

Exercise - 3.2

1. Find the common factors of the following -

(i) 16 and 24

Solution :- The factors of 16 = 1, 2, 4, 8, 16

The factors of 24 = 1, 2, 3, 4, 6, 8, 12, 24

Common factors of 16 and 24 are 1, 2, 4 and 8.

(ii) 25 and 40

Solution :- The factors of 25 = 1, 5, 25

The factors of 40 = 1, 2, 4, 5, 8, 10, 20

Common factors of 25 and 40 are 1 and 5.

(iii) 24 and 36

Solution :- The factors of 24 = 1, 2, 3, 4, 6, 8, 12, 24

The factors of 36 = 1, 2, 3, 4, 6, 9, 12, 18, 36

Common factors of 24 and 36 are 1, 2, 3, 4, 6 and 12.

(iv) 14, 35 and 42

Solution :- The factors of 14 = 1, 2, 7, 14

The factors of 35 = 1, 5, 7, 35

The factors of 42 = 1, 2, 3, 6, 7, 14, 21, 42

Common factors of 14, 35 and 42 are 1 and 7.

(v) 15, 24 and 35

Solution :- The factors of 15 = 1, 3, 5, 15

The factors of 24 = 1, 2, 3, 4, 6, 8, 12, 24

The factors of 35 = 1, 5, 7, 35

Common factors of 15, 24 and 35 are 1.

2. find first three common multiples of the following -

(i) 3 and 5

The multiples of 3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45

The multiples of 5 = 5, 10, 15, 20, 25, 30, 35, 40, 45

The first three common multiples of 3 and 5 are 15, 30 and 45

(ii) 6 and 8

The multiples of 6 = 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78

The multiples of 8 = 8, 16, 24, 32, 40, 48, 56, 64, 72, 80

The first three common multiples of 6 and 8 are 24, 48, 72

(iii) 2, 3 and 4

The multiples of 2 = 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36

The multiples of 3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36

The multiples of 4 = 4, 8, 12, 16, 20, 24, 28, 32, 36

The first three common multiples of 2, 3 and 4 are 12, 24, 36

3. Which of the following numbers are divisible by 2 or 4

(i) 52314

Divisibility by 2 $\Rightarrow$ 52314 is divisible by 2 because its unit's place digit is even.

Divisibility by 4 $\Rightarrow$ The number formed by last two digits is 14 which is not divisible by 4 so, 52314 is not divisible by 4.

(ii) 678913

Divisibility by 2 $\Rightarrow$ 678913 is not divisible by 2 because its unit's place digit is odd.

Divisibility by 4 $\Rightarrow$ The number formed by last two digits is 13, which is not divisible by 4. So, 678913 is not divisible by 4.

(iii) 4056784

Divisibility by 2 $\rightarrow$ 4056784 is divisible by 2 because its unit's place digit is even.

Divisibility by 4 $\rightarrow$ The number formed by last two digits is 84, which is divisible by 4. So, 4056784 is divisible by 4.

(iv) 21536

Divisibility by 2 $\rightarrow$ 21536 is divisible by 2 because its unit's place digit is even.

Divisibility by 4 $\rightarrow$ The number formed by last two digits is 36, which is divisible by 4. So 21536 is divisible by 4.

(v) 412318

Divisibility by 2 $\rightarrow$ 412318 is divisible by 2 because its unit's place digit is even.

Divisibility by 4 $\rightarrow$ The number formed by last two digits is 18, which is not divisible by 4. So, 412318 is not divisible by 4.

4. Which of the following numbers are divisible by 3 or 9?

(i) 654312

Divisibility by 3 $\rightarrow$ Sum of digits = $6+5+4+3+1+2 = 21$ is divisible by 3.

So, 654312 is divisible by 3

Divisibility by 9 $\rightarrow$ Since sum of digits that is 21 is not divisible by 9. So, 654312 is not divisible by 9.

