Playing with Numbers
Ex 5C

Q1

Answer :

$A = 6$
$\therefore\ A + 7 = 6 + 7 = 13$

1 is carried over.
$(1 + 5 + 8) = 14$

1 is carried over.
$\therefore B = 4$
and $C = 1$

$\therefore A = 6,\ B = 4\ and\ C = 1$

Q2

Answer :

$A = 7,\ A + 6 = 7 + 6 = 13$ (1 is carried over)

$(1 + B + 9) = 17,\ or\ B = 7$ (1 is carried over)

$A = 7,\ B = 7\ and\ C = 4$ (1 is carried over)

$\therefore A = 7,\ B = 7\ and\ C = 4$

Q3

Answer :

$A + A + A = A$ (with 1 being carried over)
This is satisfied if A is equal to 5.

When $A = 5$:

$A + A + A = 15$ (1 is carried over)

Or $B = 1$
$\therefore A = 5 \; and \; B = 1$

Q4

Answer :

First look at the left column, which is:
$6 - A = 3$

This implies that the maximum value of A can be 3.

$A \leq 3$ ... (1)

The next column has the following:
$A - B = 7$

To reconcile this with equation (1), borrowing is involved.

We know:
$12 - 5 = 7$

$\therefore A = 2 \; and \; B = 5$

Q5

Answer :

$5 - A = 9$
This implies that 1 is borrowed.
We know:
$15 - 6 = 9$
$\therefore A = 6$

$B - 5 = 8$
This implies that 1 is borrowed.
$13 - 5 = 8$
But 1 has also been lent
$\therefore B = 4$

$C - 2 = 2$
This implies that 1 has been lent.
$\therefore C = 5$

$\therefore A = 6, \; B = 4 \; and \; C = 5$

Q6

Answer :

$(B \times 3) = B$
Then, B can either be 0 or 5.
If B is 5, then 1 will be carried.
Then, $A \times 3 + 1 = A$ will not be possible for any number.
$\therefore B = 0$
$A \times 3 = A$ is possible for either 0 or 5.
If we take $A = 0$, then all number will become 0. However, this is not possible.
$\therefore A = 5$
Then, 1 will be carried.
$\therefore C = 1$
$\therefore A = 5$, $B = 0$ and $C = 1$

Q7

Answer :

$A \times B = B \Rightarrow A = 1$

$$\begin{array}{r} 1\ B \\ \times\ B\ 1 \\ \hline 1\ \ B \\ B\ \ B^2\ \ x \\ \hline B\ (1+B^2)\ B \end{array}$$

In the question:
First digit = B+1
Thus, 1 will be carried from $1+B^2$ and becomes $(B+1)$ $(B^2 -9)$ B.
$\therefore C = B^2 -1$
Now, all B, B+1 and $B^2 -9$ are one digit number.

This condition is satisfied for B=3 or B=4.

For B< 3, $B^2 -9$ will be negative.
For B>3, $B^2 -9$ will become a two digit number.
For B=3 , $C = 3^2 - 9 = 9-9 = 0$
For B = 4, $C = 4^2 -9 = 16-9 = 7$

Required answer:

A=1, B=3, C = 0

or

A=1, B=4, C = 7

Q8

Answer :

$(A - 4) = 3 \Rightarrow A = 7$
Also, $6 \times 6 = 36 \Rightarrow C = 6$
$36 - 36 = 0 \Rightarrow B = 6$

$\therefore A = 7$
$B = C = 6$

Q9

Answer :

1 and 9 are two numbers, whose product is a single digit number.
$\therefore 1 \times 9 = 9$

Sum of the numbers is a two digit number.
$\therefore 1+9=10$

Q10

Answer :

The three whole numbers are 1, 2 and 3.

$1+2+3=6=1\times2\times3$

Q11

Answer :

Taking the diagonal that starts with 6:

$6+5+x=15 \Rightarrow x=4$

6	1	
	5	
		4

Now, taking the first row:

$6+1+x=15 \Rightarrow x=8$

6	1	8
	5	
		4

Taking the last column:

$8+x+4=15 \Rightarrow x=3$

6	1	8
	5	3
		4

Taking the second column:

$1+5+x=15 \Rightarrow x=9$

6	1	8
	5	3
	9	4

Taking the second row:

$x+5+3=15 \Rightarrow x=7$

6	1	8
7	5	3
	9	4

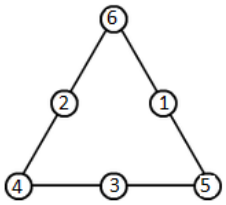
Taking the diagonal that begins with 8:

$8+5+x=15 \Rightarrow x=2$

6	1	8
7	5	3
2	9	4

Q12

Answer :



6+2+4 = 12
4+3+5 = 12
6+1+5 = 12

Q13

Answer :

Given:
$a = 8 \; and \; b = 13$
The numbers in the Fibonnaci sequence are arranged in the following manner:
$1st,\ 2nd,\ (1st + 2nd),\ (2nd + 3th),\ (3th + 4th),\ (4th + 5th),\ (5th + 6th),\ (6th + 7th),$
$(7th + 8th),\ (8th + 9th),\ (9th + 10th)$

The numbers are $8,\ 13,\ 21,\ 34,\ 55,\ 89,\ 144,\ 233,\ 377$ and 610.
Sum of the numbers = $8 + 13 + 21 + 34 + 55 + 89 + 144 + 233 + 377 + 610$

$$= 1584$$

$11 \times 7th \; number \; = \; 11 \times 144 = 1584$

Q14

Answer :

The magic square is completed assuming that the sum of the row, columns and diagonals is 30. This is because the sum of all the number of the last column is 30.

3	14	**13**	0
8	**5**	6	11
4	**9**	**10**	7
15	2	1	12