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Time : 3 Hours**MATHEMATICS REGULAR LEVEL 2 (E)****Subject Code**

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Total No. of Questions : 42**(Printed Pages : 19)****Maximum Marks : 80**

INSTRUCTIONS : Read the following instructions carefully and strictly follow them :

- (i) This question paper consists of **42** questions. *All* questions are compulsory.
- (ii) This question paper is divided into Four Sections – (A), (B), (C) and (D).
- (iii) In Section A, Question Nos. 1 to 16 are multiple choice questions (MCQs) and Question Nos. 17 to 20 are very short answer type questions (VSA) carrying **1** mark each.
- (iv) In Section B, Question Nos. 21 to 28 are short answer type I (SA-I) questions carrying **2** marks each.
- (v) In Section C, Question Nos. 29 to 40 are short answer type II (SA-II) questions carrying **3** marks each.
- (vi) In Section D, Question Nos. 41 to 42 are long answer (LA) questions carrying **4** marks each.
- (vii) There is no overall choice. However, an internal choice has been provided in two questions of **2** marks each in Section B and two questions of **3** marks each in Section C.
- (viii) In questions on Constructions, the drawing should be clear and exactly as per given measurements. The construction lines and arcs should also be maintained.
- (ix) Graph paper is provided on the answer booklet.
- (x) Logarithm and Antilogarithm tables are printed on the last pages of the question paper.
- (xi) Use of calculator is not permitted.

Section A (1 mark each)

Select and write the correct alternative from those given below each statement from question 1 to 16 :

1. The maximum number of zeroes that a polynomial of degree 3 can have :
 - 0
 - 1
 - 2
 - 3
2. If the graphs of a pair of linear equations in two variables intersect at a point, then the given pair of equations has :
 - no solution
 - unique solution
 - two solutions
 - infinitely many solutions
3. The solution of a pair of linear equations $x + 2y = 6$ and $2x - y = 2$ is :
 - $x = 2$ and $y = -2$
 - $x = -2$ and $y = -2$
 - $x = 2$ and $y = 2$
 - $x = -2$ and $y = 2$

4. The non-zero root of $5x^2 - 4x = 0$ is :

- $\frac{4}{5}$
- $\frac{5}{4}$
- $\frac{-5}{4}$
- $\frac{-4}{5}$

5. The 7th term of the A.P. 2, 7, 12, 17, is :

- 22
- 27
- 32
- 37

6. Two poles of heights 7 m and 10 m stand vertically on the ground. If the distance between their feet is 4 m, then the distance between their tops is :

- 3 m
- 4 m
- 5 m
- 6 m

7. The value of $\cot 45^\circ - \tan 45^\circ$ is :

- -1
- 0
- 1
- 2

8. If $\frac{\sin A}{\cos 36^\circ} = 1$ where A is an acute angle, then the value of A is :

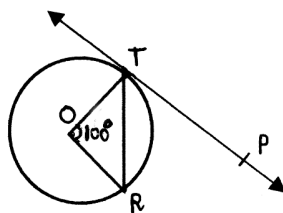
- 18°
- 36°
- 54°
- 72°

9. The value of $10 \operatorname{cosec}^2 A - 10 \cot^2 A$ is :

- 0
- 1
- 10
- 20

10. In the figure, O is the centre of the circle and PT is a tangent to it at point T. If $\angle TOR = 100^\circ$, then $\angle PTR$ is equal to :

- 40°
- 50°
- 60°
- 80°



11. The area of a semi-circle of radius 7 cm, is :

- 22 cm^2
- 44 cm^2
- 77 cm^2
- 154 cm^2

12. A circle is inscribed in a square of perimeter 20 cm. Hence, the radius of the circle is :

- 2.0 cm
- 2.5 cm
- 4.5 cm
- 5.0 cm

13. If a cube of 8 cm has to be painted fully in blue colour, then the painted area will be :

- 64 cm^2
- 88 cm^2
- 256 cm^2
- 384 cm^2

14. The curved surface area of a right cylinder of height 10 cm and radius 3.5 cm is :

- 220 cm^2
- 256 cm^2
- 385 cm^2
- 440 cm^2

15. If two coins are thrown once, at the same time, then the probability of getting exactly two heads is :

- $\frac{1}{4}$
- $\frac{1}{2}$
- $\frac{3}{4}$
- 1

16. The value of $\log_2 128$ is :

- 2
- 6
- 7
- 8

17. Write a quadratic polynomial in 'x' if the sum of its zeroes is $\frac{-1}{2}$ and the product of its zeroes is $\frac{-3}{2}$.