(ii) 516735

Divisibility by 3 :- Sum of digits = $5+1+6+7+3+5 = 27$ is divisible by 3. So, 516735 is divisible by 3.

Divisibility by 9 :- Since sum of digits that is 27 is divisible by 9. So, 516735 is divisible by 9.

(iii) 423152

Divisibility by 3 :- Sum of digits = $4+2+3+1+5+2 = 17$ is not divisible by 3. So, 423152 is not divisible by 3.

Divisibility by 9 :- Since sum of digits that is 17 is not divisible by 9. So, 423152 is not divisible by 9.

(iv) 704355

Divisibility by 3 :- Sum of digits = $7+0+4+3+5+5 = 24$ is divisible by 3. So, 704355 is divisible by 3.

Divisibility by 9 :- Since sum of digits that is 24 is not divisible by 9. So, 704355 is not divisible by 9.

(v) 215478

Divisibility by 3 :- Sum of digits = $2+1+5+4+7+8 = 27$ is divisible by 3. So, 215478 is divisible by 3.

Divisibility by 9 :- Since sum of digits that is 27 is divisible by 9. So, 215478 is divisible by 9.

5. Which of the following numbers are divisible by 5 or 10?

(i) 456803

Divisibility by 5 :- 456803 is not divisible by 5 because its last digit is not 0 or 5.

Divisibility by 10 :- 456803 is not divisible by 10 because its last digit is not 0.

(ii) 654310

Divisibility by 5 :- 654310 is divisible by 5 because its last digit is 0.Divisibility by 10 :- 654310 is divisible by 10 because its last digit is 0.

(iii) 256785

Divisibility by 5 :- 256785 is divisible by 5 because its last digit is 5.Divisibility by 10 :- 256785 is not divisible by 10 because its last digit is not 0.

(iv) 412508

Divisibility by 5 :- 412508 is not divisible by 5 because its last digit is not 5 or 0.Divisibility by 10 :- 412508 is not divisible by 10 because its last digit is not 0.

(v) 872565

Divisibility by 5 :- 872565 is divisible by 5 because its last digit is 5.Divisibility by 10 :- 872565 is not divisible by 10 because its last digit is not 0.

6. Which of the following numbers are divisible by 8?

(i) 457432

The number formed by last three digits is 432 which is divisible by 8. So, 457432 is divisible by 8.

(ii) 5134214

The number formed by last three digits is 214 which is not divisible by 8. So, 5134214 is not divisible by 8.

(iii) 7232000

7232000 ends in three zeroes so, it is divisible by 8.

(iv) 5124328

The number formed by last three digits is 328 which is divisible by 8. So, 5124328 is divisible by 8.

(v) 642516

The number formed by last three digits is 516 which is not divisible by 8. So, 642516 is not divisible by 8.

7 Which of the following numbers are divisible by 6?

(i) 425424

Divisibility by 2 :- 425424 is an even number so it is divisible by 2.

Divisibility by 3 :- sum of digits = $4+2+5+4+2+4=21$, which is divisible by 3. So, 425424 is divisible by 3.

Since 425424 is divisible by 2 and 3. So, it is divisible by 6.

(ii) 617415

Divisibility by 2 :- 617415 is an odd number so it is not divisible by 2.

Divisibility by 3 :- sum of digits = $6+1+7+4+1+5=24$, which is divisible by 3. So, 617415 is divisible by 3.

617415 is divisible by 3 but not divisible by 2. So it is not divisible by 6.

(iii) 3415026

Divisibility by 2 :- 3415026 is an even number, so it is divisible by 2.

Divisibility by 3 :- sum of digits = $3+4+1+5+0+2+6=21$, which is divisible by 3. So, 3415026 is divisible by 3.

Since 3415026 is divisible by 2 and 3. So, it is divisible by 6.

(iv) 4065842

Divisibility by 2 :- 4065842 is an even number, so it is divisible by 2.

Divisibility by 3 :- sum of digits = $4+0+6+5+8+4+2=29$, which is not divisible by 3. So 4065842 is not divisible by 3.

