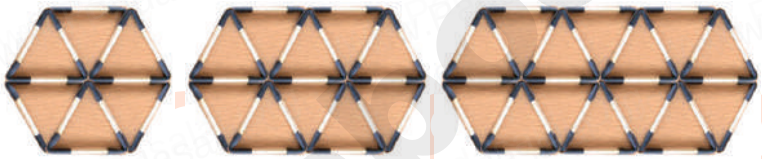
Chapter 5

Information Processing

Activity

(Text book Page No. 91)

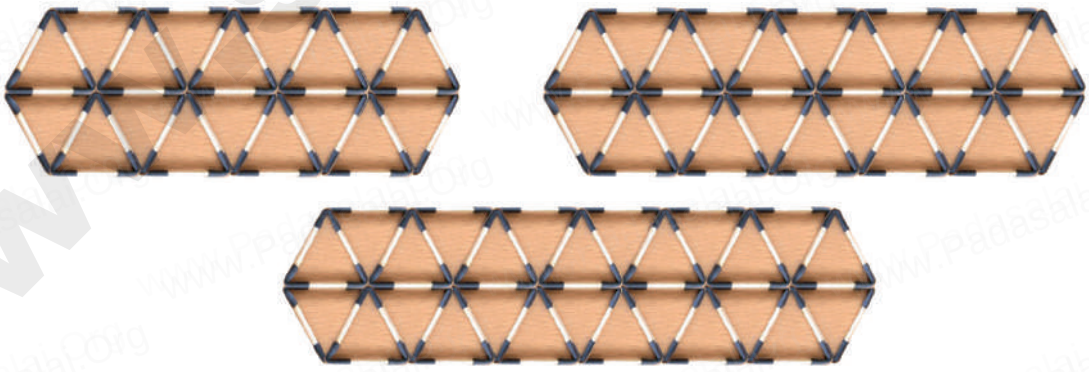
Observe the pattern given below. Continue the pattern for three more steps.



Let, 'x' be the number of steps and 'y' be the number of match sticks. Tabulate the values of 'x' and 'y' and verify the relationship $y = 7x + 5$.

Sol : Three more patterns are

Number of steps (x)	1	2	3	4	5	6	.....
Number of match sticks (y)	12	19	26	33	40	47	.....



From the table $y = 7x + 5$ is verified.

Objective Type Questions

2. Identify the correct relationship between x and y from the given table.

x	1	2	3	4	...
y	4	8	12	16	...

(i) $y = 4x$ (ii) $y = x + 4$ (iii) $y = 4$ (iv) $y = 4 \times 4$

[Ans : (i) $y = 4x$]

3. Identify the correct relationship between x and y from the given table.

x	–2	–1	0	1	2	...
y	6	3	0	–3	–6	...

(i) $y = -2x$ (ii) $y = +2x$ (iii) $y = +3x$ (iv) $y = -3x$

[Ans : (iv) $y = -3x$]

Additional Questions

1. Find the relationship between x and y if

x	–2	–1	0	1	2	...
y	10	5	0	–5	–10	...

Sol : The relationship between x and y is $y = -5x$

2. Find the relationship between x and y if

x	1	2	3	4	5	...
y	5	8	11	14	17	...

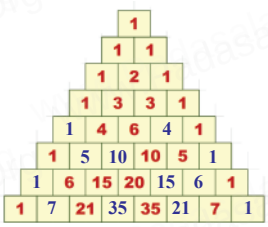
Sol : The relationship between x and y is $y = 3x + 2$

Activity

(Text book Page No. 93 & 94)

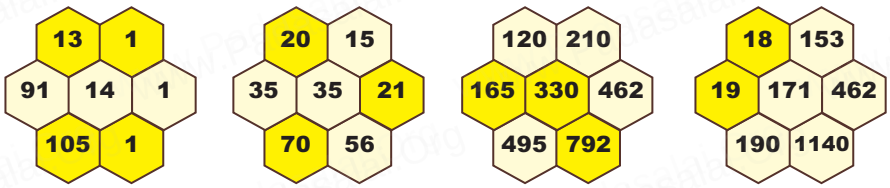
1. Complete the following Pascal's Triangle by observing the number pattern.

