times 3 \times 11$
3. (b) infinite  
**Explanation:** The multiple of any number is infinite as a number can multiply till infinite.
4. (b) 11  
**Explanation:** Sum of first 10 even numbers =  $2 + 4 + 6 + 8 + 10 + 12 + 14 + 16 + 18 + 20$   
= 110  
Average =  $\frac{110}{10}$   
= 11
5. (b) 75  
**Explanation:**  
We have,  

2	180
2	90
3	45
3	15
5	5
	1

  
 $\therefore$  The factors of 180 =  $2 \times 2 \times 3 \times 3 \times 5$   
 $\therefore$  75 does not divide 180  
 $\therefore$  75 can not be the HCF of the numbers whose LCM is 180.
6. (a) 3  
**Explanation:** Prime numbers less than 15 are 2, 3, 5, 7, 11, 13  
Where super primes are  
 $2 (2^2 - 1 = 3)$   
 $3 (3^2 - 1 = 5)$   
 $7 (7^2 - 1 = 13)$   
 $\therefore$  Number of super primes less than 15 are 3.
7. (a) 4  
**Explanation:**  $68 = 2 \times 2 \times 17$ ;  $4 = 2 \times 2$  and  $12 = 2 \times 2 \times 3$   
So, HCF of 68, 4 and 12 is 4.
8. (d) 114345  
**Explanation:** Given a number is divisible by 99. Now, going through the options, we observe that the number 114345 is divisible by 9 and 11 both as the sum of digits of the number is divisible by 9 and sum of digits at odd places = sum of digits at even places.

9.

(b) None of these

**Explanation:** The measurement of longest tape = H.C.F. of 825 cm, 675 cm and 450 cm.

Factors of 825 =  $3 \times 5 \times 5 \times 11$

Factors of 675 =  $3 \times 5 \times 5 \times 3 \times 3$

Factors of 450 =  $2 \times 3 \times 3 \times 5 \times 5$

H.C.F. =  $3 \times 5 \times 5 = 75$  cm

Therefore, the longest tape is 75 cm.

10.

(c) 216

**Explanation:**

First we have to find out common multiples of 3, 4 and 9

For that find L.C.M of 3, 4 and 9

$$\begin{array}{r|l} 3 & 3, 4, 9 \\ \hline & 1, 4, 3 \end{array}$$

L.C.M (3, 4, 9) =  $3 \times 4 \times 3 = 36$

Now multiples of 36 = {36, 72, 108, .....}

Sum of first three common multiples of 3, 4 and 9 =  $36 + 72 + 108 = 216$

### Section B

11. (a) True

**Explanation:** True

12.

(b) False

**Explanation:** False

13.

(b) False

**Explanation:** False

14. 1. Prime, Composite,

15. 1. 0, 5

16. 1. Composite number

17.

(d) A is false but R is true.

**Explanation:** Because 108 is not divisible by 5 as it's ones place has 8.

18. (a) Both A and R are true and R is the correct explanation of A.

**Explanation:** As factors of 2 = 2, 1

Factors of 3 = 3, 1

Factors of 5 = 5, 1

19.

(b) Both A and R are true but R is not the correct explanation of A.

**Explanation:** Because the Highest Common Factor(HCF) of two or more given numbers is the highest (or greatest) of their common factors whereas the Lowest Common Multiple (LCM) of two or more given numbers is the lowest (or smallest or least) of their common multiples so both assertion and reason are correct but not correct explanation.

20.

(b) Both A and R are true but R is not the correct explanation of A.

**Explanation:** Both A and R are correct but they do not give explanation of each other

### Section C

21. 17 and 68 :

$$1 \times 17 = 17$$

Factors of 17 are 1 and 17.

$$1 \times 68 = 68 ; 2 \times 34 = 68 ; 4 \times 17 = 68$$

Factors of 68 are 1, 2, 4, 17, 34 and 68.

$\therefore$  Common factors of 17 and 68 are 1 and 17.

$\therefore$  17 and 68 have two common factors.

$\therefore$  17 and 68 are not co-prime numbers.

22. Here we have

$$68 = 1 \times 68$$

$$68 = 2 \times 34$$

$$68 = 4 \times 17$$

$$68 = 17 \times 4$$

Stop here, as 4 and 17 have already occurred.

