CLASS 6 MATHS EXTRA QUESTIONS

Extra Questions for Class 6 Maths Chapter 1: Patterns in Mathematics

Fresh practice questions for Class 6 Maths Chapter 1 "Patterns in Mathematics", reinforcing number and shape sequences.

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Q1.

Find the next three terms of the sequence: 2, 5, 10, 17, 26, …

Answer: The differences are 3, 5, 7, 9 (increasing by 2 each time — these are consecutive odd numbers). So the next differences are 11, 13, 15: 26+11=37, 37+13=50, 50+15=65. Next three terms: **37, 50, 65**. (This is actually the sequence n^2+1: $1^2+1=2$, $2^2+1=5$, $3^2+1=10$, …, $6^2+1=37$?.)

Q2. Assertion-Reason

Assertion (A): The sum of the first 20 odd numbers is 400.
Reason (R): The sum of the first n odd numbers is always n^2.

Answer: Both A and R are true, and R correctly explains A. $20^2=400$.

Q3.

Is 100 a triangular number? Justify your answer.

Answer: Solve $n(n+1)/2=100 \Rightarrow n(n+1)=200$. Testing n=13: 13×14=182 (too small). n=14: 14×15=210 (too big). Since no whole number n satisfies this exactly, **100 is not a triangular number**.

Q4. Spot the Error

A student claims: “The number of connecting lines in a complete graph of n points is n(n+1)/2.” Check this against a complete graph of 3 points (a triangle), which has 3 connecting lines, and correct the formula if needed.

Answer: Testing n=3 in n(n+1)/2 gives 3×4/2=6, which does not match the actual 3 lines. The correct formula is **n(n-1)/2**: for n=3, 3×2/2=3 ?, matching the triangle’s 3 sides.

Q5.

What is the 12th triangular number, and what is the 12th square number? Which is larger?

Answer: 12th triangular number = 12×13/2 = **78**. 12th square number = 12^2 = **144**. The square number (144) is larger.

Q6. HOTS

Using the identity “sum of first n cubes = (sum of first n counting numbers)^2,” find $1^3+2^3+3^3+4^3+5^3$ without adding the cubes directly.

Answer: Sum of first 5 counting numbers = 1+2+3+4+5=15. So the sum of the first 5 cubes = 15^2 = **225**.

(Check by direct addition: 1+8+27+64+125=225 ✓.)

Q7.

What is the 7th Virahanka number, given the sequence starts 1, 2, 3, 5, 8, …?

Answer: Continuing the recurrence (each term = sum of the two before it): 1, 2, 3, 5, 8, 13, **21**. The 7th term is **21**.

Q8.

How many little squares are in a 9×9 stacked-squares arrangement, and how many little triangles are in the corresponding 9-row stacked-triangles arrangement?

Answer: Stacked squares: 9^2 = **81**. Stacked triangles (sum of first 9 odd numbers): 1+3+5+7+9+11+13+15+17 = **81** as well — both give the same total, since both are square-number sequences.

Q9.

Find the next hexagonal number after 91 (the sequence is 1, 7, 19, 37, 61, 91, …).

Answer: The differences increase by 6 each time: 6,12,18,24,30 so far, so the next difference is 36: 91+36=**127**.

Q10.

How many total line segments would a Koch snowflake have after 5 steps (starting from a triangle with 3 segments)?

Answer: Using 3×4^n: after 5 steps, $3\times4^5 = 3\times1024$ = **3,072** line segments.

See also: NCERT Solutions for Class 6 Maths Chapter 1

Quick revision: Revision Notes for Class 6 Maths Chapter 1