

CLAT COMMUNITY

WHERE ACHIEVERS HELP YOU ACHIEVE!

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DAILY QT

PASSAGE 1 — MAGNITUDE LAB: DIGIT COUNTS & COMPARING LARGE POWERS

Magnitude Lab is a research group that compares very large numbers without computing them in full. Its members are given pairs of powers, such as a power of two against a power of three, and must decide which is larger or how many digits a number has when written in ordinary decimal form. The lab trains its members to avoid direct multiplication, since the numbers involved can have many digits, and to use logarithms or other reductions instead.

The first tool is the count of digits. A positive integer N has exactly one more digit than the whole part of its base-ten logarithm, so the number of digits of 2 raised to a power can be found by multiplying the exponent by the logarithm of two. The second tool is a direct comparison of two powers, which is done by taking logarithms of both sides and comparing the resulting products. The third tool is a change of scale, in which both numbers are expressed with a common base so that their exponents can be compared.

Members are warned that approximations must be used with care, because a small error in a logarithm can change the answer when the two numbers are close. Where two values differ by only a small margin, the lab requires an exact check by a different route. Unless stated otherwise, the logarithm of two is taken as 0.30103 and the logarithm of three as 0.47712, and every power is a positive integer power.

1. The number of digits in 2^{100}, written in ordinary decimal form, is:

(A) 30

(B) 31

(C) 32

(D) 33

2. The number of digits in 3^{200}, written in ordinary decimal form, is:

(A) 95

(B) 91

(C) 96

(D) 97

3. Between 2^{300} and 3^{200}, the larger number is:

(A) 2^{300}

(B) 3^{200}

(C) they are equal

(D) it cannot be decided

4. Between 5^{50} and 2^{120}, the larger number is:

(A) 5^{50}

(B) 2^{120}

(C) they are equal

(D) it cannot be decided

5. The number of digits in 2^{300}, written in ordinary decimal form, is:

(A) 89

(B) 90

(C) 92

(D) 91

6. The difference between the number of digits in 3^{200} and the number of digits in 2^{300} is:

(A) 4

(B) 5

(C) 6

(D) 7

PASSAGE 2 — QUADRANT NOTES: QUADRATIC SEQUENCES & THEIR SUMS

Quadrant Notes is a teaching resource that explains how sequences can be generated by polynomial rules. A sequence is said to be quadratic when its differences form an arithmetic progression, which means that the n-th term can be written as a second-degree polynomial in n. The resource's first example is a sequence whose differences increase by two at each step, so that the sequence grows at a steadily accelerating pace.

Students are shown how to build such a sequence from its differences, and how to recover the formula for its n-th term from the first few values. They also learn to compute partial sums of the sequence, to locate the first term that exceeds a given threshold, and to count how many terms stay below a limit. A further exercise asks students to add consecutive terms, a task that reveals an interesting pattern in the sums.

The resource stresses that a quadratic sequence can be identified from a small number of terms, but that the identification is only certain when the differences are checked at least twice. Unless stated otherwise, the sequence begins at n = 1, every term is a positive integer, and each question refers to the first thirty terms of the sequence.

7. The 10th term of the sequence whose n-th term is $n^2 + n + 1$ is:

(A) 101

(B) 111

(C) 121

(D) 99

8. The sum of the first ten terms of the sequence $n^2 + n + 1$ is:

(A) 450

(B) 430

(C) 470

(D) 490

9. The sum of the first fifteen terms of the sequence $n^2 + n + 1$ is:

(A) 1275

(B) 1375

(C) 1425

(D) 1300

10. The smallest n for which the n-th term of $n^2 + n + 1$ exceeds 500 is:

(A) 20

(B) 21

(C) 22

(D) 23

11. The number of terms among the first thirty terms of $n^2 + n + 1$ that are at most 200 is:

(A) 12

(B) 14

(C) 11

(D) 13

12. The sum of the 10th and 11th terms of the sequence $n^2 + n + 1$ is:

(A) 240

(B) 244

(C) 250

(D) 248

Also, find us on Discord: - https://discord.gg/9kFymfz7qN

Telegram: - https://t.me/CLAT_Community and Instagram: - https://www.instagram.com/clat_community/

ANSWER KEY

PASSAGE 1 — MAGNITUDE LAB (DIGITS & POWERS)

Q1: (B) 31 — Digits = $\lfloor 100 \times \log_{10}2 \rfloor + 1 = \lfloor 30.103 \rfloor + 1 = 31$.

Q2: (C) 96 — Digits = $\lfloor 200 \times 0.47712 \rfloor + 1 = \lfloor 95.42 \rfloor + 1 = 96$.

Q3: (B) 3^{200} — $300 \log_{10}2 \approx 90.31$, while $200 \log_{10}3 \approx 95.42$, so 3^{200} is larger.

Q4: (B) 2^{120} — $50 \log_{10}5 \approx 34.95$ and $120 \log_{10}2 \approx 36.12$, so 2^{120} is larger.

Q5: (D) 91 — Digits = $\lfloor 300 \times 0.30103 \rfloor + 1 = \lfloor 90.31 \rfloor + 1 = 91$.

Q6: (B) 5 — $96 - 91 = 5$.

PASSAGE 2 — QUADRANT NOTES (QUADRATIC SEQUENCES)

Q7: (B) 111 — $10^2 + 10 + 1 = 111$.

