



## EXERCISE 5D

Q1

**Answer :**

(b) 1

If a number is exactly divisible by 3, the sum of the digits must also be divisible by 3.

$5 + x + 6 = 11 + x$  must be divisible by 3.

The smallest value of  $x$  is 1.

$$x = 1$$

$\Rightarrow x + 11 = 12$  is divisible by 3.

Q2

**Answer :**

(a) 0

If a number is divisible by 3, then the sum of the digits is also divisible by 3.

$$6 + 4 + y + 8 = 18 + y$$

This is divisible by 3 as  $y$  is equal to 0.

Q3

**Answer :**

(c) 3

If a number is exactly divisible by 9, the sum of the digits must also be divisible by 9.

$$7 + x + 8 = 15 + x$$

18 is divisible by 9.

$$\therefore 15 + x = 18 \Rightarrow x = 3$$

Q4

**Answer :**

(d) 4

A number is divisible by 9 if the sum of the digits is divisible by 9.

$$3 + 7 + y + 4 = 14 + y$$

For this sum to be divisible by 9:

$$14 + y = 18 \Rightarrow y = 4$$

Q5

**Answer :**

(a) 1

If a number is divisible by 3, the sum of the digits is also divisible by 3.

$$4 + x + y + 7 = 11 + (x + y)$$

For the sum to be divisible by 3:

$$11 + (x + y) = 12 \Rightarrow (x + y) = 1$$

Q6

**Answer :**

(d) 3

When a number is divisible by 3, the sum of the digits must also be divisible by 3.

$$x + 7 + y + 5 = (x + y) + 12$$

This sum is divisible by 3 if  $x+y+12$  is 12 or 15.

For  $x+y+12 = 12$ :

$$x+y=0$$

But  $x+y$  cannot be 0 because then  $x$  and  $y$  both will have to be 0.

Since  $x$  is the first digit, it cannot be 0.

$$\therefore x+y+12 = 15$$

$$\text{or } x+y = 15-12=3$$

Q7

**Answer :**

(c) 9

A number is divisible by 9 if the sum of the digits is divisible by 9.

$$x + 4 + y + 5 + z = 9 + (x + y + z)$$

The lowest value of  $(x + y + z)$  is equal to 0 for the number  $x4y5z$  to be divisible by 9.

In this case, all  $x$ ,  $y$  and  $z$  will be 0.

But  $x$  is the first digit, so it cannot be 0.

$$\therefore x+4+y+5+z = 18$$

$$\text{or } x+y+z+9 = 18$$

$$\text{or } x+y+z = 9$$

Q8

**Answer :**

(b) 1

For a number to be divisible by 9, the sum of the digits must also be divisible by 9.

$$1+A+2+B+5=(A+B)+8$$

The number will be divisible by 9 if  $(A+B) = 1$ .

Q9

**Answer :**

(d) 9

If a number is divisible by 9, then the sum of the digits is divisible by 9.

$$x + 2 + 7 + y = (x + y) + 9$$

For this to be divisible by 9, the least value of  $(x + y)$  is 0.

But for  $x+y = 0$ ,  $x$  and  $y$  both will be zero.

Since  $x$  is the first digit, it can never be 0.

$$\therefore x + y + 9 = 18$$

$$\text{or } x + y = 9$$

\*\*\*\*\* END \*\*\*\*\*