NCERT SOLUTIONS FOR CLASS-8 MATHS CHAPTER-16
PLAYING WITH NUMBERS EX-16.2

Q1. If $21y5$ is a multiple of 9, where y is a digit, what is the value of y?

Ans: Since $21y5$ 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.

$\therefore\ 2+1+y+5=8+y$

$\Rightarrow 8+y=9$

$\Rightarrow y=1$

Since $21y5$ is a multiple of 9.

Q2. If $31z5$ 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?

Ans: 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.

$\therefore\ 3+1+z+5=9+z$

$\Rightarrow\ 9+z=9$

$\Rightarrow\ z=0$

If $3+1+z+5=9+z$

$\Rightarrow\ 9+z=18$

$\Rightarrow\ z=9$

Hence 0 and 9 are two possible answers.

Q3. If $24x$ 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.)

Ans: 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.

$\therefore\ 2+4+x=6+x$

Since x is a digit.

$\Rightarrow\ 6+x=6\ \Rightarrow\ x=0$

$\Rightarrow\ 6+x=9\ \Rightarrow\ x=3$

$\Rightarrow\ 6+x=12\ \Rightarrow\ x=6$

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

Thus, x can have any of four different values.

Q4. If $31z5$ is a multiple of 3, where z is a digit, what might be the values of z?

Ans: Since $31z5$ 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.

Since z is a digit.

$\therefore\ 3+1+z+5=9+z$

$\Rightarrow 9+z=9\ \Rightarrow z=0$

If $3+1+z+5=9+z$

$\Rightarrow 9+z=12\ \Rightarrow z=3$

If $3+1+z+5=9+z$

$\Rightarrow 9+z=15\ \Rightarrow z=6$

If $3+1+z+5=9+z$

$\Rightarrow 9+z=18\ \Rightarrow\ z=9$

Hence 0, 3, 6 and 9 are four possible answers.

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