Exercise 16.1

Question 1:

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

	3	A	
+	2	5	
	В	2	

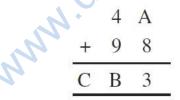
Answer 1:

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

7 + 5 = 12in which ones place is 2. *.*. A = 7 And putting 2 and carry over 1, we get B = 6 Hence, A = 7 and B = 6

Question 2:

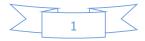
Find the values of the letters in the following and give reasons for the steps involved.



Answer 2:

On putting A = 1, 2, 3, 4, 5, 6, 7 and so on and we get, 8 + 5 = 13 in which ones place is 3. ÷ A = 5 And putting 3 and carry over 1, we get B = 4 and C = 1

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



Question 3:

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

1	A
×	A
9	A

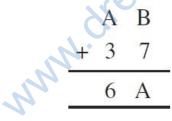
Answer 3:

On putting A = 1, 2, 3, 4, 5, 6, 7 and so on and we get, A x A = 6 x 6 = 36in which ones place is 6. tiopper if A = 6 *.*.

Hence, A = 6

Question 4:

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



Answer 4:

Here, we observe that B = 5 so that 7 + 5 = 12. Putting 2 at ones place and carry over 1 and A = 2, we get 2 + 3 + 1 = 6

Hence, A = 2 and B = 5



Question 5:

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

	×	3	-5
С	A	В	

D

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Answer 5:

Here on putting B = 0, we get $0 \ge 3 = 0$.

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

 \Rightarrow A = 5 and C = 1

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

Question 6:

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



Answer 6:

On putting B = 0, we get $0 \ge 5 = 0$ and A = 5, then $5 \ge 5 = 25$ \Rightarrow A = 5, C = 2

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



Question 7:

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

	A	В	
	×	6	
B	B	В	

Answer 7:

Here product of B and 6 must be same as ones place digit as B.

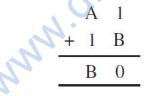
 $6 \ge 1 = 6, 6 \ge 2 = 12, 6 \ge 3 = 18, 6 \ge 4 = 24$

On putting B = 4, we get the ones digit 4 and remaining two B's value should be 44. \therefore For 6 x 7 = 42 + 2 = 44

Hence, A = 7 and B = 4

Question 8:

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



Answer 8:

On putting B = 9, we get 9 + 1 = 10Putting 0 at ones place and carry over 1, we get For A = 7 \Rightarrow 7 + 1 + 1 = 9

Hence, A = 7 and B = 9



Question 9:

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

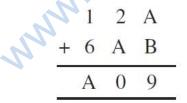
	2	А	В	
+	A	В	1	
5	В	1	8	

Answer 9:

On putting B = 7, \Rightarrow 7 + 1 = 8 Now A = 4, then 4 + 7 = 11 Putting 1 at tens place and carry over 1, we get 2 + 4 + 1 = 7 Hence, A = 4 and B = 7

Question 10:

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



Answer 10:

Putting A = 8 and B = 1, we get 8 + 1 = 9 Now again we add 2 + 8 = 10Tens place digit is '0' and carry over 1. Now 1 + 6 + 1 = 8 = A

Hence, A = 8 and B = 1



Exercise 16.2

Question 1:

If 21*y*5 is a multiple of 9, where *y* is a digit, what is the value of *y*?

Answer 1:

Since 21*y*5 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.

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 $\begin{array}{ll} \therefore & 2+1+y+5=8+y \\ \Rightarrow & 8+y=9 \\ \Rightarrow & y=1 \end{array}$

Question 2:

If 31*z*5 is a multiple of 9, where z is a digit, what is the value of z? You will find that there are *two* answers for the last problem. Why is this so?

Answer 2:

Since 31z5 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.

 $\therefore \qquad 3+1+z+5=9+z \\ \Rightarrow \qquad 9+z=9 \\ \Rightarrow \qquad z=0 \\ If \qquad 3+1+z+5=9+z \\ \Rightarrow \qquad 9+z=18 \\ \Rightarrow \qquad z=9$

Hence, 0 and 9 are two possible answers.



Question 3:

If 24*x* 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.)

Answer 3:

Since 24x is a multiple of 3.

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

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 $\therefore 2+4+x=6+x$ Since x is a digit. $\Rightarrow 6+x=6 \Rightarrow x=0$ $\Rightarrow 6+x=9 \Rightarrow x=3$ $\Rightarrow 6+x=12 \Rightarrow x=6$

 $\Rightarrow \qquad 6+x=15 \qquad \Rightarrow \qquad x=9$

Thus, *x* can have any of four different values.

Question 4:

If 31*z*5 is a multiple of 3, where z is a digit, what might be the values of z?

Answer 4:

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Since 31z5 is a multiple of 3.
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Therefore according to the divisibility rule of 3, the sum of all the digits should be a multiple of 3.

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Since *z* is a digit.

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3+1+z+5=9+z
...
            9 + z = 9
\Rightarrow
                              \Rightarrow
                                        z = 0
If
            3+1+z+5=9+z
            9 + z = 12
\Rightarrow
                              \Rightarrow
                                        z = 3
If
            3+1+z+5=9+z
            9 + z = 15
                                        z = 6
\Rightarrow
                              \Rightarrow
If
            3+1+z+5=9+z
            9 + z = 18
\Rightarrow
                              \Rightarrow
                                        z = 9
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Hence, 0, 3, 6 and 9 are four possible answers.

