

Board –CBSE

Class – 6<sup>th</sup>

Topic –Playing with Number Ex:3.3

### Exercise – 3.3

**Q1.** 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
- (j) 2150
- (h) 31795072
- (i) 1700

**Sol.** (a) Given number = 572

(i) Divisibility by 4

Here, the number formed by the last two digits of the given number is 72.

Remainder 0. Hence, 572 is divisible by 4.

**Q2.** Using divisibility tests, determine which of the 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

**Sol.** We know that a number is divisible by 6 if it is also divisible by both 2 and 3.

(a) Given number = 297144

The given number 297144 has an even digit at its one's place.

So, 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.

Hence, the given number 297144 is divisible by 6.

(b) Given number = 1258

The given number 1258 has an even digit i.e., 8 at its ones place.

So, it is divisible by 2.

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

Hence, the given number 1258 is not divisible by 6.

(c) Given number = 4335

The digit at ones place of the given number is not even.

So, it is not divisible by 2.

The sum of all the digits of  $4335 = 4 + 3 + 3 + 5 = 15$  which is divisible by 3.

Since the given number 4335 is not divisible by both 2 and 3 therefore, it is not divisible by 6.

(d) Given number = 61233

The digit at ones place of the given number is not even.

So, it is not divisible by 2.

The sum of the digits of the given number  $61233 = 6 + 1 + 2 + 3 + 3 = 15$  which is divisible by 3.

Since, the given number is not divisible by both 2 and 3, it is not divisible by 6.

(e) Given number = 901352

The digit at ones place of the given number is even.

So, it is divisible by 2.

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

Since, the given number is not divisible by both 2 and 3 hence, it is not divisible by 6.

(f) Given number = 438750

The digit at ones place of the given number is 0. So, it is divisible by 2.

The sum of all the digits of the given number 438750

$= 4 + 3 + 8 + 7 + 5 + 0 = 27$  which is divisible by 3.

Hence, the given number is divisible by 6.

(g) Given number = 1790184

The digit at ones place of the given number is even.

So, it is divisible by 2.

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

Hence, the given number is divisible by 6.

(h) Given number = 12583

The digit to ones place of the given number is odd.

So, it is not divisible by 2.

Sum of all the digits of the given number 12583

$$= 1 + 2 + 5 + 8 + 3 = 19$$

which is not divisible by 3.

Hence, the given number is not divisible by 6.

(i) Given number = 639210

The digit at ones place of the given number is 0.

So, it is divisible by 2.

The sum of all the digits of the given number 639210

$$= 6 + 3 + 9 + 2 + 1 + 0 = 21$$
 which is divisible by 3.

Hence, the given number is divisible by 6.

(j) Given number = 17852

The digit at ones place of the given number is even.

So, it is divisible by 2.

The sum of all the digits of the given number 17852

$$= 1 + 7 + 8 + 5 + 2 = 23$$
 which is not divisible by 3.

Hence, the given number is not divisible by 6.

**Q3.** Using divisibility tests, determine which of the following numbers are divisible by 11:

(a) 5445

(b) 10824

(c) 7138965

(d) 70169308

(e) 10000001.

**Sol.** We know that a number is divisible by 11 if the difference between the sum of the digits at odd places (from the right) and the sum of the digits at even places (from the right) of the number is either 0 or divisible by 11.

(a) Given number = 5445

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

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

Difference =  $9 - 9 = 0$

Hence, the given number is divisible by 11.

(b) Given number = 10824

Sum of the digits at odd places =  $4 + 8 + 1 = 13$

Sum of the digits at even places =  $2 + 0 = 2$

Difference =  $13 - 2 = 11$

which is divisible by 11.

Hence, the given number is divisible by 11.

(c) Given number = 7138965

Sum of the digits at odd places =  $5 + 9 + 3 + 7 = 24$

Sum of the digits at even places =  $6 + 8 + 1 = 15$

Difference =  $24 - 15 = 9$

which is not divisible by 11.

Hence, the given number is not divisible by 11.

(d) Given number = 70169308

Sum of all the digits at odd places =  $8 + 3 + 6 + 0 = 17$

Sum of all the digits at even places =  $0 + 9 + 1 + 7 = 17$

Difference =  $17 - 17 = 0$

Hence, the given number is divisible by 11.

(e) Given number = 10000001

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

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

Difference =  $1 - 1 = 0$

Hence, the given number is divisible by 11.

**Q4.** 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

**Sol.** We know that number is divisible by 3 if the sum of all the digits of the number is also divisible by 3.

(a) \_\_\_ 6724

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

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

Hence, the required digits are 2 and 8.

(b) 4765 \_\_\_ 2.

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

The smallest digits to be place 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.

Hence, the required digits are 0 and 9.

**Q5.** 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

**Sol.** (a) 92 \_\_\_ 389

Sum of the digits at odd places =  $9 + 3 + 2 = 14$

Sum of the digits at even places =  $8 + ( ) + 9 = 17$

Difference =  $17 + ( ) - 14 = ( ) + 3$

For the given number to be divisible by 11

$( ) + 3 = 11$

$\therefore ( ) = 11 - 3 = 8$

So, the missing digit = 8

Hence, the required number is 928389.

(b) 8 \_\_\_ 9484

Sum of the digits at odd places =  $4 + 4 + ( ) = 8 + ( )$

Sum of the digits at even places =  $8 + 9 + 8 = 25$

$\therefore$  Difference =  $25 - [8 + ( )]$

$$= 25 - 8 - ( ) = 17 - ( )$$

For the given number to be divisible by 11

$$17 - 0 = 11$$

$$\therefore 17 - 11 = 6$$

So, the missing digit = 6

Hence, the required number = 869484.