

How to Solve: Sieve of Eratosthenes (Prime Numbers between 1 and 100)

By [BrushMyQuant](#)



YouTube Video Link to this Post is [Here](#)

Following is Covered in the Video

- Sieve of Eratosthenes Method to find all prime numbers \leq a number
- Find Prime numbers between 1 to 100

Sieve of Eratosthenes Method

Sieve of Eratosthenes Method is a method to find all the prime numbers \leq a number.

Following are the steps involved in finding all the prime numbers $\leq n$

STEP 1: Cancel out 1 as it is not prime

STEP 2: Find all the prime numbers from 2 to \sqrt{n}

STEP 3: Take each prime number from 2 to \sqrt{n} and cancel out all the multiples of these prime numbers except the number itself.

STEP 4: Remaining numbers are prime numbers

Find Prime numbers between 1 to 100

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

STEP 1 : Cancel out 1 as it is not prime

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

STEP 2 : Find all the prime numbers from 2 to \sqrt{n}

We need to find all the prime numbers from 2 to $\sqrt{100}$

=> Primes between 2 to 10, which are 2, 3, 5, 7 [[Watch this video to know about prime numbers](#)]

STEP 3 : Take each prime number from 2 to \sqrt{n} and cancel out all the multiples of these prime numbers except the number itself.

So, we will take all prime numbers 2, 3, 5 and 7 and cancel out their multiples, except the numbers 2, 3, 5, 7

STEP 3.1 : Cancel out all multiples of 2 except 2. We will get :

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

STEP 3.2 : : Cancel out all multiples of 3 except 3. We will get :

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

STEP 3.3 : : Cancel out all multiples of 5 except 5. We will get :

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

STEP 3.4 : : Cancel out all multiples of 7 except 7. We will get :

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

STEP 4: Remaining numbers are prime numbers

2	3	5	7	
11	13		17	19
	23			29
31			37	
41	43		47	
	53			59
61			67	
71	73			79
	83			89
			97	

There are 25 Prime Numbers between 1 and 100, which are 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97

Hope it Helps!