18. Find the value of 'k' if the given pair of linear equations has infinitely many solutions :

$$(k-3)x + 3y = k$$

$$kx + 6y = 12.$$

19. Find the length of the arc of a circle of radius 6 cm and subtending an angle of 90° at the centre. (Do not substitute for π).

20. The alphabets of the word 'MATHEMATICS' are jumbled and put in a bag. What is the probability of picking a vowel without looking into the bag ?

Section B (2 marks each)

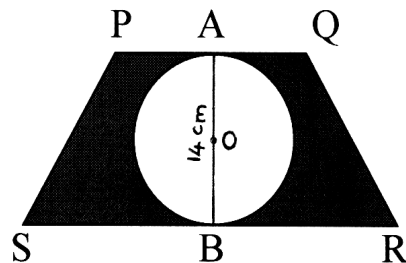
21. Find the HCF of 105 and 120 using Euclid's Division Algorithm.

Or

Without actually performing long division, show that $\frac{3}{160}$ has a terminating decimal expansion and hence find its decimal expansion.

22. In the given figure, a circle with centre O and diameter AB is drawn in a trapezium PQRS of height 14 cm and its parallel sides PQ = 17 cm and SR = 27 cm touch the circle at points A and B respectively. Find the area of the shaded region.

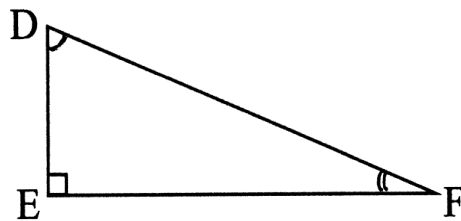
(Take $\pi = \frac{22}{7}$)



23. Find the mode of the following distribution table :

Class Interval (C.I.)	Frequency (f)
15—25	11
25—35	21
35—45	23
45—55	15

24. In $\triangle DEF$, $\angle E = 90^\circ$. If $\tan F = \frac{7}{24}$. Find : $\sin D$.



25. Evaluate the following expression by substituting the known values of trigonometric ratios :

$$4\sin^2 60^\circ \times \tan^2 45^\circ - \tan^2 60^\circ.$$

26. If $\triangle XYZ \sim \triangle STR$, $\frac{\text{ar}(\triangle XYZ)}{\text{ar}(\triangle STR)} = \frac{9}{4}$ and $YZ = 15$ cm,

then find the length of TR.

27. Find the distance between the points A(8, -2) and B(-3, -6).

Or

Find the co-ordinates of the mid-point which divides the line segment joining the points P(6, 4) and Q(2, -8).

28. Find the area of the triangle formed by joining the points :

$$L(6, 4), M(-3, 4) \text{ and } N(6, -2).$$

Section C (3 marks each)

29. Divide the polynomial $2x^3 - 13x^2 + 29x - 45$ by $x - 2$ and write the Quotient and Remainder.

Hence express the result in the form,

$$\text{Dividend} = \text{Divisor} \times \text{Quotient} + \text{Remainder}.$$

30. Find the solution of the pair of linear equations :

$$4x - 3y = 10 \text{ and } 2x + 5y = 18$$

by Elimination method.

Or

Find the solution of the pair of linear equations :

$$4x - y = -1 \text{ and } 6x - 5y = 9$$

by Substitution method.

31. Find the roots of the Quadratic equation :

$$2x^2 - 17x + 21 = 0 \text{ by factorization method.}$$

32. Find the roots of the Quadratic equation :

$$2x^2 + 3x - 44 = 0 \text{ by using Quadratic formula.}$$

33. In an Arithmetic Progression, the 3rd term is 13 and the 10th term is -1.

Find the sum of the first 20 terms.

34. Evaluate the following expression using logarithm method :

$$\frac{(5.96)^2 \times 24}{1.372}.$$

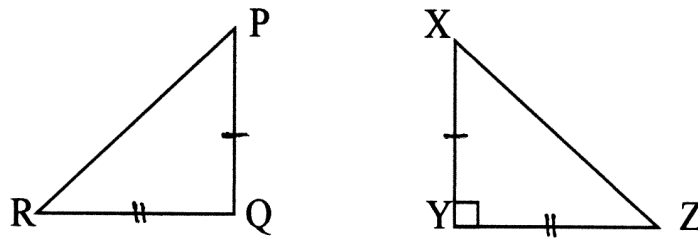
35. Draw a circle with centre O and radius 3 cm. Take a point P at a distance of 8.5 cm from the centre of the circle. Using a pair of compasses and ruler, construct two tangents PA and PB from the point P to the circle. Measure and state the length of the tangent segments.

36. Using a pair of compasses and ruler, construct $\triangle ABC$, in which $AB = 6.5$ cm, $\angle B = 60^\circ$ and $BC = 7.5$ cm. Then construct $\triangle A'BC'$ whose sides are $\frac{3}{5}$ of the corresponding sides of $\triangle ABC$.

