6th Class-Divisibility

Work Sheet-3 Solutions

Teaching Task

1. 23A57

2 + 3 + A + 5 + 7 = 17 + AIf sum of digits divisible by 3, given number is divisible by 3. If A = 1, 17 + 1 = 18 divisible by 3.

- 2. 35x7y13 + 5 + x + 7 + y +1 = 16 + x + y Sum of digits divisible by 9, then x + y = 2
- 3. 476a
 If a = 8, last two digits number = 68
 68 is divisible by 4.

:. 4768 also divisible by 4.

4. 57a68

'a' should be any single digit number since 68 is divisible by 4.

5. 3A57

3 + A + 5 + 7 = 15 + AA can be 0 or 3. 4568B4 + 5 + 6 + 8 + B = 24 + BTo get 27 divisible by 9, B = 3, $\therefore A + B = 0 + 3 = 3$ Key – D

- 6. From options, check sum of digits
 A) 1 + 2 + 3 + 4 + 5 = 15
 B) 4 + 5 + 3 = 12
 C) 3 + 6 + 9 + 0 = 18
 D) 1 + 2 + 3 + 5 = 11
 Key A, B, C
- 7. In statement I true Let k = 1, I = 6

16 is divisible by 4. Statement – II -True.

- 8. From options key D
 D) 320418
 3 + 2 + 0 + 4 + 1 + 8 = 18
 ∴ It is divisible by 9.
- 9. Check the options A & D Since they are even, divisible by 2 and 1 + 2 + 0 + 3 + 6 + 0 = 12 divisible by 2 5+6+3+2= 16 not divisible by 3 ∴ only 120360 is divisible by 2 and 3
- 10. Check the sum of digits to divide with 3 only
 - A) 1080 \rightarrow Sum = 9
 - B) 46782 \rightarrow Sum = 27
 - C) 112233 \rightarrow Sum = 12
 - D) 356850 \rightarrow Sum= = 27
 - ∴ Key C.
- 11. Conceptual xyz = 104 divisible by. 4.
- 12. Conceptual abc = 104 divisible by 8
- 13. Check the divisibility rules by 5, 10, 2, 7, 11.

we get matching

a – p, q, r, s b – r, s c – p, q, r d – r, t

Learners Task

- 1. Conceptual
- 2. Conceptual
- 3. Conceptual
- 4. Conceptual

- 5. If the number with last three digits divisible by 8, given number digits is divisible by 8.
 - ∴ From option (c).
 648 is divisible by 8.
 - :. 3648 is also divisible by 8
- 6. Sum of the digits is divisible by 9 then given number is divisible by 9. From option (D)
 - 3+4+0+2+1+8=. 18 divisible by 9.
 - \therefore 340218 is also divisible by 9.
- 7. Check divisibility rules for given number It is divisible by 2.
- 8. Conceptual

10. Double the last digit and subtract from the remaining number, until last result will be 0 or 7.

From option (B)

50815<u>8</u>

 $8 \times 2 = 16$

$$50815$$
- 16
50799
9×2=18
5079
- 18
5061
1×2=2
506

	- 2				
-	504				
4×2	=8				
	50				
	- 8				
	42				
2×2	= 4				
	4				
	- 4				
	0				
	∴given	number	508158	is divisibl	e by 7.

JEE MAIN LEVEL

1. 7x57y

If a number is divisible by both 2 & 3, it is divisible by 6. \therefore y must be 0 or even for divisibility rules by 2. \therefore Least value of y = 0 Least value of x(y) = x(0) = 0

2. From option (A) 7983

7 + 9 + 8 + 3 = 27 is divisible by 3 & 9. From option (B) 14301 1 + 4 + 3 + 0 + 1 = 9 is divisible by 3 & 9. From option © 1668 1 + 6 + 6 + 8 = 21 is divisible by 3 but not by 9. From option (D) 4995 4 + 9 + 9 + 5 = 27 is divisible by 3 & 9. ∴ Key - C

- 3. Option (A) $1 \ 0 \ 1 \ 0 \ 1 \ 0 \ -3 \ -0 \ = 3$. Option (B) $1 \ 1 \ 1 \ 1 \ 1 \ -3 \ -3 \ = \ 0$ Option (C) $1 \ 0 \ 1 \ 0 \ 0 \ 1 \ -2 \ -1 \ = \ 1$ Option (D) $1 \ 0 \ 0 \ 1 \ 0 \ -2 \ -0 \ = \ 2$ \therefore Key - B 111111 is divisible by 11.
- 4. Check the divisibility rules by 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 for each option. We get key – D.

- 5. 7a6b5c
 7 + 6 + 5 = 18
 ∴ a + b + c = 18 to get the difference = 0 for divisibility by 11.
- 6. Key B & C Let option (D) as B & C
- 7. xy is given number
 ∴ double the units digit = 2y.
 Subtract from remaining which is x, we should get 0 or 7.
 ∴ x 2y = 0
 x = 2y
- 8. Conceptual.
- 9. A) 8449 1 = 8448 divisible by 11. 12 - 12 = 0
 C) 4875 - 2 = 4873 divisible by 11. 11 -11 =0
 Key - A, C

10. Let the number be x. 6) x (a $\frac{-6a}{-6a}$ Remainder = 3 $\therefore x = 6a + 3$ Now $x^2 = (6a+3)^2 = 36a^2 + 36a + 9$ It is divided by 6, remainder = ? 6) $36a^2 + 36a + 9(6a^2 + 6a + 1)$ $\frac{-36a^2}{-36a}$ 9 -6Remainder = 3

Advanced level

1. Conceptual

12345678 – It is even, so divisible by 2 and 1 + 2 + 3 +4 + 5 + 6 + 7 + 8 = 36 36 is divisible by both 3 & 9. Key – D

2. Conceptual

Key – C & D

- 3. Conceptual Key – A & C
- 4. Key A Consider in statement II (a + c + e) - (b + d + f) = 0
- 5. 2358<u>134</u>
 - →134 is not divisible by 8, So given number is not divisible by 8.
 →It is even, so it is divisible by 2.
 →Sum of digits = 2 + 3 + 5 + 8 + 1 + 3 + 4 = 26 26 is not divisible by 3.
 ∴ given number is not divisible by 3.
 → ∴ It is not divisible by 6 also.
 - ∴ Key C
- 6. Option (A) 41<u>384</u>
 384 is divisible by 8.
 ∴ 41384 is divisible by 8.
- 7. From option (B) 124672
 It is even; it is divisible by 2.
 1 + 2 + 4 + 6 + 7 + 2 = 22, it is not divisible by 3.
 ∴ It is not divisible by 6.
 Key B
- 8. C) m = 6, n = 4 mn = 64 is divisible by 4.
- 9. D) *I* = 7, m = 0, n = 4 change like this. *Imn* = 704 is divisible by 8.
 Key D
- 10. Conceptual
- 11. Least value of d = 3.
 Then 3 + 5 + 4 = 12 divisible by 3.
 ∴ 354 is divisible by 3.
 354 is even, it is divisible by 2.
 ∴ It is divisible by 6.
- 12. 1m1 + 11m should be even when least value of m = 1. $\therefore 111 + 111 = 222$ $\therefore 1 + m = 1 + 1 = 2$

13. Check the divisibility rules for the numbers

- a) 578
- b) 789
- c) 895
- d) 957
 - ∴ a s, b p, c q. d p