#463420

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

$$\begin{array}{r} 3\ A \\ +\ 2\ 5 \\ \hline B\ 2 \end{array}$$

Solution

If $A+5$ must give 2 as the unit digit of the sum , then A has to be 7.

$B = 3+2+1$(carry over) $= 6$

$A = 7$ and $B = 6$.

#463429

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

$$\begin{array}{r} 4\ A \\ +\ 9\ 8 \\ \hline C\ B\ 3 \end{array}$$

Solution

$A+8 = 3$, then A has to be 5 because unit digit of the sum has to be 3.

There is a carry-over of 1.

So, $4+9+1 = 14$

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

#463430

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

$$\begin{array}{r} 1\ A \\ \times\ A \\ \hline 9\ A \end{array}$$

Solution

According to the question that when a digit A multiplies with itself then the unit digit of the answer should be A.

$1, 5$ and 6 are those numbers which satisfy the above condition

so put $1, 5$ and 6 in place of A and check

$11 \times 1 = 11$

$15 \times 5 = 75$

$16 \times 6 = 96$

So, the value of A is 6.

#463433

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

$$\begin{array}{r} A\ B \\ +\ 3\ 7 \\ \hline 6\ A \end{array}$$

Solution

From the ten's place, we can say that either A has to be 2 or 3.

If $A = 3$, then the sum is not satisfied. So, $A = 2$.

Then, $B = 5$.

$A = 2$ and $B = 5$

#463441

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

$$\begin{array}{r} A\ B \\ \times\ 3 \\ \hline C\ A\ B \end{array}$$

Solution

If $B \times 3$ has to end with B, then B has to be either 0 or 5.

With $B = 5$, there is a carry-over, which will not give the next product as C A.

Thus, $B = 0$.

$A \times 3$ ends with A, so $A = 5$.

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

#463444

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

$$\begin{array}{r} A\ B \\ \times\ 5 \\ \hline C\ A\ B \end{array}$$

Solution

As $B \times 5 = B$, B has to be either 5 or 0.

If $B = 0$, then A has to be 5 as $A \times 5 = A$

So, $A = 5, B = 0$and $C = 2$.

If $B = 5$, then $A = 2$ so that $A \times 5$ with carry over ends with A.

Hence, $A = 2, B = 5, C = 1$.

#463446

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

$$\begin{array}{r} A\ B \\ \times\ 6 \\ \hline B\ B\ B \end{array}$$

Solution

If $B \times 6$ has to end with B, then B can be $2, 4, 8$ or 6.

But with B as 2 and 6, the above condition is not satisfied to arrive at a value for A.

If $B = 4$, then A has to be 7 to give the product as 444.

If we consider B to be 8, then A has to be a two digit number to give the product as 888.

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

#463447

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

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

Solution

If $1 + B = 0$, then B has to be 9.

With $B = 9$,

Now, we have condition $A + 1 + 1(\text{carry over}) = B$.

i.e. $A + 2 = 9$

So,

$A = 7, B = 9$

#463450

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

$$\begin{array}{r} 2\ A\ B \\ +\ A\ B\ 1 \\ \hline B\ 1\ 8 \end{array}$$

Solution

If $B+1=8$ then B has to be 7.

Now we have

$A+7$ has to end with 1, so it has to be 11,

$\therefore A$ has to be 4.

Then, $2+A+1(\text{carry over})=B$

Thus, $A=4, B=7$

#463453

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

$$\begin{array}{r} 1\ 2\ A \\ +\ 6\ A\ B \\ \hline A\ 0\ 9 \end{array}$$

Solution

Lets assume, $A+B>9$

We know that A and B both can attain maximum value of 9,

If both $A=B=9$then we get 18 where unit digit is 8, so its not possible to achieve unit digit as 9

This implies that sum must be $=9$

Now focusing on ten's digit,

$2+A=0$

Here, A has to be 8 as there is no carry over from unit digit addition.

Now, we know that $A=8$

$\therefore B=9-A=9-8=1$

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

#463454

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

Solution

For a number to be multiple of 9 then the sum of digits of number should be equal to 9 or multiple of 9

$21y5$ to be a multiple of 9, the sum of the digits $2+1+y+5$should be equal to 9.

So, $y=1$

#463455

If $31z5$ is a multiple of 9, where z is a digit, what is the value of z?

Solution

For a number to be multiple of 9 the sum of digits of number should be equal to 9 or multiple of 9

So, $31z5$ to be a multiple of 9, the sum of the digits $3+1+z+5$ should be equal to 9 or a multiple of 9.

So, $z=$ either 0 or 9.

#463460

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

Solution

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: $0,\ 3,\ 6,\ 9,\ 13,\ 15,\ 18,\ \ldots$

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.

#463462

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

Solution

For $31z5$ to be a multiple of 3,

$3 + 1 + z + 5$should be a multiple of 3.

So, the values of z can be $0, 3, 6$ or 9.

If $z = 0$, then the sum is 9.

If $z = 3$, sum is 12

If $z = 6$, sum is 15

If $z = 9$, then the sum is 18

In the above cases, we see that the sums are all multiples of 3.

Hence, z can be $0, 3, 6$ or 9.

#464957

Find the smallest square no. which is divisible by each of the numbers $4, 9$ and 10.

Solution

$4 = 2 \times 2$

$9 = 3 \times 3$

$10 = 2 \times 5$

L.C.M = $2^2 \times 3^2 \times 5 = 180$

Required no. $= 180 \times 5 = 900$

#464958

Find the smallest square no. which is divisible by each of the numbers $8, 15$ and 20.

Solution

$8 = 2 \times 2 \times 2$

$15 = 3 \times 5$

$20 = 2 \times 2 \times 5$

$L.C.M = 2 \times 2 \times 2 \times 3 \times 5 = 120$

Required no. $= 120 \times 3 \times 5 = 1800$