37. Given : In ΔPQR , $PR^2 = PQ^2 + QR^2$. ΔXYZ is constructed such that :

$$\angle Y = 90^\circ, XY = PQ \text{ and } YZ = QR.$$

Prove that : ΔPQR is a right angled triangle.

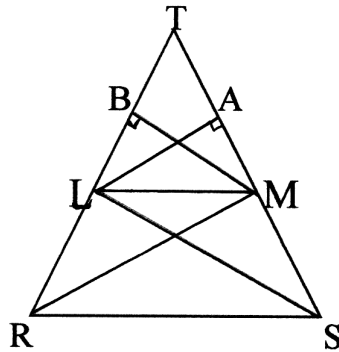


Or

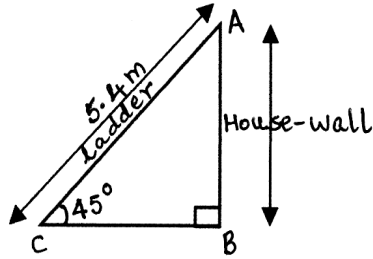
Given : In ΔRST , $LM \parallel RS$ such that $T - L - R$ and $T - M - S$. $LA \perp TS$

and $MB \perp TR$. MR and LS are joined. Prove that :

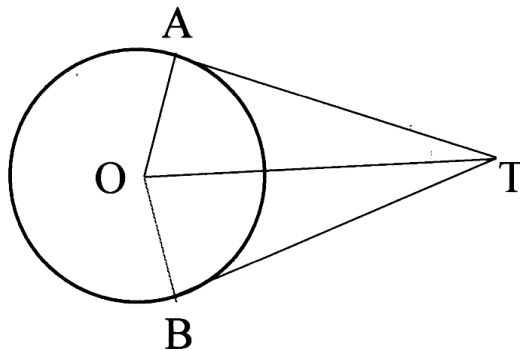
$$\frac{TL}{LR} = \frac{TM}{MS}.$$



38. A ladder 5.4 m long, touches the top of a wall of a house when its angle of elevation with the horizontal ground is 45° . Find the height of the wall of the house.



39. Given : Point O is the centre of a circle. TA and TB are two tangent segments drawn from an external point T to the circle at points A and B respectively.



Prove that : $TA = TB$

(Write only the proof with reasons)

40. A solid metallic sphere of radius 4.5 cm is melted and recast into the shape of a solid cylinder of radius 5 cm. Find the height of the cylinder.

Section D (4 marks each)

41. The following table shows the donation collected by 40 students for a needy old-aged home.

Donation Collection (₹) (C.I.)	Number of Students (f_i)	Class Mark (x_i)	($f_i \times x_i$)
150—250	2	.....	.....
250—350	4	.....	.....
350—450	7	.....	.....
450—550	9	.....	.....
550—650	10	.....	.....
650—750	8	.....	.....
	$\Sigma f_i =$		$\Sigma f_i x_i =$

Find the mean collection of the students using Direct Method.

42. Find the solution of the following pair of linear equations graphically :

$$x + y = 3 \text{ and } x + 2y = 9$$

Rewrite and complete the following tables :

$$x + y = 3$$

x			
y			

$$x + 2y = 9$$

x			
y			

(Plot at least 3 points of each line)