Q8: (A) 450 — Sum of $n^2 + n + 1$ for n = 1 to 10 is $385 + 55 + 10 = 450$.

Q9: (B) 1375 — Sum for n = 1 to 15 is $1240 + 120 + 15 = 1375$.

Q10: (C) 22 — $21^2 + 21 + 1 = 463$ is below 500, while $22^2 + 22 + 1 = 507$ exceeds it.

Q11: (D) 13 — The terms for n = 1 to 13 are at most 200 (the 13th term is 183), and the 14th term is 211.

Q12: (B) 244 — $111 + 133 = 244$.

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SECTIONAL TEST

22 DAYS TO GO FOR **CLAT 2027**

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OUR RANKERS

1 in every 4 of CLAT Community's students are now placed in Top 5 NLUs.



ALL INDIA RANK **15**

SAHER GOLE



ALL INDIA RANK **17**

PARTHIVA SUSHANTH



ALL INDIA RANK **61**

MIHIKA AGGARWAL



ALL INDIA RANK **79**

SUHIT KENDURKAR



ALL INDIA RANK **86**

RIYA CHAUHAN



ALL INDIA RANK **100**

SHEIKH EHSAAN KHALEELULLAH



ALL INDIA RANK **104**

HRISHIT PODDAR



ALL INDIA RANK **137**

ROHAN YADAV



ALL INDIA RANK **146**

TEJAS ROY



ALL INDIA RANK **147**

ANIRUDDH BAJAJ



ALL INDIA RANK **189**

KABIR WADHWANI



ALL INDIA RANK **263**

CANCHI SISTLA AKSHARA



ALL INDIA RANK **319**

SHIVAM TRIPATHI



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MANYA BHASKAR



ALL INDIA RANK **NLSIU**

NAMASHRITA GOPINATH



ALL INDIA RANK **NLSIU**

RONIL DHASAL



ALL INDIA RANK **NALSAR**

VEDA RAO



ALL INDIA RANK **NLSIU**

SAMANDAR SINGH



ALL INDIA RANK **NALSAR**

GANJI HAINDAVI



ALL INDIA RANK **NALSAR**

SAHISHNA



ALL INDIA RANK **NLSIU**

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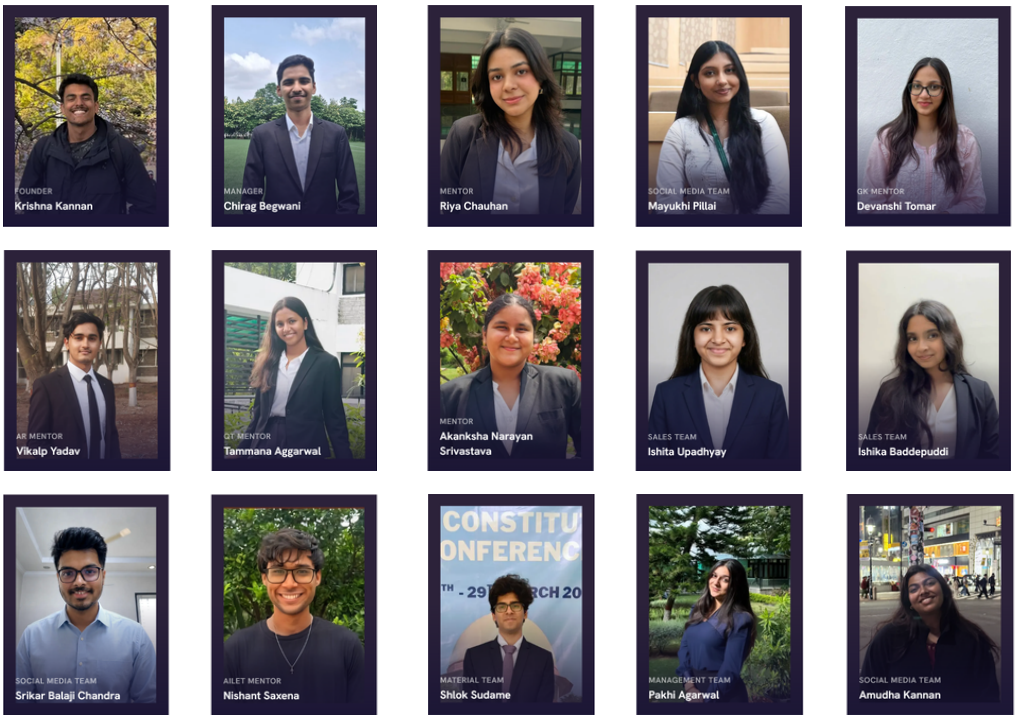








OUR MENTORS



MENTORS' NOTE

Good morning everyone,

If you're reading this, you're already doing something that thousands of CLAT aspirants never do—you've shown up today. That might sound like a small thing, but over the next few months you'll realise that success in CLAT is rarely decided by one brilliant mock or one 12-hour study session. It's decided by the hundreds of ordinary days where you choose to sit down and study even when you don't feel like it.

The entire CLAT Community team is rooting for you. Whenever you're stuck, ask doubts, discuss questions, and make use of the people around you. You don't have to prepare alone. We hope today's material helps you take one more step towards your dream.

Now stop reading this note and get to work. Your future self will thank you for the effort you put in today.

All the best.

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