Sol : Pascal's triangle is given by

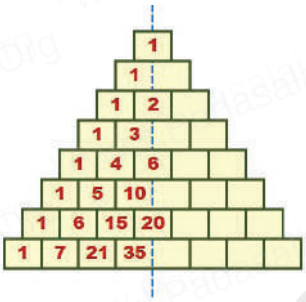


Unit 5

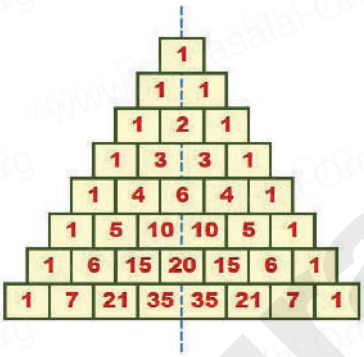
Sol :



3. Complete the Pascal's Triangle by taking the numbers 1,2,6,20 as line of symmetry.



Sol : Corresponding numbers are equal about the line of symmetry.



Objective Type Questions

4. The elements along the sixth row of the Pascal's Triangle is

(i) 1,5,10,5,1 (ii) 1,5,5,1 (iii) 1,5,5,10,5,5,1 (iv) 1,5,10,10,5,1

[Ans : (iv) 1,5,10,10,5,1**]**

5. The difference between the consecutive terms of the fifth slanting row containing four elements of a Pascal's Triangle is

(i) 3,6,10,… (ii) 4,10,20,… (iii) 1,4,10,… (iv) 1,3,6,…

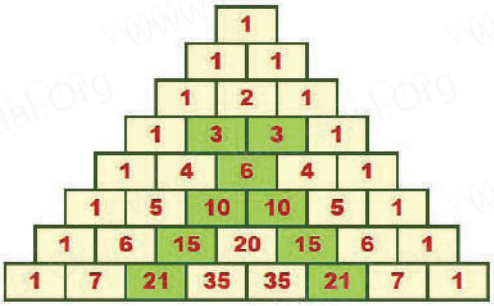
[Ans : (ii) 4,10,20,…**]**

6. What is the sum of the elements of nineth row in the Pascal's Triangle?

(i) 128 (ii) 254 (iii) 256 (iv) 126

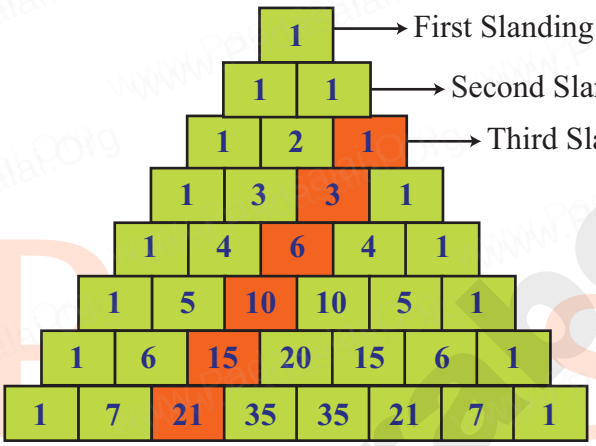
[Ans : (iii) 256**]**

From Pascal's Triangle, the triangular numbers are



3. Write the first five numbers in the third slanting row of the Pascal's Triangle and find their squares. What do you infer?

Sol :



Numbers in the 3rd slanding row are 1, 3, 6, 10, 15, 21, ...

The squares are 1^2, 3^2, 6^2, 10^2. 15^2, 21^2, ... = 1, 9, 36, 100, 225, 441, ...

Natural Numbers	Cubes	Sum of the cubes	Squares of triangular Nos.
1	$1^3 = 1$	1	1
2	$2^3 = 8$	1 + 8 = 9	9
3	$3^3 = 27$	1 + 8 + 27 = 36	36
4	$4^3 = 64$	1 + 8 + 27+ 64 = 100	100
5	$5^3 = 125$	1 + 8 + 27+ 64 + 125 = 225	225
6	$6^3 = 216$	1 + 8 + 27+ 64 + 125 + 216 = 441	441
7	$7^3 = 343$	1 + 8 + 27+ 64 + 125 + 216 +343 = 784	784
.	.	.	.
.	.	.	.
.	.	.	.

From the above table we can conclude that the squares of the triangular numbers are the sum of cubes of natural numbers.