LOGARITHMS

	0	1	2	3	4	5	6	7	8	9	Mean Differences								
											1	2	3	4	5	6	7	8	9
10	0000	0043	0086	0128	0170	0212	0253	0294	0334	0374	4	8	12	17	21	25	29	33	37
11	0414	0455	0492	0531	0569	0607	0645	0682	0719	0755	4	8	11	15	19	23	26	30	34
12	0702	0828	0864	0899	0934	0969	1004	1038	1072	1106	3	7	10	14	17	21	24	28	31
13	1139	1173	1206	1239	1271	1303	1335	1367	1399	1430	3	6	10	13	16	19	22	26	29
14	1461	1492	1523	1553	1584	1614	1644	1673	1703	1732	3	6	9	12	15	18	21	24	27
15	1761	1796	1818	1847	1875	1903	1931	1959	1987	2014	3	6	8	11	14	17	20	22	25
16	2041	2068	2095	2122	2148	2175	2201	2227	2253	2279	3	5	8	11	13	16	18	21	24
17	2304	2330	2355	2380	2405	2430	2455	2480	2504	2529	2	5	7	10	12	15	17	20	22
18	2553	2577	2601	2625	2648	2672	2695	2718	2742	2765	2	5	7	9	12	14	16	19	21
19	2788	2810	2833	2856	2878	2900	2923	2945	2967	2989	2	4	7	9	11	13	16	18	20
20	3010	3032	3054	3075	3096	3118	3139	3160	3181	3201	2	4	6	8	11	13	15	17	19
21	3222	3243	3263	3284	3304	3324	3345	3365	3385	3404	2	4	6	8	10	12	14	16	18
22	3424	3444	3464	3483	3502	3522	3541	3560	3579	3598	2	4	6	8	10	12	14	15	17
23	3617	3636	3655	3674	3692	3711	3729	3747	3766	3784	2	4	6	7	9	11	13	15	17
24	3802	3820	3838	3856	3874	3892	3909	3927	3945	3962	2	4	5	7	9	11	12	14	16
25	3979	3997	4014	4031	4048	4065	4082	4099	4116	4133	2	3	5	7	9	10	12	14	15
26	4150	4166	4183	4200	4216	4232	4249	4265	4281	4298	2	3	5	7	8	10	11	13	15
27	4314	4330	4346	4362	4378	4393	4409	4425	4440	4456	2	3	5	6	8	9	11	13	14
28	4472	4487	4502	4518	4533	4548	4564	4579	4594	4609	2	3	5	6	8	9	11	12	14
29	4624	4639	4654	4669	4683	4698	4713	4728	4742	4757	1	3	4	5	6	8	9	10	13
30	4771	4786	4800	4814	4829	4843	4857	4871	4886	4900	1	3	4	6	7	9	10	11	13
31	4914	4928	4942	4955	4969	4983	4997	5011	5024	5038	1	3	4	6	7	8	10	11	12
32	5051	5065	5079	5092	5105	5119	5132	5145	5159	5172	1	3	4	5	7	8	9	11	12
33	5185	5198	5211	5224	5237	5250	5263	5276	5289	5302	1	3	4	5	6	8	9	10	12
34	5315	5328	5340	5353	5366	5378	5391	5403	5416	5428	1	3	4	5	6	8	9	10	11
35	5441	5453	5465	5478	5490	5502	5514	5527	5539	5551	1	2	4	5	6	7	9	10	11
36	5563	5575	5587	5599	5611	5623	5635	5647	5658	5670	1	2	4	5	6	7	8	10	11
37	5682	5694	5705	5717	5729	5740	5752	5763	5775	5786	1	2	3	5	6	7	8	9	10
38	5798	5809	5821	5832	5843	5855	5866	5877	5888	5899	1	2	3	5	6	7	8	9	10
39	5911	5922	5933	5944	5955	5966	5977	5988	5999	6010	1	2	3	4	5	7	8	9	10
40	6021	6031	6042	6053	6064	6075	6085	6096	6107	6117	1	2	3	4	5	6	8	9	10
41	6128	6138	6149	6160	6170	6180	6191	6201	6212	6222	1	2	3	4	5	6	7	8	9
42	6232	6243	6253	6263	6274	6284	6294	6304	6314	6325	1	2	3	4	5	6	7	8	9
43	6335	6345	6355	6365	6375	6385	6395	6405	6415	6425	1	2	3	4	5	6	7	8	9
44	6435	6444	6454	6464	6474	6484	6493	6503	6513	6522	1	2	3	4	5	6	7	8	9
45	6532	6542	6551	6561	6571	6580	6590	6600	6618	1	2	3	4	5	6	7	8	9	
46	6628	6637	6646	6656	6665	6675	6684	6693	6702	6712	1	2	3	4	5	6	7	8	
47	6721	6730	6739	6749	6758	6767	6776	6785	6794	6803	1	2	3	4	5	5	6	7	8
48	6812	6821	6830	6839	6848	6857	6866	6875	6884	6893	1	2	3	4	4	5	6	7	8
49	6902	6911	6920	6928	6937	6946	6955	6964	6972	6981	1	2	3	4	4	5	6	7	8
50	6990	6998	7007	7016	7024	7033	7042	7050	7059	7067	1	2	3	3	4	4	5	6	7
51	7076	7084	7093	7101	7110	7118	7126	7135	7143	7152	1	2	3	3	4	4	5	6	7
52	7160	7167	7175	7183	7193	7202	7210	7218	7226	7235	1	2	2	3	4	4	5	6	7
53	7243	7251	7258	7267	7275	7284	7292	7300	7308	7316	1	2	2	3	4	4	5	6	7
54	7324	7332	7340	7348	7356	7364	7372	7380	7388	7396	1	2	2	3	4	4	5	6	7