Since 4065842 is divisible by 2 but not divisible by 3. So it is not divisible by 6.

(v) 725436

Divisibility by 2 :- 725436 is an even number, so it is divisible by 2.

Divisibility by 3 :- sum of digits = $7+2+5+4+3+6=27$ which is divisible by 3. So, 725436 is divisible by 3.

Since 725436 is divisible by 2 and 3. So, it is divisible by 6.

8. Which of the following numbers are divisible by 11?

(i) 4281970

$$\text{sum of digits in odd places} = 4 + 8 + 9 + 0 = 21$$

$$\text{sum of digits in even places} = 2 + 1 + 7 = 10$$

$$\text{difference} = 21 - 10 = 11$$

Since difference is multiple of 11, 4281970 is divisible by 11.

(ii) 8049536

$$\text{sum of digits in odd places} = 8 + 4 + 5 + 6 = 23$$

$$\text{sum of digits in even places} = 0 + 9 + 3 = 12$$

$$\text{difference} = 23 - 12 = 11$$

difference is multiple of 11, so 8049536 is divisible by 11.

(iii) 1234321

$$\text{sum of digits in odd places} = 1 + 3 + 3 + 1 = 8$$

$$\text{sum of digits in even places} = 2 + 4 + 2 = 8$$

$$\text{difference} = 8 - 8 = 0$$

difference is 0, so 1234321 is divisible by 11.

(iv) 6450828

$$\text{sum of digits in odd places} = 6 + 5 + 8 + 8 = 27$$

$$\text{sum of digits in even places} = 4 + 0 + 2 = 6$$

$$\text{difference} = 27 - 6 = 21$$

difference is neither 0 nor multiple of 11, so 6450828 is not divisible by 11.

(v) 5648346

$$\text{sum of digits in odd places} = 5 + 4 + 3 + 6 = 18$$

$$\text{sum of digits in even places} = 6 + 8 + 4 = 18$$

$$\text{difference} = 18 - 18 = 0$$

difference is 0, so 5648346 is divisible by 11.

9. State True or False :-

- (i) If a number is divisible by 24, then it is also divisible by 3 and 8. True
- (ii) 60 and 90 both are divisible by 10 then their sum is not divisible by 10. False
- (iii) If a number is divisible by 8 then it is also divisible by 16. False
- (iv) If a number is divisible by 15 then it is also divisible by 3. True
- (v) 144 and 72 are divisible by 12 then their difference is also divisible by 12. True

10. If a number is divisible by 5 and 9 then by which other number will that number be always divisible?

Solution:- 5 and 9 are co-prime numbers. If a number is divisible by 5 and 9, then that number is divisible by 5×9 that is 45.

11. Which of the following pairs are co-prime?

(i) 25, 35

The factors of 25 = 1, 5, 25

The factors of 35 = 1, 5, 7, 35

Common factors of 25 and 35 are 1 and 5

So 25 and 35 are not co-prime numbers.

(ii) 16, 21

The factors of 16 = 1, 2, 4, 8, 16

The factors of 21 = 1, 3, 7, 21

Common factors of 16 and 21 is only 1

So 16 and 21 are co-prime numbers.

(iii) 24, 41

The factors of 24 = 1, 2, 3, 4, 6, 8, 12, 24

The factors of 41 = 1, 41

Common factors of 24 and 41 = 1

So 24 and 41 are co-prime numbers.

(iv) 48, 33.

The factors of 48 = 1, 2, 3, 4, 6, 8, 12, 16, 24, 48

The factors of 33 = 1, 3, 11, 33

Common factors of 48 and 33 = 1, 3

So 48 and 33 are not co-prime numbers.

(v) 20, 57

The factors of 20 = 1, 2, 4, 5, 10, 20

The factors of 57 = 1, 3, 19, 57

Common factors of 20 and 57 = 1

So 20 and 57 are co-prime numbers.

NEHA SHARMA
SCIENCE MISTRESS
G.M.S. DHULETA.