CHAPTER – 3

Playing with Numbers

EXERCISE – 3.4

Q. 1

Find the common factors of:

(a) 20 and 28 (b) 15 and 25

(c) 35 and 50 (d) 56 and 120

Answer:

When we find the factors of two or more numbers, then some factors may be found in both the numbers, these are called common factors.

a. 20 and 28

Factors of 20 = 1, 2, 4, 5, 10 and 20

Factors of 28 = 1, 2, 4, 7, 14 and 28

Common factors = 1, 2, 4

b. 15 and 25

Factors of 15 = 1, 3, 5, 15

Factors of 25 = 1, 5, 25

Common factors = 1 and 5

c. 35 and 50

Factors of 35 = 1, 5, 7, 35

Factors of 50 = 1, 2, 5, 10, 25, 50

Common factors = 1 and 5

d. 56 and 120

Factors of 56 = 1, 2, 4, 7, 8, 14, 28 and 56
Factors of 120 = 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120
Common factors = 1, 2, 4 and 8

Q. 2

Find the common factors of:
(a) 4, 8 and 12 (b) 5, 15 and 25

Answer:

a. 4, 8 and 12
Factors of 4 = 1, 2 and 4
Factors of 8 = 1, 2, 4 and 8
Factors of 12 = 1, 2, 3, 4, 6 and 12
Common factors = 1, 2, and 4

b. 5, 15 and 25
Factors of 5 = 1, 5
Factors of 15 = 1, 3, 5 and 15
Factors of 25 = 1, 5 and 25
Common factors = 1 and 5.

Q. 3

Find first three common multiples of:
(a) 6 and 8 (b) 12 and 18

Answer:

a. 6 and 8

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

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

So,

First three common multiples are = 24, 48 and 72

b. 12 and 18

Multiples of 12 = 12, 24, 36, 48, 60, 72, 84, 96, 108, 120

Multiples of 18 = 18, 36, 54, 72, 90, 108, 126

First three common multiples = 36, 72 and 108

Q. 4

Write all the numbers less than 100 which are common multiples of 3 and 4.

Answer:

Multiples of 3 less than 100 are;

= 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63, 66, 69, 81, 84, 87, 90, 93, 96, 99.

Multiples of 4 less than 100 are;

= 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96.

Common multiples are;

= 12, 24, 36, 48, 60, 72, 84 and 96

Q. 5

Which of the following numbers are co-prime?
(a) 18 and 35 (b) 15 and 37
(c) 30 and 415 (d) 17 and 68
(e) 216 and 215 (f) 81 and 16

Answer:

Two numbers are said to be co-prime if they don't have any common factor other than 1

a. 18 and 35

Factors of 18 = 1, 2, 3, 6, 9, and 18
Factors of 35 = 1, 5, 7 and 35
Common factor = 1
Therefore, the given two numbers are co-prime.

b. 15 and 37

Factors of 15 = 1, 3, 5, and 15
Factors of 37 = 1, and 37
Common factor = 1
Therefore, the given two numbers are co-prime.

c. 30 and 415

Factors of 30 = 1, 2, 3, 5, 6, 10, 15, and 30
Factors of 415 = 1, 5, 83 and 415
Common factor = 1 and 5
These two numbers have a factor other than 1, therefore, the given two numbers are not co-prime.

d. 17 and 68

Factors of 17 = 1, and 17

Factors of 68 = 1, 2, 4, 17, 34 and 68

Common factor = 1, and 17

These two numbers have a factor other than 1, therefore, the given two numbers are not co-prime.

e. 216 and 215

Factors of 216 = 1, 3, 4, 6, 8, 9, 12, 18, 24, 27, 36, 54, 72, 108 and 216

Factors of 215 = 1, 5, 43 and 215

Common factor = 1

Therefore, the given two numbers are co-prime.

f. 81 and 16

Factors of 81 = 1, 3, 9, 27 and 81

Factors of 16 = 1, 2, 4, 8 and 16

Common factor = 1

Therefore, the given two numbers are co-prime.

Q. 6

A number is divisible by both 5 and 12. By which other number will that number be always divisible?

Answer:

The no. will always be divisible by their LCM which is 60.

It can be shown. Let the number be *p*.

p = 12 × q [Given: p is divisible by 12]Also, p is

divisible by 5, but 12 is not divisible by 5, and do not have any factor common So, q is divisible by 5.p = 12 × (5 × r)p= (12 × 5) r p= 60rSo the number is divisible by 60.

Q. 7

A number is divisible by 12. By what other numbers will that number be divisible?

Answer:

As the number is divisible by 12,

So, it will also be divisible by its factors;

That is,

1, 2, 3, 4, 6 and 12.

Therefore,

1, 2, 3, 4 and 6 are the numbers other than 12 by which this number is also divisible.