LOGARITHMS

	0	1	2	3	4	5	6	7	8	9	Mean Differences									
											1	2	3	4	5	6	7	8	9	
55	7404	7412	7419	7427	7435	7443	7451	7459	7466	7474	1	2	2	3	3	4	5	5	6	7
56	7482	7490	7497	7505	7513	7520	7528	7536	7543	7551	1	2	2	3	4	5	5	6	7	
57	7559	7566	7574	7582	7589	7597	7604	7612	7619	7627	1	2	2	3	4	5	5	6	7	
58	7634	7642	7649	7657	7664	7672	7679	7686	7694	7701	1	1	2	3	4	4	5	6	7	
59	7709	7716	7723	7731	7738	7745	7752	7760	7767	7774	1	1	2	3	4	4	5	6	7	
60	7782	7789	7796	7803	7810	7818	7825	7832	7839	7846	1	1	2	3	4	4	5	6	7	
61	7853	7860	7868	7875	7882	7889	7896	7903	7910	7917	1	1	2	3	4	4	5	6	7	
62	7924	7931	7938	7945	7952	7959	7966	7973	7980	7987	1	1	2	3	4	4	5	6	7	
63	7993	8000	8007	8014	8021	8028	8035	8041	8048	8055	1	1	2	3	3	4	5	5	6	
64	8062	8069	8075	8082	8089	8096	8102	8109	8116	8122	1	1	2	3	3	4	4	5	6	
65	8129	8136	8142	8149	8156	8162	8169	8176	8182	8189	1	1	2	3	3	4	5	5	6	
66	8195	8202	8209	8215	8222	8228	8235	8241	8248	8254	1	1	2	3	3	4	5	5	6	
67	8261	8267	8274	8280	8287	8293	8299	8306	8312	8319	1	1	2	3	3	4	5	5	6	
68	8325	8331	8338	8344	8351	8357	8363	8370	8376	8382	1	1	2	3	3	4	4	5	6	
69	8388	8395	8401	8407	8414	8420	8426	8432	8439	8445	1	1	2	2	3	4	4	5	6	
70	8451	8457	8463	8470	8476	8482	8488	8494	8500	8506	1	1	2	2	3	4	4	5	6	
71	8513	8519	8525	8531	8537	8543	8549	8555	8561	8567	1	1	2	2	3	4	4	5	5	
72	8573	8579	8585	8591	8597	8603	8609	8615	8621	8627	1	1	2	2	3	4	4	5	5	
73	8633	8639	8645	8651	8657	8663	8669	8675	8681	8686	1	1	2	2	3	4	4	5	5	
74	8692	8698	8704	8710	8716	8722	8727	8733	8739	8745	1	1	2	2	3	4	4	5	5	
75	8751	8756	8762	8768	8774	8779	8785	8791	8797	8802	1	1	2	2	3	3	4	4	5	
76	8808	8814	8820	8825	8831	8837	8842	8848	8854	8859	1	1	2	2	3	3	4	4	5	
77	8865	8871	8876	8882	8887	8893	8899	8904	8910	8915	1	1	2	2	3	3	4	4	5	
78	8921	8927	8932	8938	8943	8949	8954	8960	8965	8971	1	1	2	2	3	3	4	4	5	
79	8976	8982	8987	8993	8998	9004	9009	9015	9020	9025	1	1	2	2	3	3	4	4	5	
80	9031	9036	9042	9047	9053	9058	9063	9069	9074	9079	1	1	2	2	3	3	4	4	5	
81	9085	9090	9096	9101	9106	9112	9117	9122	9128	9133	1	1	2	2	3	3	4	4	5	
82	9138	9143	9149	9154	9159	9165	9170	9175	9180	9186	1	1	2	2	3	3	4	4	5	
83	9191	9196	9201	9206	9212	9217	9222	9227	9232	9238	1	1	2	2	3	3	4	4	5	
84	9243	9248	9253	9258	9263	9269	9274	9279	9284	9289	1	1	2	2	3	3	4	4	5	
85	9294	9299	9304	9309	9315	9320	9325	9330	9335	9340	1	1	2	2	3	3	4	4	5	
86	9345	9350	9355	9360	9365	9370	9375	9380	9385	9390	1	1	2	2	3	3	4	4	5	
87	9395	9400	9405	9410	9415	9420	9425	9430	9435	9440	1	1	2	2	3	3	4	4	5	
88	9455	9460	9465	9469	9474	9479	9484	9489	0	1	1	2	2	3	3	4	4	5		
89	9494	9499	9504	9509	9513	9518	9523	9528	9533	9538	0	1	2	2	3	3	4	4		
90	9542	9547	9552	9557	9562	9566	9571	9576	9581	9586	0	1	1	2	2	3	3	4	4	
91	9590	9595	9600	9605	9609	9614	9619	9624	9628	9633	0	1	1	2	2	3	3	4	4	
92	9638	9643	9647	9652	9657	9661	9666	9671	9675	9680	0	1	1	2	2	3	3	4	4	
93	9685	9689	9694	9699	9703	9708	9713	9717	9722	9727	0	1	1	2	2	3	3	4	4	
94	9731	9736	9741	9745	9750	9754	9759	9763	9768	9773	0	1	1	2	2	3	3	4	4	
95	9777	9782	9786	9791	9795	9800	9805	9809	9814	9818	0	1	1	2	2	3	3	4	4	
96	9823	9827	9832	9836	9841	9845	9850	9854	9859	9863	0	1	1	2	2	3	3	4	4	
97	9868	9872	9877	9881	9886	9890	9894	9899	9903	9908	0	1	1	2	2	3	3	4	4	
98	9912	9917	9921	9926	9930	9934	9939	9943	9948	9952	0	1	1	2	2	3	3	4	4	
99	9956	9961	9965	9969	9974	9978	9983	9987	9991	9996	0	1	1	1	2	2	3	3	3	4

