

**CBSE Class –VIII Mathematics**  
**NCERT Solutions**  
**CHAPTER - 16**  
**Playing with Numbers (Ex. 16.2)**

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**1. 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.

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**2. 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.

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

$$\Rightarrow 9+z=9$$

$$\Rightarrow z=0$$

$$\text{If } 3+1+z+5=9+z$$

$$\Rightarrow 9+z=18$$

$$\Rightarrow z = 9$$

Hence 0 and 9 are two possible answers.

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**3. 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.

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**4. 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.