EXERCISE 5(A)

Question 1. Write the quotient when the sum of 73 and 37 is divided by
(i) 11
Solution:
We know that
Sum of 73 and 37 is to be divided by
Consider ab = 73
and ba = 37
a = 7 and b = 3
The quotient of ab + bc i.e. (73 + 37) when
Now divided by 11 is a + b = 7 + 3 = 10
[((ab + ba)/11) = a + b]

(ii) 10
Solution:
We know that
Sum of 73 and 37 is to be divided by
Consider ab =73
and ba = 37
a = 7 and b = 3
The quotient of ab + ba i.e. (73 + 37) when
Now divided by 10 (i.e. a + b is 11) ,
[((ab + ba)/(a + b)) = 11)]

Question 2.Write the quotient when the sum of 94 and 49 is divided by
(i) 11
Solution:
We know that
Sum of 94 and 49 is to be divided by
Consider ab = 94
and ba = 49
a = 9 and b = 4
The quotient of 94 + 49 (i.e. ab + ba)
Now divided by
11 is a + b i.e. 9 + 4 = 13
[((ab+ba)/11) = a + b]

(ii) 13
Solution:
We know that
Sum of 94 and 49 is to be divided by
Consider ab = 94
and ba = 49
a = 9 and b = 4

The quotient of 94 + 49 (i.e. ab + ba)
Now divided by 13 i.e. (a+b) is 11
[((ab + ba)/(a + b)) = 11]

Question 3. Find the quotient when 73 – 37 is divided by
(i) 9
Solution:
(i) We know that
Difference of 73 – 37 is to be divided by 9
Consider ab = 73 and ba = 37
a = 7 and b = 3
The quotient of 73-37(i.e. ab-ba) when
When divided by 9 is a-b i.e. 7 – 3 = 4
[((ab – ba)/9) = a – b]

(ii) 4
Solution:
Consider ab = 73 and ba = 37
(a = 7 and b = 3)
The quotient of 73 - 37 (i.e. ab – ba) when
Now divided by 4 i.e. (a - b) is 9
[((ab – ba)/(a – b) = 9]

Question 4.
Find the quotient when 94 - 49 is divided by
(i) 9
Solution:
We know that
Difference of 94 and 49 is to be divided by
ab = 94 and ba = 49
a = 9 and b = 4
The quotient of 94 – 49 i.e. (ab – ba) when
Now divided by 9 is (a - b) i.e. 9 – 4 = 5
[((ab –ba)/9) = a–b]

(ii) 5
Solution:
The quotient of 94 - 49 i.e. (ab - ba) when
Now divided by 5 i.e. (a - b) is 9
[((ab – ba)/(a–b)) = 9]

Question 5. Show that 527 + 752 + 275 is exactly divisible by 14.
Solution:
abc = 100a + 106 +c……(i)
bca = 1006 + 10c + a…….(ii)
cab = 100c + 10a + b…….(iii)

By adding,(i), (ii) and (iii),
we get abc + bca + cab = 111a + 111c + 111c = 111(a + b + c) = 3 x 37 (a + b + c)
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 × 37 (5 + 2 + 7) = 3 × 37 × 14
Therefore, 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)
Here a = 6
Now substitute the value of a=6 in equation (i) and (ii), we get
abc = 1006 + 106 + c…. (iii)
bac = 1006 + 106 + c…..(iv)
By subtracting (iv) from (iii) abc – bac=0
abc = bac
Therefore, 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)
By subtracting, equation (ii) from (i), we get
abc – cba = 100a + c – 100c – a
abc – cba = 99a – 99c
abc – cba = 99(a – c)
Therefore, it is 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)
Therefore, it is 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)
Here, a = c,
Now substitute the value of a = c in equation (i) and (ii)
cba =100c +10b + c…..(iii)
abc = 100c + 10b +c…..(iv)
By subtracting (iv) from (iii)
cba – abc - 100c + 106 + c - 100c – 106 - c
cba - abc = 0
cba = abc
Therefore, it is proved

Question 10. Show that 954 – 459 is exactly divisible by 99.
Solution:
To show: 954 – 459 is exactly divisible by 399, where a = 9, b = 5, c = 4
abc = 100a + 10b + c
954 = (100×9) + (10×5) + 4
954 = 900 + 50 + 4…… (i)
459 = (100 × 4) + (10 ×5) +9
459 = 400 + 50 +9…… (ii)
Now subtract both the equations
954 – 459 = 900 + 50 + 4 – 400 – 50 – 9
By further calculation
954 – 459 = 500 – 5
954 – 459 = 495
We get
954 – 459 = 99 x 5
954 – 459 is exactly divisible by 99
Therefore, it is proved.

EXERCISE 5(B)

Question 1.

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

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
Therefore, A = 7 and B = 6

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

Question: 2

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

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

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

Question: 3

$$\begin{array}{r} A1 \\ +1B \\ \hline B0 \end{array}$$

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

Therefore, A = 7 and B = 9

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  71
+19
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  90
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Question: 4

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  2AB
+AB1
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  B18
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Solution:
B = 7 as 7 + 1 = 8. We want 8 at unit place.
Now
7 + A = 11
A= 11 – 7 = 4
Therefore, A = 4 and B = 7

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  247
+ 471
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  718
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Question: 5

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  12A
+6AB
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  A09
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Solution:
A + B = 9
and 2 + A = 10
A = 10 – 2 = 8
8 + B = 9
B = 9 – 8 = 1
Therefore, A = 8 and B = 1

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  128
+ 681
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  809
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