ANTILOGARITHMS

	0	1	2	3	4	5	6	7	8	9	Mean Differences								
											1	2	3	4	5	6	7	8	9
.00	1000	1002	1005	1007	1009	1012	1014	1016	1019	1021	0	0	1	1	1	1	2	2	2
.01	1023	1026	1028	1030	1033	1035	1038	1040	1042	1045	0	0	1	1	1	1	2	2	2
.02	1047	1050	1052	1054	1057	1059	1062	1064	1067	1069	0	0	1	1	1	1	2	2	2
.03	1072	1074	1076	1079	1081	1084	1086	1089	1091	1094	0	0	1	1	1	1	2	2	2
.04	1096	1099	1102	1104	1107	1109	1112	1114	1117	1119	0	1	1	1	1	1	2	2	2
.05	1122	1125	1127	1130	1132	1135	1138	1140	1143	1146	0	1	1	1	1	1	2	2	2
.06	1148	1151	1153	1156	1159	1161	1164	1167	1169	1172	0	1	1	1	1	1	2	2	2
.07	1175	1178	1180	1183	1186	1189	1191	1194	1197	1199	0	1	1	1	1	1	2	2	2
.08	1202	1205	1208	1211	1213	1216	1219	1222	1225	1227	0	1	1	1	1	1	2	2	2
.09	1230	1233	1236	1239	1242	1245	1247	1250	1253	1256	0	1	1	1	1	1	2	2	3
.10	1259	1262	1265	1268	1271	1274	1276	1279	1282	1285	0	1	1	1	1	1	2	2	3
.11	1288	1291	1294	1297	1300	1303	1306	1309	1312	1315	0	1	1	1	1	1	2	2	3
.12	1318	1321	1324	1327	1330	1334	1337	1340	1343	1346	0	1	1	1	1	1	2	2	3
.13	1349	1352	1355	1358	1361	1365	1368	1371	1374	1377	0	1	1	1	1	1	2	2	3
.14	1380	1384	1387	1390	1393	1396	1400	1403	1406	1409	0	1	1	1	1	1	2	2	3
.15	1413	1416	1419	1422	1426	1429	1432	1435	1439	1442	0	1	1	1	1	1	2	2	3
.16	1449	1452	1455	1459	1462	1466	1469	1472	1476	1479	0	1	1	1	1	1	2	2	3
.17	1479	1483	1486	1489	1493	1496	1500	1503	1507	1510	0	1	1	1	1	1	2	2	3
.18	1514	1517	1521	1524	1528	1531	1535	1538	1542	1545	0	1	1	1	1	1	2	2	3
.19	1549	1552	1556	1560	1563	1567	1570	1574	1578	1581	0	1	1	1	1	1	2	2	3
.20	1585	1589	1592	1596	1600	1603	1607	1611	1614	1618	0	1	1	1	1	1	2	2	3
.21	1622	1626	1629	1633	1637	1641	1644	1648	1652	1656	0	1	1	1	1	1	2	2	3
.22	1660	1663	1667	1671	1675	1679	1683	1687	1690	1694	0	1	1	1	1	1	2	2	3
.23	1698	1702	1706	1710	1714	1718	1722	1726	1730	1734	0	1	1	1	1	1	2	2	3
