

MULTIPLES AND FACTORS

Important facts about Factors

- 1 is a factor of every number. It is also the smallest factor.
- The greatest factor of a number is the number itself.
- As division by 0 is not possible, so 0 is not a factor of any number.
- A number has infinite factors.
- 1 is neither Prime nor composite as it has only one factor it is a unique number.
- 2 is the smallest and only even prime number.
- 3 is the smallest odd number.
- 4 is the smallest composite number.
- 2 and 3 are the only consecutive prime numbers.
- Two prime numbers with a composite number between them are called twin primes.

Exercise - 3

1 Use multiplication to find the factors of:

a) 15

$$1 \times 15 = 15$$

$$3 \times 5 = 15$$

Factors of 15 = 1, 3, 5, 15

c) 24

$$1 \times 24 = 24$$

$$2 \times 12 = 24$$

$$3 \times 8 = 24$$

$$4 \times 6 = 24$$

Factors of 24 = 1, 2, 3, 4, 6, 8, 12, 24

Practice b, d, f

2. Use division to find the products of:

a) 12

$$12 \div 1 = 12$$

$$12 \div 2 = 6$$

$$12 \div 3 = 4$$

Factors of 12 are 1, 2, 3, 4, 6, 12

c) 36

$$36 \div 1 = 36$$

$$36 \div 2 = 18$$

$$36 \div 3 = 12$$

$$36 \div 4 = 9$$

$$36 \div 6 = 6$$

Factors of 36 are 1, 2, 3, 4, 6, 9, 12, 18, 36

Practice - b, d, e

3 Do in the book.

Exercise 4

1. Find the common factors of the following numbers :

Exercise - 4

Q1.

a) 4 and 10

Factors of 4 are - ①, ②, 4

Factors of 10 are - ①, ②, 5, 10

Common factors of 4 and 10 = 1, 2

c) 12 and 20

Factors of 12 are - ①, ②, 3, ④, 6, 12

Factors of 20 are - ①, ②, ④, 5, 10, 20

Common factors of 12 and 20 = 1, 2, 4

f) 12, 18 and 36

factors of 12 are - ①, ②, ③, 4, ⑥, 12
factors of 18 are - ①, ②, ③, ⑥, 9, 18
factors of 36 are - ①, ②, ③, 4, ⑥, 9, 12, 18, 36

Common factors of 12, 18 and 36 =
1, 2, 3, 6

Practice - b and e

2. Find the HCF of the following

a) 4 and 6

Factors of 4 are - ①, ②, 4
Factors of 6 are - ①, ②, 3, 6

Common factors are 1 and 2

H.C.F = 2

c) 30 and 40

Factors of 30 are - ①, ②, 3, ⑤, 6
 ⑩, 15, 30

Factors of 40 are - ①, ②, 4, ⑤, 8,
 ⑩, 20, 40

Common factors are - 1, 2, 5, 10
 HCF = 10

f) 25, 45 and 50

Factors of 25 are - ①, ⑤, 25

Factors of 45 are - ①, 3, ⑤, 9, 15,
 45

Factors of 50 are - ①, 2, ⑤, 10, 25,
 50.

Common factors are - 1, 5
 HCF = 5

Practice b, e

3. Which of the following pair are co-prime ?

Q 3(a) 9 and 12

factors of 9 = ①, ③, 9
 factors of 12 = ①, 2, ③, 4, 6, 12

Common factors = 1, 3
 HCF = 3

It is not a co-prime.

