

Math 110: The Sieve of Eratosthenes

1. a) Look up the Prime Number Theorem in your text or notes. Use it to estimate the number of primes less than $n = 300$.
- b) Now use the Sieve of Eratosthenes method to actually find all the prime numbers less than or equal to 300. Carefully and **neatly** show your work. Circle the primes you find and fill in the row total.

										# of primes in each row
	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	
101	102	103	104	105	106	107	108	109	110	
111	112	113	114	115	116	117	118	119	120	
121	122	123	124	125	126	127	128	129	130	
131	132	133	134	135	136	137	138	139	140	
141	142	143	144	145	146	147	148	149	150	
151	152	153	154	155	156	157	158	159	160	
161	162	163	164	165	166	167	168	169	170	
171	172	173	174	175	176	177	178	179	180	
181	182	183	184	185	186	187	188	189	190	
191	192	193	194	195	196	197	198	199	200	
201	202	203	204	205	206	207	208	209	210	
211	212	213	214	215	216	217	218	219	220	
221	222	223	224	225	226	227	228	229	230	
231	232	233	234	235	236	237	238	239	240	
241	242	243	244	245	246	247	248	249	250	
251	252	253	254	255	256	257	258	259	260	
261	262	263	264	265	266	267	268	269	270	
271	272	273	274	275	276	277	278	279	280	
281	282	283	284	285	286	287	288	289	290	
291	292	293	294	295	296	297	298	299	300	

- c) How many primes are smaller than 300?
- d) List the 5 largest pairs of **twin primes** less than 300.