.24	1738	1742	1746	1750	1754	1758	1762	1766	1770	1774	0	1	1	1	1	1	2	2	3
.25	1776	1782	1786	1791	1795	1799	1803	1807	1811	1816	0	1	1	1	1	1	2	2	3
.26	1820	1824	1828	1832	1837	1841	1845	1849	1854	1858	0	1	1	1	1	1	2	2	3
.27	1862	1866	1871	1875	1879	1884	1888	1892	1897	1901	0	1	1	1	1	1	2	2	3
.28	1905	1910	1914	1919	1923	1928	1932	1936	1941	1945	0	1	1	1	1	1	2	2	3
.29	1950	1954	1959	1963	1968	1972	1977	1982	1986	1991	0	1	1	1	1	1	2	2	3
.30	1995	2000	2004	2009	2014	2018	2023	2028	2032	2037	0	1	1	1	1	1	2	2	3
.31	2042	2046	2051	2056	2061	2065	2070	2075	2080	2084	0	1	1	1	1	1	2	2	3
.32	2089	2094	2099	2104	2109	2113	2118	2123	2128	2133	0	1	1	1	1	1	2	2	3
.33	2138	2143	2148	2153	2158	2163	2168	2173	2178	2183	0	1	1	1	1	1	2	2	3
.34	2188	2193	2198	2203	2208	2213	2218	2223	2228	2234	1	1	1	1	1	1	2	2	3
.35	2239	2244	2249	2254	2259	2265	2270	2275	2280	2287	1	1	1	1	1	1	2	2	3
.36	2291	2296	2301	2307	2312	2317	2323	2328	2333	2339	1	1	1	1	1	1	2	2	3
.37	2344	2350	2355	2360	2366	2371	2377	2382	2388	2393	1	1	1	1	1	1	2	2	3
.38	2399	2404	2410	2415	2421	2427	2432	2438	2443	2449	1	1	1	1	1	1	2	2	3
.39	2455	2460	2466	2472	2477	2483	2489	2495	2500	2506	1	1	1	1	1	1	2	2	3
.40	2512	2518	2523	2529	2535	2541	2547	2553	2559	2564	1	1	1	1	1	1	2	2	3
.41	2570	2576	2582	2588	2594	2600	2606	2612	2618	2624	1	1	1	1	1	1	2	2	3
.42	2630	2636	2642	2649	2655	2661	2667	2673	2679	2685	1	1	1	1	1	1	2	2	3
.43	2692	2698	2704	2710	2716	2723	2729	2735	2742	2748	1	1	1	1	1	1	2	2	3
.44	2754	2761	2767	2773	2780	2786	2793	2799	2805	2812	1	1	1	1	1	1	2	2	3
.45	2818	2825	2831	2838	2844	2851	2858	2864	2871	2877	1	1	1	1	1	1	2	2	3
.46	2884	2891	2897	2904	2911	2917	2924	2931	2938	2944	1	1	1	1	1	1	2	2	3
.47	2951	2958	2965	2972	2979	2985	2992	2999	3006	3013	1	1	1	1	1	1	2	2	3
.48	3020	3027	3034	3041	3048	3055	3062	3069	3076	3083	1	1	1	1	1	1	2	2	3
.49	3090	3097	3105	3112	3119	3126	3133	3141	3148	3155	1	1	1	1	1	1	2	2	3

