



CLASS NOTES-ANSWERS

EXERCISE 3.3

1. Using divisibility tests, determine which of the following numbers are divisible by 2; by 3; by 4; by 5; by 6; by 8; by 9; by 10; by 11 (say, yes or no):

Number	Divisible by								
	2	3	4	5	6	8	9	10	11
128	Yes	No	Yes	No	No	Yes	No	No	No
990
1586
275
6686
639210
429714
2856
3060
406839

Answer:

Number	Divisible by								
	2	3	4	5	6	8	9	10	11
128	Yes	No	Yes	No	No	Yes	No	No	No
990	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
1586	Yes	No	No	No	No	No	No	No	No
275	No	No	No	Yes	No	No	No	No	Yes
6686	Yes	No	No	No	No	No	No	No	No
639210	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes
429714	Yes	Yes	No	No	Yes	No	Yes	No	No
2856	Yes	Yes	Yes	No	Yes	Yes	No	No	No
3060	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
406839	No	Yes	No	No	No	No	No	No	No

2. Using divisibility tests, determine which of the following numbers are



divisible by 4; by 8:

- (a) 572 (b) 726352 (c) 5500 (d) 6000 (e) 12159
 (f) 14560 (g) 21084 (h) 31795072 (i) 1700 (j) 2150

Answer:

Numbers	Divisible by	
	4	8
(a) 572	Yes	No
(b) 726352	Yes	Yes
(c) 5500	Yes	No
(d) 6000	Yes	Yes
(e) 12159	No	No
(f) 14560	Yes	Yes
(g) 21084	Yes	No
(h) 31795072	Yes	Yes
(i) 1700	Yes	No
(j) 2150	No	No

3. Using divisibility tests, determine which of following numbers are divisible by 6:

- (a) 297144 (b) 1258 (c) 4335 (d) 61233 (e) 901352
 (f) 438750 (g) 1790184 (h) 12583 (i) 639210 (j) 17852

Answer:

- (a) 297144

The number 297144 has an even digit at its one's place. Therefore, it is divisible by 2.



The sum of all the digits of $297144 = 2 + 9 + 7 + 1 + 4 + 4 = 27$, which is divisible by 3.

Therefore, the number 297144 is divisible by 6.

(b) 1258

The number 1258 has an even digit i.e., 8 at its one's place. Therefore, it is divisible by 2.

The sum of all digits of $1258 = 1 + 2 + 5 + 8 = 16$, which is not divisible by 3.

Therefore, the number 1258 is not divisible by 6.

(c) 4335

The digit at one's place of the number 4335 is not even. Therefore, it is not divisible by 2.

Therefore, the number 4335 is not divisible by 6.

(d) 61233

The digit at one's place of the number 612333 is not even. Therefore, it is not divisible by 2.

The number 61233 is not divisible by 6.

(e) 901352

The digit at one's place of the given number is even, i.e., 2

Therefore, it is divisible by 2.

The sum of all the digits of the number $901352 = 9 + 0 + 1 + 3 + 5 + 2 = 20$, which is not divisible by 3.



Therefore, the number 901352 is not divisible by 6.

(f) 438750

The digit at one's place of the number 438750 is 0. Therefore, it is divisible by 2.

The sum of all the digits of the number $438750 = 4 + 3 + 8 + 7 + 5 + 0 = 27$, which is divisible by 3.

Therefore, the number 438750 is divisible by 6.

(g) 1790184

The digit at one's place of the number 1790184 is even i.e., 4. Therefore, it is divisible by 2.

The sum of all the digits of the number $1790184 = 1 + 7 + 9 + 0 + 1 + 8 + 4 = 30$ which is divisible by 3.

Therefore, the number 1790184 is divisible by 6.

(h) 12583

The digit to one's place of the number 12583 is odd. Therefore, it is not divisible by 2.

Therefore, the number 12583 is not divisible by 6.

(i) 639210

The digit at one's place of the number 639210 is 0. Therefore, it is divisible by 2.

The sum of all the digits of the number $639210 = 6 + 3 + 9 + 2 + 1 + 0 = 21$, which is divisible by 3.



Therefore, the number 639210 is divisible by 6.

(j) 17852

The digit at one's place of the number 17852 is even. Therefore, it is divisible by 2.