Thus, the factors of 68 are 1, 2, 4, 17, 34 and 68.

23. LCM - Lowest common multiple

The LCM of two numbers is the smallest number that is a multiple of both the numbers, and can be obtained as follows:

2	9, 4
2	9, 2
3	9, 1
3	3, 1
	1, 1

$$\text{LCM} = 2 \times 2 \times 3 \times 3 = 36$$

24. (a) The H.C.F. of two consecutive numbers is 1.

Example : 5 & 6 ; their HCF is 1

(b) The H.C.F. of two consecutive even number is 2.

Example : 4 & 6 :

Factors of 4 are 1 , 2 , 4

Factors of 6 are 1 , 2 , 3 , 6. their HCF is 2.

(c) The H.C.F. of two consecutive odd numbers is 1.

Example : 3 & 5 . Both are co-prime numbers so their HCF is 1.

25. i. We have, 4096 since, the last two digits 96 is divisible by 4

$\therefore$  4096 must be divisible by 4.

ii. We have, 21084 since, the last two digits 84 is divisible by 4

$\therefore$  21084 must be divisible by 4.

iii. We have, 31795012 since, the last two digits 12 is divisible by 4

$\therefore$  31795012 must be divisible by 4.

26.  $1 \times 18 = 18 ; 2 \times 9 = 18 ; 3 \times 6 = 18$

Factors of 18 are 1, 2, 3, 6, 9 and 18.

$$1 \times 35 = 35 ; 5 \times 7 = 35$$

Factors of 35 are 1, 5, 7 and 35.

$\therefore$  Common factor of 18 and 35 is 1.

$\therefore$  18 and 35 have only 1 as the common factor.

$\therefore$  18 and 35 are co-prime numbers.

27. Multiples of 3 are 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63, 66, 69, 72, 75, 78, 81, 84, 87, 90, 93, 96, 99, 102, 105, 108, .....

Multiples of 4 are 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100, 104, 108, .....

$\therefore$  Common multiples of 3 and 4 are 12, 24, 36, 48, 60, 72, 84, 96, 108, ....

$\therefore$  All the numbers less than 100 which are common multiples of 3 and 4 are 12, 24, 36, 48, 60, 72, 84 and 96.

28. The greatest four-digit number is 9999.

$$\begin{array}{r|l}
 3 & 9999 \\
 \hline
 3 & 3333 \\
 \hline
 11 & 1111 \\
 \hline
 101 & 101 \\
 \hline
 & 1
 \end{array}$$

$$\therefore 9999 = 3 \times 3 \times 11 \times 101$$

29.  $1 \times 5 = 5$

Factors of 5 are 1 and 5.

$$1 \times 15 = 15 ; 3 \times 5 = 15$$

Factors of 15 are 1, 3 and 5.

$$1 \times 25 = 25 ; 5 \times 5 = 25$$

Factors of 25 are 1, 5 and 25.

Hence, the common factors of 5, 15 and 25 are 1 and 5.

30. Quantity of fruit juice in a vessel = 13 L 200 mL =  $(13 \times 1000 + 200)$  mL = 13200 mL

Capacity of one glass = 60 mL

$$\therefore \text{The required number of glasses} = 13200 \div 60 = 220$$

Therefore, 220 glasses can be filled by fruit juice.

### Section D

31. a. Divisibility by 4

The number formed by last two digits = 52

$$\begin{array}{r}
 4 \overline{) 52} \quad (13 \\
 \underline{4} \phantom{0} \\
 12 \\
 \underline{12} \\
 0
 \end{array}$$

$\therefore$  Remainder is 0

$\therefore$  52 is divisible by 4

$\therefore$  726352 is divisible by 4 because a no. is divisible by 4 if the no. formed by its last two digits i.e (ones and tens) is divisible by 4

b. Divisibility by 8.

The number formed by last three digits = 352

$$\begin{array}{r}
 8 \overline{) 352} \quad (44 \\
 \underline{32} \\
 32 \\
 \underline{32} \\
 0
 \end{array}$$

$\therefore$  Remainder is 0

$\therefore$  352 is divisible by 8.

$\therefore$  726352 is divisible by 8 because a no. with four or more digits is divisible by 8 if the no. formed by its last three digits is divisible by 8.

32. (i) Divisibility by 4.

