## Ex - 8(B)

1. Using the common factor method; find HCF of:

i) 16 and 35

| | |
|---|---|
| 2 \| 16 | 5 \| 35 |
| 2 \| 8 | 7 \| 7 |
| 2 \| 4 | 1 |
| 2 \| 2 | |
| 1 | |

$16 = 2 \times 2 \times 2 \times 2 \times (1)$

$35 = 5 \times 7 \times (1)$

~~Common factor~~ HCF = 1

ii) 25 and 20

| | |
|---|---|
| 5 \| 25 | 2 \| 20 |
| 5 \| 5 | 2 \| 10 |
| 1 | 5 \| 5 |
| | 1 |

$25 = (5) \times 5 \times (1)$

$20 = 2 \times 2 \times (5) \times (1)$

HCF = 5

iii) 27 and 75

| | |
|---|---|
| 3 \| 27 | 3 \| 75 |
| 3 \| 9 | 5 \| 25 |
| 3 \| 3 | 5 \| 5 |
| 1 | 1 |

$27 = (3) \times 3 \times 3 \times (1)$

$75 = (3) \times 5 \times 5 \times (1)$

HCF = 3

iv) 8, 12 and 18

| 2 \| 8 | 2 \| 12 | 2 \| 18 |
|---|---|---|
| 2 \| 4 | 2 \| 6 | 3 \| 9 |
| 2 \| 2 | 3 \| 3 | 3 \| 3 |
| 1 | 1 | 1 |

$8 = (2) \times 2 \times 2 \times (1)$

$12 = (2) \times 2 \times 3 \times (1)$

$18 = (2) \times 3 \times 3 \times (1)$

HCF = 2

v) 24, 36, 45 and 60

| 2 \| 24 | 2 \| 36 | 5 \| 45 | 2 \| 60 |
|---|---|---|---|
| 2 \| 12 | 2 \| 18 | 3 \| 9 | 2 \| 30 |
| 2 \| 6 | 3 \| 9 | 3 \| 3 | 3 \| 15 |
| 3 \| 3 | 3 \| 3 | 1 | 5 \| 5 |
| 1 | 1 | | 1 |

$24 = 2 \times 2 \times 2 \times (3) \times (1)$

$36 = 2 \times 2 \times (3) \times 3 \times (1)$

$45 = 5 \times (3) \times 3 \times (1)$

$60 = 2 \times 2 \times (3) \times 5 \times (1)$

HCF = 3

2) Using the Prime factor method, find the HCF of :

i) 5 and 8

$P_5 = 1 \times 5$

$P_8 = 2 \times 2 \times 2$

HCF = 1

ii) 24 and 49

$P_{24} = 2 \times 2 \times 2 \times 3$

$P_{49} = 7 \times 7$

HCF = 1

iii) 40, 60 and 80

$P_{40} = 2 \times 2 \times 2 \times 5$

$P_{60} = 2 \times 2 \times 3 \times 5$

$P_{80} = 2 \times 2 \times 2 \times 2 \times 5$

· Common factor = $2 \times 2 \times 5$

HCF = 20

iv) 48, 84 and 88

$P_{48} = 2 \times 2 \times 2 \times 2 \times 3$

$P_{84} = 2 \times 2 \times 3 \times 7$

$P_{88} = 2 \times 2 \times 2 \times 11$

Common factor = $2 \times 2$

HCF = 4.

v) 12, 16, 28

$P_{12} = 2 \times 2 \times 3$

$P_{16} = 2 \times 2 \times 2 \times 2$

$P_{28} = 2 \times 2 \times 7$

Common factor $= 2 \times 2$

HCF $= 4$

3) Using the division method, find HCF of the following :—

i) 16 and 24

| | | |
|---|---|---|
| 16 | 24 | 1 |
| | 16 | |
| 8 | 16 | 2 |
| | 16 | |
| | 0 | |

HCF $= 8$

ii) 18 and 30

| | | |
|---|---|---|
| 18 | 30 | 1 |
| | 18 | |
| 12 | 18 | 1 |
| | 12 | |
| 6 | 12 | 2 |
| | 12 | |
| | 0 | |

HCF $= 6$

iii) 7, 14 and 24

| | | |
|---|---|---|
| 7 | 14 | 2 |
| | 14 | |
| | 0 | |

| | | |
|---|---|---|
| 7 | 24 | 3 |
| | 21 | |
| 3 | 7 | 2 |
| | 6 | |
| 1 | 3 | 3 |
| | 3 | |
| | 0 | |

