Question 1.

Write the quotient when the sum of 73 and 37 is divided by

(i) 11

(ii) 10

Solution:

Sum of 73 and 37 is to be divided by

Let ab = 73

and ba = 37

$\therefore a = 7$

and $b = 3$

The quotient of $ab + bc$ i.e. $(73 + 37)$ when

divided by 11 is $a + b = 7 + 3 = 10$

$\left(\because \frac{ab+ba}{11} = a + b\right)$

(ii) 10

Solution:

Sum of 73 and 37 is to be divided by

Let ab=73

and ba=37

$\therefore a = 7$

And $b = 3$

The quotient of $ab + ba$ i.e. $(73 + 37)$ when

Divided by $10(\ i.e.\ a + b\ is\ 11)$

$\left(\because \frac{ab+ba}{a+b} = 11\right)$

Question 2

Write the quotient when the sum of 94 and 49 is divided by

(i) 11 (ii) 13

Solution:

Sum of 94 and 49 is to be divided by

Let $ab = 94$

and $ba = 49$

$\therefore a = 9$ and $b = 4$

The quotient of $94 + 49$(i.e. ab+ba)

When divided by

11 is $a + b$ i.e. $9 + 4 = 13$

$\left(\because \frac{ab+ba}{11} = a + b\right)$

(ii) 13

Solution:

Sum of 94 and 49 is to be divided by

Let$ab = 94$

and $ba = 49$

$\therefore a = 9$ and $b = 4$

The quotient of $94 + 49$(i.e.ab+ba)

When divided by i.e..$(a + b)$is 11

$\left(\because \frac{ab+ba}{a+b} = 11\right)$

Question 3.

Find the quotient when 73 - 37 is divided by

(i) 9 (ii) 4

Solution:

(i) Difference of 73-37s to be divided by 9

Let $ab = 73$ and $ba = 37$

$a = 7$ and $b = 3$

The quotient of $73 - 37$(i.e. ab-bc) when

Divided by 7 is a-b i.e. 7-3=4

$\left(\because \frac{ab-ba}{9} = a - b\right)$

(ii) 4

Solution:

Let $ab = 73$and $ba = 37$

$\therefore a = 7$ and $b = 3$

The quotient of $73 - 37$(i.e. ab-ba) when

Divided by 4 i.e. (a-b) is 9)

$\left(\because \frac{ab-ba}{a-b} = 9\right)$

Question 4.

Find the quotient when 94-49 is divided by

(i) 9 (ii) 5

Solution:

Difference of 94 and 49 is to be divided by

$ab = 94$ and $ba = 49$

The quotient of 94-49 i.e. (ab-ba) when

Divided by 9 is (a-b) i.e. 9-4=5

$\left(\because \frac{ab-ba}{9} = a - b\right)$

(ii) 5

Solution:

The quotient of 94-49 i.e. (ab-ba) when

Divided by 5 i.e. (a-b) is 9

$\left(\because \frac{ab-ba}{a-b} = 9\right)$

Question 5.

Show that 527+752+275 is exactly divisible by 14.

Solution:

abc = 100a+106+c……(i)

bca=1006+10c+a…….(ii)

And cab=100c+10a+b…….(iii)

Adding,(i),(II) and (iii), we get

$abc + bca + cab = 111a + 111c + 111c = 111(a + b + c) = 3 x\, 37(a + b + c)$

Now, let us try this method on

527 + 752 + 275 to check is it exactly divisible by 14

Here, a = 5,b = 2,c = 7 $527 + 752 + 275 = 3 \times 37(5 + 2 + 7) = 3 \times 37 \times 14$

Hence, it shown that 527 + 752 + 275 is exactly divisible by 14

Question 6.

If a = 6, show that abc = bac.

Solution:

Given: a = 6

To show: abc = bac

Proof: abc = 100a + 106 + c……(i)

(By using property 3)

Bac = 1006 + 10a + c…..(ii)

(By using property 3)

Since, a = 6

Substitute the value of a=6 in equation (i) and (ii), we get

abc = 1006 + 106 + c…. (iii)

bac = 1006 + 106 + c…..(iv)

Subtracting (iv) from (iii) abc – bac=0

abc = bac

Hence proved.

Question 7.

If a>c; show that abc – cba = 99(a - c).

