1) Using the common factor method, find the H.C.F of:

Ex → 8 (B)

i) 16 and 35

Ans Factors of 16 → 1, 2, 4, 8, 16

Factors of 35 → 1, 5, 7, 35

H.C.F ⇒ 1

ii) 25 and 20

Ans Factors → 25 → 1, 5, 25

20 → 1, 2, 4, 5, 10, 20

H.C.F ⇒ 5

iii) 27 and 75

Ans Factors of 27 → 1, 3, 9, 27

Factors of 75 → 1, 3, 5, 15, 25, 75

Common factor :- 1, 3

H.C.F ⇒ 3

iv) 8, 12, 18

Ans Factors of 8 → 1, 2, 4, 8

Factors of 12 → 1, 2, 3, 6, 12

Factors of 18 → 1, 2, 3, 6, 9, 18

Common → 1, 2

HCF : 2

v) 24, 36, 45, 60

Ans 24 → 1, 2, 3, 4, 6, 8, 12, 24

36 → 1, 2, 3, 6, 9, 12, 18, 36

45 → 1, 3, 5, 9, 15, 45

60 → 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60

Common → 1, 3,

H.C.F ⇒ 3

Coprimes → ~~The set of numbers~~ Any two numbers that do not have a common prime factor ~~are called coprimes~~. other than 1 is called coprimes.

GCD
2 | 6 | 21

Prime factorization method

Ex 8(B)

2. Using prime factor method, find H.C.F of:

iii) ~~16 and 35~~ 5 and 8

Ans

~~16 → 2×2×2×2~~
~~35 → 5×7~~

5 | 5
1

8 = 2×2×2×1

5 = 5×1

H.C.F = 1

2 | 8
2 | 4
2

2 | 80
2 | 40
2 | 20
2 | 10
5

2 | 40, 60, 80
2 | 20, 30, 40
5 | 10, 15, 20
2 | 2, 3, 4
1, 3, 2

2 | 60
2 | 30
3 | 15
5

~~40 → 2×2×5~~
40 → 2×2×2×5
60 → 2×2×3×5
80 → 8×2×2×2×5

2×2×5 = 20

iii) 24 and 49

Ans 2|24 — 7|49 — 7

2|12

2|6

3

24 → 2×2×2×3 ①

49 → 7×7 ①

H.C.F → 1

iv) 48, 84, 88

Ans 2|48 , 2|84 , 2|88

2|24 — 2|42 — 2|44

2|12 — 3|21 — 2|22

2|6 — 7 — 11

2×2×2×3

2×2×3×7

2×2×2×11

H.C.F → 4

v) 12, 16, 28

Ans 2|28 — 2|16 — 2|12

2|14 — 2|8 — 2|6

7 — 2|4 — 3

2

2×2×7

2×2×2×2

2×2×3

H.C.F → 2×2 = 4

③ i) 16 and 24

Ans

H.C.F is 8.

16) 24 (1

− 16

8) 16 (2

− 16

0

ii) 18 and 30

A) 18) 30 (1
- 18
12) 18 (1
- 12
06) 12 (2
- 12
0

H.C.F is 6.

iii) 7, 14, 24

A) (7, 14) (24) → (7, 24)

7) 14 (2
- 14
0

7) 24 (3
- 21
3) 7 (2
- 6
1) 3 (3
- 3
0

iv) ~~A~~ (70, 80), (120, 150)
10 30

70) 80 (1
- 70
10) 70 (7
- 70
0

10) 30 (3
- 30
0

Like that only we have to do H.C.F of 120 and 150.

H.C.F of 70, 80, 120 and 150 is 10.

v) (32, 56) (46) ——→ (8, 46)

A) 32) 56 (1
- 32
24) 32 (1
- 24
8) 24 (3
- 24
0

8) 46 (5
- 40
6) 8 (1
- 6
2) 6 (3
- 6
0

H.C.F of 32, 56 and 46 is 2.

~~2×2~~
~~2×3×2~~
~~2×3×2~~

(4) Use a method of your own choice to find the H.C.F of:

i) 45, 75, 135

Ans

5 | 45 , 5 | 75 , 5 | 135
3 | 9 , 3 | 15 , 3 | 27
3 , 5 , 3 | 9
3

5×3×3
5×3×5
5×3×3×3

H.C.F ⇒ 5×3 = 15

ii) 48, 36, 96

Ans

2 | 48 , 2 | 36 , 2 | 96
2 | 24 , 2 | 18 , 2 | 48
2 | 12 , 3 | 9 , 2 | 24
2 | 6 , 3 , 2 | 12
3 , 2 | 6
3

2×2×2×2×3
2×2×3×3
2×2×2×2×2×3

H.C.F ⇒ 2×2×3
= 12

iii) 66, 33, 132

Ans

2 | 66 , 3 | 33 , 2 | 132
3 | 33 , 11 , 2 | 66
11 , 3 | 33
11

2×3×1×11
3×11
2×2×3×11

H.C.F ⇒ 3×11 = 33

iv) 24, 36, 60, 132

A) 2 | 24
2 | 12
2 | 6
3

2 | 36
2 | 18
3 | 9
3

2 | 60
2 | 30
3 | 15
5

2 | 132
2 | 66
3 | 33
11

2 × 2 × 2 × 3
2 × 2 × 3 × 3
2 × 2 × 3 × 5
2 × 2 × 3 × 11

H.C.F ⇒ 2 × 2 × 3 = 12

v) 30, 60, 90, 105

A) 2 | 30
3 | 15
5

2 | 60
2 | 30
3 | 15
5

2 | 90
5 | 45
3 | 9
3

5 | 105
3 | 21
7 | 7
1

~~2 × 3~~ 2 × 3 × 5
2 × 2 × 3 × 5
2 × 5 × 3 × 3
5 × 3 × 7 × 1

H.C.F 5 × 3 = 15

Ho
2M | 6 | 2 Do 8 (B) ⇒ 5, 6, 7, 8 in N bk

5) The greatest number that ~~dives~~ divides each of 180, 225 and 315 will be the H.C.f of 180, 225 and 315.

By using division method, the H.C.f is:

(180, 225), ——→ (315)

```
180)225(1
  -180
  ----
   45 )180(4
      -180
      ----
         0
```

(45, 315)

```
45)315(7
  -315
  ----
     0
```

∴ Since last division is 45.
∴ H.C.f of 180, 225 and 315 is 45.

Note: We can ~~do this method~~ find this solution by any method in this type of questions.

6) Ans → Coprimes → when the H.C.f or common factor of two numbers is 1 only, these two numbers are called coprimes.

```
5|45        2|56
3|9         2|28
 3          2|14
             7
```

45 ⇒ 5 × 3 × 3 × 1
56 ⇒ 2 × 2 × 2 × 7 × 1

∴ These numbers are coprimes.

7) Ans The coprime pairs are: (15 and 16), (15 and 28), (16 and 21)

8) Ans First of all coe will subtract 3 from 93, 111 and 129 to find the ~~exact division~~ required number.

93 - 3 = 90, 111 - 3 = 108, 129 - 3 = 126

In each case, the H.C.F of 90, 108, 126 will be greatest number that will divide 93, 111, 129 leaving remainder 3.

H.C.F → 90 → 2 × 3 × 3 × 5

108 → 2 × 2 × 3 × 3 × 3

126 → 2 × 3 × 3 × 7

= 18