HCF = 1

iv) 70, 80, 120 and 150

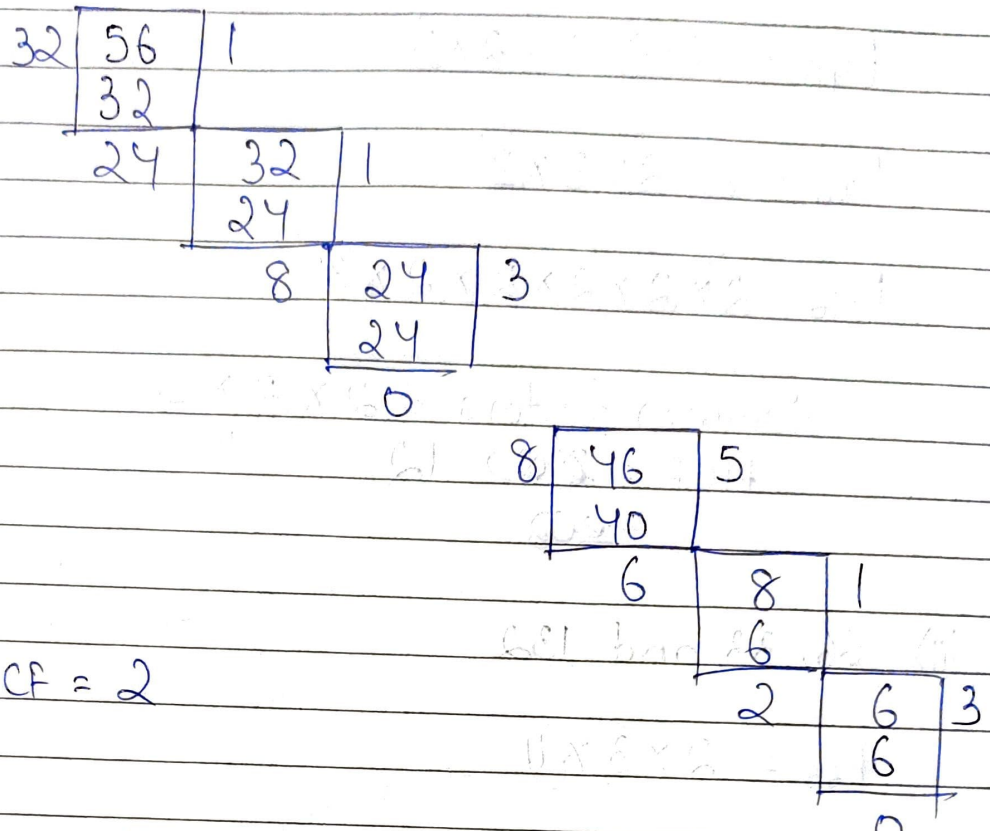
| | | |
|---|---|---|
| 70 | 80 | 1 |
| | 70 | |
| 10 | 70 | 7 |
| | 70 | |
| | 0 | |

| | | |
|---|---|---|
| 10 | 120 | 12 |
| | 10 | |
| | 20 | |
| | 20 | |
| | 0 | |

| | | |
|---|---|---|
| 10 | 150 | 15 |
| | 10 | |
| | 50 | |
| | 50 | |
| | 0 | |

HCF = 10

v) 32, 56 and 46




HCF = 2

4) Use a method of your own choice to find the HCF of :—

i) 45, 75 and 135

$P_{45} = 3 \times 3 \times 5$

$P_{75} = 3 \times 5 \times 5$

$P_{135} = 3 \times 3 \times 3 \times 5$

Common factors $= 3 \times 5$

HCF = 15

ii) 48, 36 and 96

$P_{48} = 2 \times 2 \times 2 \times 2 \times 3$

$P_{36} = 2 \times 2 \times 3 \times 3$

$P_{96} = 2 \times 2 \times 2 \times 2 \times 2 \times 3$

Common factors $= 2 \times 2 \times 3$

HCF = 12

iii) 66, 33 and 132

$P_{66} = 2 \times 3 \times 11$

$P_{33} = 3 \times 11$

$P_{132} = 2 \times 2 \times 3 \times 11$

Common factors $= 3 \times 11$

HCF = 33

iv) 24, 36, 60, 132

$P_{24} = 2 \times 2 \times 2 \times 3$

$P_{36} = 2 \times 2 \times 3 \times 3$

$P_{60} = 2 \times 2 \times 3 \times 5$

$P_{132} = 2 \times 2 \times 3 \times 11$

Common factors = 2 × 2 × 3

HCF = 12

v) 30, 60, 90 and 105

$P_{30} = 2 \times 3 \times 5$

$P_{60} = 2 \times 2 \times 3 \times 5$

$P_{90} = 2 \times 3 \times 3 \times 5$

$P_{105} = 3 \times 5 \times 7$

Common factors = 3 × 5

HCF = 15

5) Find the greatest number that divides each of 180, 225 and 315 completely.

The greatest number that divides each of 180, 225, 315 will be the HCF of 180, 225 and 315.

| | | |
|---|---|---|
| 180 | 225 | 1 |
| | 180 | |
| 45 | 180 | 4 |
| | 180 | |
| | 0 | |

| | | |
|---|---|---|
| 45 | 315 | 7 |
| | 315 | |
| | 0 | |

HCF = 45

6. Show that 45 and 56 are co-prime numbers.

The HCF of two co-prime numbers is always 1.

| | | |
|---|---|---|
| 45 | 56 | 1 |
| | 45 | |
| 11 | 45 | 4 |
| | 44 | |
| 1 | 11 | 11 |
| | 11 | |
| | 0 | |

HCF = 1

Therefore 45 and 56 are co-prime.

