x	10	20	30	40	50	60
y	1.105	1.808	2.614	3.604	4.857	6.451

3. The following data gives the marks obtained by 100 students in a subject in an examination using both Newton's forward and backward interpolation formulas, find the number of students who have scored 45 marks and above.

Marks obtained:	30-40	40-50	50-60	60-70	70-80
No of students:	25	35	22	11	7

[**Hint:** Rewrite the data in terms of x and y, where x denotes the lower boundary of marks and y the numbers of students who have secured marks x and above.]

4. Use both Newton's forward and backward interpolation formulas to find tan 17° from the following data:

$x°$	0	4	8	12	16	20
tan $x°$	0	0.0699	0.1405	0.2126	0.2167	0.3640

5. Use both Newton's forward and backward interpolation formulas to find the value of y when $x = 23.6$ from the following data:

x	19	20	21	22	23	24	25
y	91.00	100.25	110.00	120.25	131.00	142.25	154.00

6. Use both Newton's forward and backward interpolation formulas to find the number of students who have secured 75 or less marks from the following data:

Mark range	30-40	40-50	50-60	60-70	70-80
No. of students	31	42	51	35	31

7. Find $y(5)$, using both Newton's and backward interpolation formulas, if $y(10) = 35.3$, $y(15) = 32.4$, $y(20) = 29.2$, $y(25) = 26.1$, $y(30) = 23.2$ and $y(35) = 20.5$.

8. Find y at $x = 0.95$, using both Newton's forward and backward interpolations formulas, from the given table.

x	1.0	1.1	1.2	1.3	1.4	1.5
y	0.841	0.891	0.932	0.964	0.925	1.015

9. Find the value of y at $x = 0.47$ using Newton's forward and backward interpolations formulas from the given table.

x	0.50	0.55	0.60	0.65	0.70
y	0.1915	0.2088	0.2258	0.2422	0.2580

10. Find the value of y at $x = 6$, using both Newton's forward and backward interpolation formulas from the following table.

x	1	2	3	4	5
y	41.66	34.46	28.28	22.94	18.32

11. Find $e^{0.655}$, using both Newton's forward and backward interpolation formulas from the following table.

x	0.61	0.62	0.63	0.64	0.65
e^x	1.840431	1.858928	1.877610	1.896481	1.915541

4. Using the inverse Lagrange's interpolation, find the value of x when $y = 3$ from the following tab

x	36	54	72	144
y	–2	1	2	4

5. Using Lagrange's interpolation formula find $f(x)$

x	0	1	4	5
$f(x)$	4	3	24	39

6. Using Lagrange's interpolation formula find polynomial

x	0	1	3	4
y	–12	0	6	12

7. Find the polynomial using Lagrange's Interpolation

x	0	1	2	5
y	2	3	12	15

8. Find the polynomial using Lagrange's Interpolation

x	0	2	3	4	7
$f(x)$	4	26	58	112	466

9. Using Lagrange's Inverse interpolation find x at $y = 100$ from the given data.

x	3	5	7	9	11
y	6	24	58	108	174

10. Using Lagrange's Inverse interpolation find x at $y = 85$ from the given data.

x	2	5	8	14
y	94.8	87.9	81.3	68.7

11. Using Lagrange's Inverse interpolation find polynomial.

x	30	34	38	42
$f(x)$	–30	–13	3	18

12. Find polynomial using Lagrange's Interpolation.

x	–1	0	3	4
$f(x)$	–38	–12	6	12

13. Find the polynomial using Lagrange's Interpolation

x	0	1	4	5
$f(x)$	8	11	68	123

14.

x	1.2	2.0	2.5	3.0
$f(x)$	1.36	0.58	0.34	0.20

Find $f(x)$ at $x = 1.6$

15.

x	25	30	40	50
$f(x)$	26	34	42	47

Find $f(x)$ at $x = 35$