

Inductive Reasoning

Inductive reasoning involves looking at a number of special cases, finding a pattern, and coming up with a general rule that fits the pattern.

Example: A new student observed that when John was tardy for the third time, he was assigned detention. The next day, Sally was tardy for the third time, and she was assigned detention. Ann also arrived late for the third time, and was given detention.

The student concluded that the rule must be that if a student is tardy three times, the student is assigned detention.

Use inductive reasoning to find the pattern in each of the following problems.

1. $25 \times 25 = 625$

$35 \times 35 = 1225$

$45 \times 45 = 2025$

$55 \times 55 = \underline{\hspace{2cm}}$

$65 \times 65 = \underline{\hspace{2cm}}$

$75 \times 75 = \underline{\hspace{2cm}}$

2. 5, 25, 125, _____, _____, _____

3. 0, 1, 3, 6, 10, _____, _____, _____

4. $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \underline{\hspace{2cm}}, \underline{\hspace{2cm}}, \underline{\hspace{2cm}}$

5. 1, -3, 9, -27, _____, _____, _____

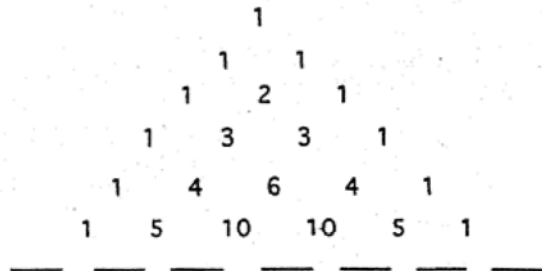
6. 64, 32, 16, _____, _____, _____

7. 1, 4, 9, 16, _____, _____, _____

8. $\frac{C}{D^2}, \frac{C^2}{D^4}, \frac{C^3}{D^6}, \underline{\hspace{2cm}}, \underline{\hspace{2cm}}, \underline{\hspace{2cm}}$

9. $AB^2, A^3B^3, A^5B^4, A^7B^5, \underline{\hspace{2cm}}, \underline{\hspace{2cm}}$

10. The arrangement of numbers shown here is called PASCAL'S TRIANGLE. It contains many patterns. Study it and then complete the next row.



11. Refer to PASCAL'S TRIANGLE. Try adding each row of the triangle and look for a pattern in the sums.

Sum of Row 1 = 1

Sum of row 2 = 2

Sum of row 3 = 4

4th row = _____

5th row = _____

6th row = _____

7th row = _____

•

•

•

nth row = _____