Solution:

Given, a>c

To show: abc – cba= 99(a - c)

Proof:abc = 100a + 10b + c….(i)

(By using property 3)

cba = 100c + 10b + a…..(ii)

(By using property 3)

Subtracting, equation (ii) from (i), we get abc – cba = 100a + c - 100c - a

abc – cba = 99a - 99c

abc – cba = 99(a - c)

Hence proved.

Question 8.

If c>a; show that cba – abc = 99(c - a).

Solution:

Given: c>a

To show: cba – abc = 99 (c - a)

Proof:

cba = 100c + 106 + a…..(i)

(By using property 3)

abc = 100a + 106 + a….(ii)

(By using property 3)

$cba - abc = 100c + 106 + a - 100a - 106 - c$

$=> cba - abc = 99c - 99a$

$=> cba - abc = 99(c - a)$

Hence proved.

Question 9.

If a = c, show that cba – abc = 0

Solution:

Given: a=c

To show : cba – abc = 0

Proof:

cba = 100c + 106 + a....(i)

(By using property 3)

Since, a = c,

Substitute the value of a = c in equation (i) and (ii), we get

cba =100c +10b + c.....(iii)

abc = 100c + 10b +c.....(iv)

Subtracting (iv) from (iii) ,we get

$\mathrm{cba} - \mathrm{abc} - 100\mathrm{c} + 106 + \mathrm{c} - 100\mathrm{c} - 106 - \mathrm{c}$

$=> \mathrm{cba} - \mathrm{abc} = 0$

$\Rightarrow \mathrm{cba} = \mathrm{abc}$

Hence proved

Question 10.

Show that 954 - 459 is exactly divisible by 99.

Solution:

To show: 954 - 459 is exactly divisible by 3 99, where a = 9, b = 5,c = 4

abc = 100a + 10b + c

$=> 954 = 100 \times 9 + 10 \times 5 + 4$

$=> 954 = 900 + 50 + 4 \ldots\ldots$ (i)

and $459 = 100 \times 4 + 10 \times 5 + 9$

$=> 459 = 400 + 50 + 9 \ldots\ldots$ (ii)

Hence, 954 - 459 is exactly divisible by 99

Hence proved.

EXERCISE 5(B)

Question :1

$$\begin{array}{r} 3A \\ +\ 25 \\ \hline B2 \\ \hline \end{array}$$

Solution:

$A = 7\ as\ 7 + 5 = 12$. We want 2 at units place

and 1 is carry over. Now $3 + 2 + 1 = 6$

B=6

Hence A=7 and B=6

$$\begin{array}{r} 37 \\ +\ 25 \\ \hline 62 \\ \hline \end{array}$$

Question: 2

$$\begin{array}{r} 98 \\ +4A \\ \hline CB3 \\ \hline \end{array}$$

Solution:

A=5 as $8 + 5 = 13$. We want 3 at units place

and 1 is carry over. Now $9 + 4 + 1 = 14$.

B=4

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

$$\begin{array}{r} 98 \\ +45 \\ \hline 143 \\ \hline \end{array}$$

Question: 3

$$\begin{array}{r} \text{A!} \\ +\ 1\text{B} \\ \hline \text{B}0 \\ \hline \end{array}$$

Solution:

B=9 as 9+1=10. We want 0 at units place

and 1 is carry over. Now B-1-1=A.

∴A=9-2=7

Hence A=7 and B=9

$$\begin{array}{r} 71 \\ +19 \\ \hline 90 \\ \hline \end{array}$$

Question: 4

$$\begin{array}{r} 2\text{AB} \\ +\ \text{AB}1 \\ \hline \text{B}18 \\ \hline \end{array}$$

Solution:

B=7 as 7+1=8. We want 8 at unit place.

Now

7+A=11

∴A=11-7=4

Hence A=4 and B=7

$$\begin{array}{r} 247 \\ +471 \\ \hline 718 \end{array}$$

Question: 5

$$\begin{array}{r} 247 \\ +471 \\ \hline 718 \\ \hline \end{array}$$

Solution:

A+B=9

and 2+A=10

∴A=10-2=8

and 8+B=9

∴ B=9-8=1

Hence A=8 and B=1

$$\begin{array}{r} 128 \\ +681 \\ \hline 809 \\ \hline \end{array}$$