

## **EXERCISE 16.1**

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Find the values of the letters in each of the following and give reasons for the steps involved.

1.



#### **Solution:**

Say, A = 7, and we get

$$7+5 = 12$$

In which one's place is 2.

Therefore, A = 7

And putting 2 and carrying over 1, we get

B = 6

Hence, A = 7 and B = 6.

2.



#### **Solution:**

If 
$$A = 5$$
, we get

8+5=13, in which one's place is 3.

Therefore, A = 5 and carry over 1, then

B = 4 and C = 1

Hence, A = 5, B = 4 and C = 1.

3.



1	Α
x	Α
9	Α

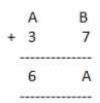
## **Solution:**

On putting A = 1, 2, 3, 4, 5, 6, 7 and so on, we get

 $AxA = 6 \times 6 = 36$ , in which one's place is 6.

Therefore, A = 6

4.



#### **Solution:**

Here, we observe that B = 5, so that 7+5=12

Putting 2 at one's place and carrying over 1 and A = 2, we get

2+3+1=6

Hence, A = 2 and B = 5.

5.

## **Solution:**

Here, on putting B = 0, we get 0x3 = 0.

And A = 5, then  $5 \times 3 = 15$ 

A = 5 and C = 1

Hence A = 5, B = 0 and C = 1.



6



## **Solution:**

On putting B = 0, we get 0x5 = 0 and A = 5, then  $5 \times 5 = 25$ 

$$A = 5, C = 2$$

Hence A = 5, B = 0 and C = 2

7.



## **Solution**:

Here, products of B and 6 must be the same as one's place digit is B.

$$6 \times 1 = 6$$
,  $6 \times 2 = 12$ ,  $6 \times 3 = 18$ ,  $6 \times 4 = 24$ 

On putting B = 4, we get the one's digit 4, and the remaining two B's value should be 44.

Therefore, for  $6 \times 7 = 42 + 2 = 44$ 

Hence, A = 7 and B = 4.

8.

## **Solution:**

On putting B = 9, we get 9+1 = 10

Putting 0 at ones place and carrying over 1, we get A = 7

$$7+1+1=9$$

Hence, 
$$A = 7$$
 and  $B = 9$ .

9.

## **Solution:**

On putting 
$$B = 7$$
, we get  $7+1 = 8$ 

Now 
$$A = 4$$
, then  $4+7 = 11$ 

Putting 1 at tens place and carrying over 1, we get

$$2+4+1=7$$

Hence, 
$$A = 4$$
 and  $B = 7$ .

10.

#### **Solution:**

Putting 
$$A = 8$$
 and  $B = 1$ , we get

$$8+1=9$$

Now, again we add 
$$2 + 8 = 10$$

The tens place digit is '0' and carries over 1. Now 1+6+1=8=A

Hence, 
$$A = 8$$
 and  $B = 1$ .



EXERCISE 16.2 PAGE NO: 260

## 1. If 21y5 is a multiple of 9, where y is a digit, what is the value of y?

#### **Solution:**

Suppose 21y5 is a multiple of 9.

Therefore, according to the divisibility rule of 9, the sum of all the digits should be a multiple of 9.

That is, 2+1+y+5 = 8+y

Therefore, 8+y is a factor of 9.

This is possible when 8+y is any one of these numbers 0, 9, 18, 27, and so on

However, since y is a single-digit number, this sum can be only 9.

Therefore, the value of y should be 1 only, i.e. 8+y=8+1=9.

## 2. If 31z5 is a multiple of 9, where z is a digit, what is the value of z? You will find that there are two answers to the last problem. Why is this so?

#### **Solution:**

Since 31z5 is a multiple of 9,

According to the divisibility rule of 9, the sum of all the digits should be a multiple of 9.

3+1+z+5=9+z

Therefore, 9+z is a multiple of 9

This is only possible when 9+z is any one of these numbers: 0, 9, 18, 27, and so on.

This implies, 9+0 = 9 and 9+9 = 18

Hence, 0 and 9 are the two possible answers.

#### 3. If 24x is a multiple of 3, where x is a digit, what is the value of x?

(Since 24x is a multiple of 3, its sum of digits 6+x is a multiple of 3, so 6+x is one of these numbers: 0, 3, 6, 9, 12, 15, 18, .... But since x is a digit, it can only be that 6+x=6 or 9 or 12 or 15. Therefore, x=0 or 3 or 6 or 9. Thus, x can have any of four different values.)

#### **Solution:**

Let's say 24x is a multiple of 3.

Then, according to the divisibility rule of 3, the sum of all the digits should be a multiple of 3.

2+4+x = 6+x



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So, 6+x is a multiple of 3, and 6+x is one of the numbers: 0, 3, 6, 9, 12, 15, 18 and so on.

Since x is a digit, the value of x will be either 0 or 3 or 6 or 9, and the sum of the digits can be 6 or 9 or 12 or 15, respectively.

Thus, x can have any of the four different values: 0 or 3 or 6 or 9.

## 4. If 31z5 is a multiple of 3, where z is a digit, what might be the values of z?

#### **Solution:**

Since 31z5 is a multiple of 3,

According to the divisibility rule of 3, the sum of all the digits should be a multiple of 3.

That is, 3+1+z+5 = 9+z

Therefore, 9+z is a multiple of 3.

This is possible when the value of 9+z is any of the values: 0, 3, 6, 9, 12, 15, and so on.

At z = 0, 9+z = 9+0 = 9

At z = 3, 9+z = 9+3 = 12

At z = 6, 9+z = 9+6 = 15

At z = 9, 9+z = 9+9 = 18

The value of 9+z can be 9 or 12 or 15 or 18.

Hence 0, 3, 6 or 9 are the four possible answers for z.