The sum of all the digits of the number $17852 = 1 + 7 + 8 + 5 + 2 = 23$, which is not divisible by 3.

Therefore, the number 17852 is not divisible by 6.

4. Using divisibility tests, determine which of the following numbers are divisible by 11:

(a) 5445

(b) 10824

(c) 7138965

(d) 70169308

(e) 10000001

(f) 901153

(g) 901153

Answer:

(a) Given number = 5445

Sum of the digits at odd places = $5 + 4 = 9$ and sum of the digits at even places = $4 + 5 = 9$

Difference = $9 - 9 = 0$, which is divisible by 11.

Therefore, the number 5445 is divisible by 11.

(b) Given number = 10824

Sum of the digits at odd places = $4 + 8 + 1 = 13$ and Sum of the digits at even places = $2 + 0 = 2$

Difference = $13 - 2 = 11$, which is divisible by 11.



Therefore, the number 10824 is divisible by 11.

(c) Given number = 7138965

Sum of the digits at odd places = $5 + 9 + 3 + 7 = 24$ and Sum of the digits at even places = $6 + 8 + 1 = 15$

Difference = $24 - 15 = 9$, which is not divisible by 11.

Therefore, the number 7138965 is not divisible by 11.

(d) Given number = 70169308

Sum of digits at odd places = $0 + 9 + 1 + 7 = 17$ and Sum of all the digits at even places = $8 + 3 + 6 + 0 = 17$

Difference = $17 - 17 = 0$, which is divisible by 11.

Therefore, the number 70169308 is divisible by 11.

(e) Given number = 10000001

Sum of all the digits at odd places = $1 + 0 + 0 + 0 = 1$ and Sum of the digits at even places = $0 + 0 + 0 + 1 = 1$

Difference = $1 - 1 = 0$, which is divisible by 11.

Therefore, the number 10000001 is divisible by 11.

(f) Given number = 901153

Sum of all the digits at odd places = $9 + 1 + 5 = 15$ and Sum of the digits at even places = $0 + 1 + 3 = 4$

Difference = $15 - 4 = 11$, which is divisible by 11.

Therefore, the number 901153 is divisible by 11.

5. Write the smallest digit and the greatest digit in the blank space of each of the



following numbers so that the number formed is divisible by 3:

(a) ___6724

(b) 4765__2

Answer:

(a)___6724

Sum of the digits = $4 + 2 + 7 + 6 = 19$

Thus, The smallest digit to be placed is blank space = 2.

Then the sum = $19 + 2 = 21$, which is divisible by 3.

The greatest digit to be placed in blank space = 8.

Then, the sum = $19 + 8 = 27$, which is divisible by 3

Therefore, the required digits are 2 and 8.

(b) 4765__2.

Sum of digits = $2 + 5 + 6 + 7 + 4 = 24$

Thus, the smallest digits to be placed in blank space = 0.

Then, sum = $24 + 0 = 24$, which is divisible by 3.

The greatest digit to be placed in blank space = 9.

Then, the sum = $24 + 9 = 33$, which is divisible by 3.

Therefore, the required digits are 0 and 9.

6. Write a digit in the blank space of each of the following numbers so that the number formed is divisible by 11:

(a) 92__389

(b) 8__9484

Answer:



(a) Let 'x' be placed inside the blank.

$$\text{Sum of its digits at odd places} = 9 + 3 + 2 = 14$$

$$\text{Sum of its digits at even places} = 8 + x + 9 = 17 + x$$

$$\text{Difference} = 17 + x - 14 = 3 + x$$

$$\text{If } 3 + x = 0$$

$$x = -3$$

But it cannot be a negative

$$\text{Now, if } 3 + x = 11$$

$$x = 11 - 3$$

$$x = 8$$

(b) Let 'x' be placed inside the blank.

$$\text{Sum of its digits at odd places} = 4 + 4 + x = 8 + x$$

$$\text{Sum of its digits at even places} = 8 + 9 + 8 = 25$$

$$\text{Difference} = 25 - (8 + x) = 17 - x$$

$$\text{If } 17 - x = 0$$

$$x = 17 \text{ (not possible)}$$

$$\text{If } 17 - x = 11$$

$$x = 17 - 11$$

$$x = 6$$