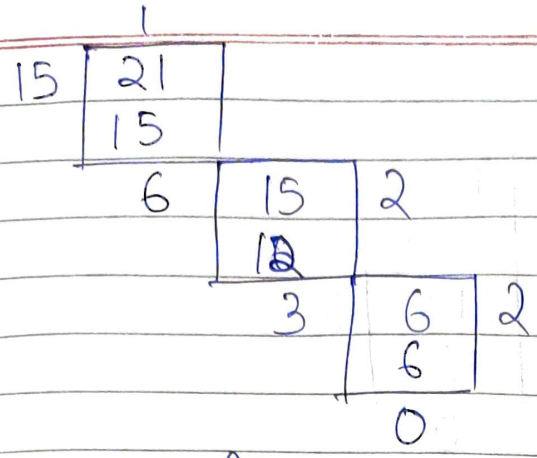
7. Out of 15, 16, 21 and 28 find out all the pairs of co-prime numbers.

15 and 16, 15 and 21, 15 and 28, 16 and 21, 16 and 28 and 21 and 28 will be the possible pairs.

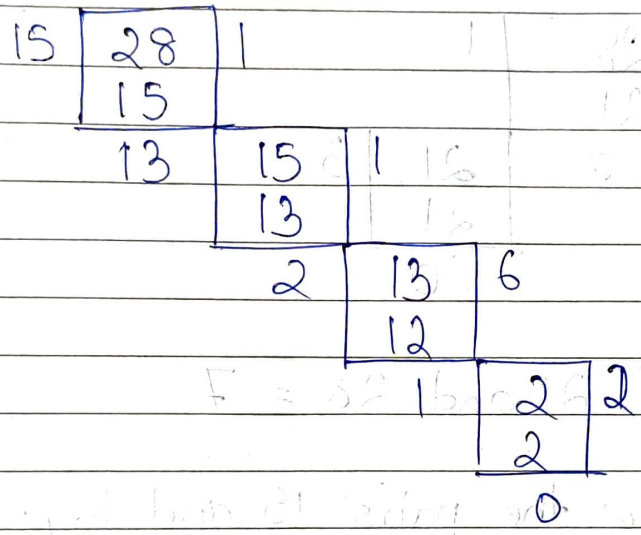
HCF of two co-prime numbers is alway 1.

| | | |
|---|---|---|
| 15 | 16 | 1 |
| | 15 | |
| 1 | 15 | 15 |
| | 15 | |
| | 0 | |

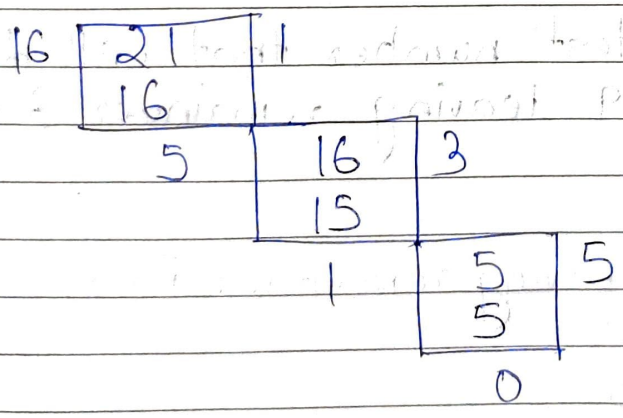
HCF of 15 and 16 = 1




HCF of 15 and 21 = 3




HCF of 15 and 28 = 1




HCF of 16 and 21 = 1

| | | |
|---|---|---|
| 16 | 28 | 1 |
| | 16 | |
| 12 | 16 | 1 |
| | 12 | |
| 4 | 12 | 3 |
| | 12 | |
| | 0 | |

HCF of 16 and 28 = 4

| | | |
|---|---|---|
| 21 | 28 | 1 |
| | 21 | |
| 7 | 21 | 3 |
| | 21 | |
| | 0 | |

HCF of 21 and 28 = 7

Therefore the pairs 15 and 16, 15 and 28, 16 and 21 are co-prime.

8) Find the greatest number that will divide 93, 111 and 129 leaving remainder 3 in each case.

decrease the leaving remainder from the numbers

$93 - 3 = 90$

$111 - 3 = 108$

$129 - 3 = 126$

| | | |
|---|---|---|
| 90 | 108 | 1 |
| | 90 | |
| 18 | 90 | 5 |
| | 90 | |
| | 0 | |

| 18 | 126 | 7 |
|---|---|---|
| | 126 | |
| | 0 | |

HCF = 18

Therefore the greatest number that will divide 93, 111 and 129 is 18.