



Memo: Highest Common Factor (HCF)

Using Prime factorisation method, find the HCF of the following numbers.

1. HCF (3; 9)

$$\begin{array}{r|l} 3 & 3 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$3 = 3 \checkmark$$

$$9 = 3 \times 3 \checkmark$$

$$\text{HCF (3; 9)} = 3 \checkmark$$

2. HCF (20; 40)

$$\begin{array}{r|l} 2 & 20 \\ \hline 2 & 10 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 40 \\ \hline 2 & 20 \\ \hline 2 & 10 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$20 = 2 \times 2 \times 5 \checkmark$$

$$40 = 2 \times 2 \times 2 \times 5 \checkmark$$

$$\text{HCF (20; 40)} = 2 \times 2 \times 5 = 20 \checkmark$$

3. HCF (5; 7)

$$\begin{array}{r|l} 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 7 & 7 \\ \hline & 1 \end{array}$$

$$5 = 5 \checkmark$$

$$7 = 7 \checkmark$$

$$\text{HCF (5; 7)} = \text{N/A} \checkmark$$

4. HCF (10; 18)

2	10
5	5
	1

2	18
3	9
3	3
	1

$$10 = 2 \times 5 \checkmark$$

$$18 = 2 \times 3 \times 3 \checkmark$$

$$\text{HCF (10; 18)} = 2 \checkmark$$

5. HCF (18; 45)

2	18
3	9
3	3
	1

3	45
3	15
5	5
	1

$$18 = 2 \times 3 \times 3 \checkmark$$

$$45 = 3 \times 3 \times 5 \checkmark$$

$$\text{HCF (18; 45)} = 3 \times 3 = 9 \checkmark$$

6. HCF (21; 60)

3	21
7	7
	1

2	60
2	30
3	15
5	5
	1

$$21 = 3 \times 7 \checkmark$$

$$60 = 2 \times 2 \times 3 \times 5 \checkmark$$

$$\text{HCF (21; 60)} = 3$$

7. HCF (32; 64)

2	32
2	16
2	8
2	4
2	2
	1

2	64
2	32
2	16
2	8
2	4
2	2
	1

$$32 = 2 \times 2 \times 2 \times 2 \times 2 \checkmark$$

$$64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \checkmark$$

$$\text{HCF (32; 64)} = 2 \times 2 \times 2 \times 2 \times 2 = 32 \checkmark$$

8. HCF (17; 102)

17	17
	1

2	102
3	51
17	17
	1

$$17 = 17 \checkmark$$

$$102 = 2 \times 3 \times 17 \checkmark$$

$$\text{HCF (17; 102)} = 17 \checkmark$$

9. HCF (24; 192)

2	24
2	12
2	6
3	3
	1

2	192
2	96
2	48
2	24
2	12
2	6
3	3
	1

$$24 = 2 \times 2 \times 2 \times 3 \checkmark$$

$$192 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \checkmark$$

$$\text{HCF (24; 192)} = 2 \times 2 \times 2 \times 3 = 24 \checkmark$$

10. HCF (126; 36)

2	126
3	63
3	21
7	7
	1

2	36
2	18
3	9
3	3
	1

$$126 = 2 \times 3 \times 3 \times 7 \checkmark$$

$$36 = 2 \times 2 \times 3 \times 3 \checkmark$$

$$\text{HCF (126; 36)} = 2 \times 3 \times 3 = 18 \checkmark$$

11. HCF (105; 147)

3	105
5	35
7	7
	1

3	147
7	49
7	7
	1

$$105 = 3 \times 5 \times 7 \checkmark$$

$$147 = 3 \times 7 \times 7 \checkmark$$

$$\text{HCF (105; 147)} = 3 \times 7 = 21 \checkmark$$

12. HCF (224; 192)

2	224
2	62
31	31
	1

2	192
2	96
2	48
2	24
2	12
2	6
3	3
	1

$$224 = 2 \times 2 \times 31 \checkmark$$

$$192 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \checkmark$$

$$\text{HCF (224; 192)} = 2 \times 2 = 4 \checkmark$$

13. HCF (75; 90)

3	75
5	25
5	5
	1

2	90
3	45
3	15
5	5
	1

$$75 = 3 \times 5 \times 5 \checkmark$$

$$90 = 2 \times 3 \times 3 \times 5 \checkmark$$

$$\text{HCF (75; 90)} = 3 \times 5 = 15 \checkmark$$

14. HCF (180; 240)

2	180
2	90
3	45
3	15
5	5
	1

2	240
2	120
2	60
2	30
3	15
5	5
	1

$$180 = 2 \times 2 \times 3 \times 3 \times 5 \checkmark$$

$$240 = 2 \times 2 \times 2 \times 2 \times 3 \times 5 \checkmark$$

$$\text{HCF (180; 240)} = 2 \times 2 \times 3 \times 5 = 60 \checkmark$$

15. HCF (56; 210)

2	56
2	28
2	14
7	7
	1

2	210
3	105
5	35
7	7
	1

$$56 = 2 \times 2 \times 2 \times 7 \checkmark$$

$$210 = 2 \times 3 \times 5 \times 7 \checkmark$$

$$\text{HCF (56; 210)} = 2 \times 7 = 14 \checkmark$$

16. HCF (195; 385)

3	195
5	65
13	13
	1

5	385
7	77
11	11
	1

$$195 = 3 \times 5 \times 13 \checkmark$$

$$385 = 5 \times 7 \times 11 \checkmark$$

$$\text{HCF (195; 385)} = 5 \checkmark$$

17. HCF (24; 28; 42)

2	24
2	12
2	6
3	3
	1

2	28
2	14
7	7
	1

2	42
3	21
7	7
	1

$$24 = 2 \times 2 \times 2 \times 3 \checkmark$$

$$28 = 2 \times 2 \times 7 \checkmark$$

$$42 = 2 \times 3 \times 7 \checkmark$$

$$\text{HCF (24; 28; 42)} = 2 \checkmark$$

18. HCF (17; 21; 35)

17	17
	1

3	21
7	7
	1

5	35
7	7
	1

$$17 = 17 \checkmark$$

$$21 = 3 \times 7 \checkmark$$

$$35 = 5 \times 7 \checkmark$$

$$\text{HCF (17; 21; 35)} = \text{N/A} \checkmark$$

19. HCF (75; 120; 200)

3	75
5	25
5	5
	1

2	120
2	60
2	30
3	15
5	5
	1

2	200
2	100
2	50
5	25
5	5
	1

$$75 = 3 \times 5 \times 5 \checkmark$$

$$120 = 2 \times 2 \times 2 \times 3 \times 5 \checkmark$$

$$200 = 2 \times 2 \times 2 \times 5 \times 5 \checkmark$$

$$\text{HCF (75; 120; 200)} = 5 \checkmark$$

20. HCF (18; 30; 45)

2	18
3	9
3	3
	1

2	30
3	15
5	5
	1

3	45
3	15
5	5
	1

$$18 = 2 \times 3 \times 3 \checkmark$$

$$30 = 2 \times 3 \times 5 \checkmark$$

$$45 = 3 \times 3 \times 5 \checkmark$$

$$\text{HCF (18; 30; 45)} = 3 \checkmark$$