(b) 3 and 8

factors of 3 = ①, 3
 factors of 8 = ①, 2, 4, 8

Common factors = 1
 HCF = 1

yes, it is a co-prime

(c) 15 and 3

factors of 15 = ①, ③, 5, 15

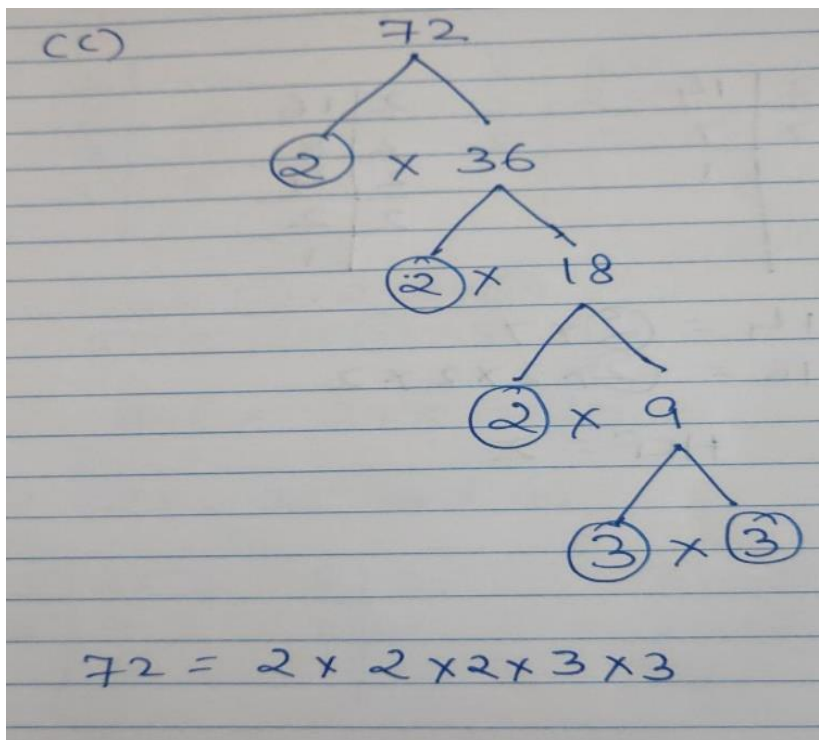
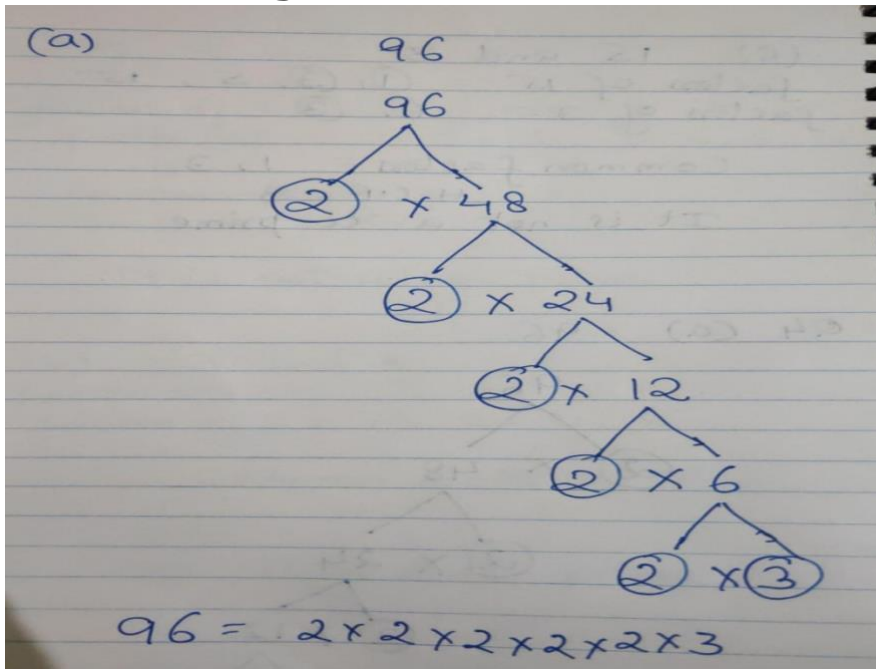
factors of 3 = ①, ③

Common factors = 1, 3

H.C.F = 3

It is not a co-prime

4. Find the prime factorization of the following numbers using the factor tree:



Practice b.

5. Find the HCF of the following by the prime factorization method :

Q5 (a) 14 and 16

2	14
7	7
	1

2	16
2	8
2	4
2	2
	1

$14 = 2 \times 7$
 $16 = 2 \times 2 \times 2 \times 2$
HCF = 2

c) 40 and 50

2	40
2	20
2	10
5	5
	1

2	50
5	25
5	5
	1

$40 = 2 \times 2 \times 2 \times 5$
 $50 = 2 \times 5 \times 5$
HCF = $2 \times 5 = 10$

(f) 25, 35 and 45

5	25
5	5
	1

5	35
7	7
	1

3	45
3	15
5	5
	1

$25 = 5 \times 5$
 $35 = 5 \times 7$
 $45 = 3 \times 3 \times 5$
HCF = 5

Practice b , d , e

Exercise 5

1 Check whether the number is prime or composite by listing its factors

a) **5**

Factors of 5 are 1 and 5

As it has only two factors 1 and the number itself .So 5 is a prime number.

b) **12**

Factors of 12 are 1, 2, 3 , 4 , 6 , 12

As there are more than two factors so 12 is a composite number.

e) **31**

Factors of 31 are 1 and 31

As there are only two factors 1 and the number itself so 31 is a prime number .

h) **60**

Factors of 60 are 1 , 2 ,3 ,4 ,5 6 , 10 ,12 , 15,20 ,30

As there are more than two factors so 60 is a composite number .

Practice – d , g , j , k , l

2 List the prime numbers between 75 and 100

The prime numbers between 75 and 100 are

79, 83, 89,97

DO NOT DRAW THIS IN YOUR FAIR COPY. OKAY?

FACTORS

Numbers that you multiply together to get a product.



Prime Numbers: Only have 2 factors
1 and the number itself
Ex: $7: 7 \times 1$ $19: 1 \times 19$

Composite Numbers: Have more than two factors
Ex: $12: 1 \times 12, 2 \times 6, 3 \times 4$

FACTORS

Two factors are multiplied together to get a product.



Two ways to think about this...

•What can I multiply together (factors) to get my number (product)?

$$\begin{aligned} 1 \times 32 &= 32 \\ 2 \times 16 &= 32 \\ 4 \times 8 &= 32 \end{aligned}$$

So the numbers 1, 2, 4, 8, 16 & 32 are factors of 32.

•What numbers can I divide evenly into my number?

MULTIPLES

The product of a given number and another factor multiplied together.

$$4 \times 9 = 36$$

Multiple ↗

Find the multiples of 4.

$$\begin{aligned} 4 \times 1 &= 4 \\ 4 \times 2 &= 8 \\ 4 \times 3 &= 12 \\ 4 \times 4 &= 16 \\ 4 \times 5 &= 20 \\ 4 \times 6 &= 24 \\ 4 \times 7 &= 28 \\ 4 \times 8 &= 32 \\ 4 \times 9 &= 36 \end{aligned}$$

4, 8, 12, 16, 20, 24, 28, 32, 36 and so on are multiples of 4.

Skip counting by 4 also will give you the multiples!