The number formed by last two digits = 00,

which is divisible by 4

$\therefore$  6000 is divisible by 4 because a no. is divisible by 4 if the no. formed by its last two digits (i.e ones and tens) is divisible by 4.

(ii) Divisibility by 8.

The number formed by last three digits = 000,

which is divisible by 8.

$\therefore$  6000 is divisible by 8 because a no. is divisible by 8 if the no. formed by its last three digits is divisible by 8.

33. i. Yes, last two digits number is divisible by 4.

ii. No, last two digits number is not divisible by 4.

iii. Yes, last two digits number is not divisible by 4.

34. i. No, because last three digits numbers is not divisible by 8.

ii. Yes, because last three digits number is divisible by 8.

iii. No, because last three digits number is divisible by 8.

35. Factors of 35 are 1, 5, 7, 35.

Factors of 45 are 1, 3, 5, 9, 15, 45.

Common factors are 1 and 5.

The highest common factor is 5.

Therefore H.C.F of 35 and 45 is 5.

### Section E

36. The minimum number of pencils required to make sets of 30, 25 and 20

L.C.M of 30, 25 and 20:

5	30, 25, 20
2	6, 5, 4
	3, 5, 2

L.C.M of 30, 25, 20 =  $5 \times 2 \times 3 \times 5 \times 2 = 300$ .

Therefore, the minimum number of colour pencils required to make sets of 1st, 2nd and 3rd prizes consisting of 30, 25, and 20 pencils respectively are 300.

37. The distance at which they would be at the same point = L.C.M of 24, 35, 42.

L.C.M of 24, 35, 42:

2	24, 35, 42
7	12, 35, 21
3	12, 5, 3
	4, 5, 1

L.C.M of 24, 35, 42 =  $2 \times 7 \times 3 \times 4 \times 5 \times 1 = 840$ .

i.e., after 840 m they would meet at the same point.

38. i. Divisibility by 4.

The number formed by last two digits = 60.

$$\begin{array}{r} 4 \overline{) 60} \phantom{( 15} \\ \underline{4} \phantom{0} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

$\therefore$  Remainder is 0.

$\therefore$  60 is divisible by 4.

$\therefore$  14560 is divisible by 4 because a no. is divisible by 4 only if the no. formed by its last two digits ( i.e ones and tens ) is divisible by 4.

ii. Divisibility by 8.

The number formed by last three digits = 560

$$\begin{array}{r} 8 \overline{) 560} \phantom{( 70} \\ \underline{56} \phantom{0} \\ 0 \\ \underline{0} \\ 0 \end{array}$$

$\therefore$  Remainder is 0.

$\therefore$  560 is divisible by 8.

$\therefore$  14560 is divisible by 8 because a no. is divisible by 8 if the no. formed by its last three digits is divisible by 8.

### Section F

39. Read the text carefully and answer the questions:

The width of a swimming pool (in feet) is a prime number greater than 10. The width and length of the pool are factors of 408.



(i) 1. only even

(ii) **(b)** 24 feet

**Explanation:** 24 feet

(iii) **(d)** 17 feet

**Explanation:** 17 feet

(iv) **(c)**  $2 \times 2 \times 5 \times 7 \times 7$

**Explanation:**  $2 \times 2 \times 5 \times 7 \times 7$

(v) **(b)** False

**Explanation:** False

40. Read the text carefully and answer the questions:

Ramesh and Suresh are playing game with 50 cards numbered from 1 to 50. This game is about spotting factors. They arrange the cards in the following way.

1	2	3	4	5	6	7	
8	9	10	11	12	13	14	
15	16	17	18	19	20	21	
22	23	24	25	26	27	28	
29	30	31	32	33	34	35	
36	37	38	39	40	41	42	
43	44	45	46	47	48	49	50

(i) 1. given number

(ii) **(a)** 5,10,15,20,25,30,35,40,45,50

**Explanation:** 5,10,15,20,25,30,35,40,45,50

(iii) **(d)** 1,2,3,4,8,12,16,24,48

**Explanation:** 1,2,3,4,8,12,16,24,48

(iv) **(a)** 1,2,3,4,6,9,12,18,36

**Explanation:** 1,2,3,4,6,9,12,18,36

(v) **(a)** True

**Explanation:** True