ANTILOGARITHMS

	0	1	2	3	4	5	6	7	8	9	Mean Differences																	
											1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.50	3162	3170	3177	3184	3192	3199	3206	3214	3221	3228	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.51	3235	3243	3251	3258	3266	3273	3281	3289	3296	3304	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.52	3311	3319	3327	3334	3342	3350	3357	3365	3373	3381	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.53	3388	3396	3404	3412	3420	3428	3436	3443	3451	3459	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.54	3467	3475	3483	3491	3499	3508	3516	3524	3532	3540	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.55	3548	3556	3565	3573	3581	3589	3597	3606	3614	3622	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.56	3631	3639	3648	3656	3664	3673	3681	3690	3698	3707	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.57	3715	3724	3733	3741	3750	3758	3767	3776	3784	3793	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.58	3802	3811	3819	3828	3837	3846	3855	3864	3873	3882	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.59	3890	3899	3908	3917	3926	3936	3945	3954	3963	3972	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.60	3981	3990	3999	4009	4018	4027	4036	4046	4055	4064	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.61	4074	4083	4093	4102	4111	4121	4130	4140	4150	4159	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.62	4169	4178	4188	4198	4207	4217	4227	4236	4246	4256	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.63	4265	4276	4285	4295	4305	4315	4325	4335	4345	4355	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.64	4365	4375	4385	4395	4406	4416	4426	4436	4446	4457	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.65	4467	4477	4487	4498	4508	4519	4529	4539	4550	4560	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.66	4571	4581	4592	4603	4613	4624	4634	4645	4656	4667	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.67	4677	4688	4699	4710	4721	4732	4742	4753	4764	4775	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.68	4786	4797	4808	4819	4831	4842	4853	4864	4875	4887	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.69	4898	4909	4920	4932	4943	4955	4966	4977	4989	5000	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.70	5012	5023	5035	5047	5058	5067	5078	5082	5093	5105	5117	1	2	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
.71	5129	5140	5152	5164	5176	5188	5200	5212	5224	5236	1	2	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9	
.72	5248	5260	5272	5284	5297	5309	5321	5333	5346	5358	1	2	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9	
.73	5370	5383	5395	5408	5420	5433	5445	5458	5470	5483	1	3	4	5	6	8	9	1	2	3	4	5	6	7	8	9		
.74	5495	5508	5521	5534	5546	5559	5572	5585	5598	5610	1	3	4	5	6	8	9	1	2	3	4	5	6	7	8	9		
.75	5623	5636	5649	5662	5675	5689	5702	5715	5728	5741	1	3	4	5	7	8	9	1	2	3	4	5	6	7	8	9		
.76	5754	5768	5781	5794	5808	5821	5834	5848	5861	5875	1	3	4	5	7	8	9	1	2	3	4	5	6	7	8	9		
.77	5888	5902	5916	5929	5943	5957	5970	5984	5998	6012	1	3	4	5	7	8	1	2	3	4	5	6	7	8	9			
.78	6026	6039	6053	6067	6081	6095	6109	6124	6138	6152	1	3	4	6	7	8	1	2	3	4	5	6	7	8	9			
.79	6166	6180	6194	6208	6223	6237	6252	6266	6281	6295	1	3	4	6	7	9	1	2	3	4	5	6	7	8	9			
.80	6310	6324	6339	6353	6368	6383	6397	6412	6427	6442	1	3	4	6	7	9	1	2	3	4	5	6	7	8	9			
.81	6457	6471	6486	6501	6516	6531	6546	6561	6577	6592	2	3	5	6	8	9	1	2	3	4	5	6	7	8	9			
.82	6607	6622	6637	6653	6668	6683	6699	6714	6730	6745	2	3	5	6	8	9	1	2	3	4	5	6	7	8	9			
.83	6774	6789	6792	6808	6823	6839	6855	6871	6887	6907	2	3	5	6	8	9	1	2	3	4	5	6	7	8	9			
.84	6918	6934	6950	6966	6982	6998	7015	7031	7047	7063	2	3	5	6	8	9	1	2	3	4	5	6	7	8	9			
.85	7079	7096	7112	7129	7145	7161	7178	7194	7211	7228	2	3	5	7	8	1	2	3	4	5	6	7	8	9				
.86	7244	7261	7278	7295	7311	7328	7345	7362	7379	7396	2	3	5	7	8	1	2	3	4	5	6	7	8	9				
.87	7413	7430	7447	7464	7482	7499	7516	7534	7551	7568	2	3	5	7	8	1	2	3	4	5	6	7	8	9				
.88	7586	7603	7621	7638	7656	7674	7691	7709	7727	7745	2	4	5	7	9	1	2	3	4	5	6	7	8	9				
.89	7762	7780	7798	7816	7834	7852	7870	7889	7907	7925	2	4	5	7	9	1	2	3	4	5	6	7	8	9				
.90	7943	7962	7980	7999	8017	8035	8054	8072	8091	8109	2	4	6	7	9	1	2	3	4	5	6	7	8	9				
.91	8128	8147	8166	8185	8204	8222	8241	8260	8279	8298	2	4	6	8	9	1	2	3	4	5	6	7	8	9				
.92	8318	8337	8356	8375	8395	8414	8433	8453	8472	8492	2	4	6	8	9	1	2	3	4	5	6	7	8	9				
.93	8511	8531	8551	8570	8590	8610	8630	8650	8670	8690	2	4	6	8	10	12	14	16	18	18	18	18	18	18	18	18	18	
.94	8710	8730	8750	8770	8790	8810	8831	8851	8872	8892	2	4	6	8	10	12	14	16	18	18	18	18	18	18	18	18	18	
.95	8913	8933	8954	8974	8995	9016	9036	9057	9078	9099	2	4	6	8	10	12	15	17	19	19	19	19	19	19	19	19	19	
.96	9120	9141	9162	9183	9204	9226	9247	9268	9289	9311	2	4	6	8	11	13	15	17	19	19	19	19	19	19	19	19	19	
.97	9333	9354	9376	9397	9419	9441	9462	9484	9506	9528	2	4	7	9	11	13	15	17	20	20	20	20	20	20	20	20	20	
.98	9550	9572	9594	9616	9638	9661	9683	9705	9727	9750	2	4	7	9	11	13	16	18	20	20	20	20	20	20	20	20	20	
.99	9772	9795	9817	9840	9863	9886	9908	9931	9954	9977	2	5	7	9	11	14	16	18	20	20	20	20	20	20	20	20	20	

Space for rough work

Space for rough work