Correlation and Regression(Exponential

A population of single-celled organisms was grown in a Petri dish over a period of 16 hours. The number of organisms at a given time is recorded in the table below.

Time, hrs (x)	Number of Organisms (y)
0	25
2	36
4	52
6	68
8	85
10	104
12	142
16	260

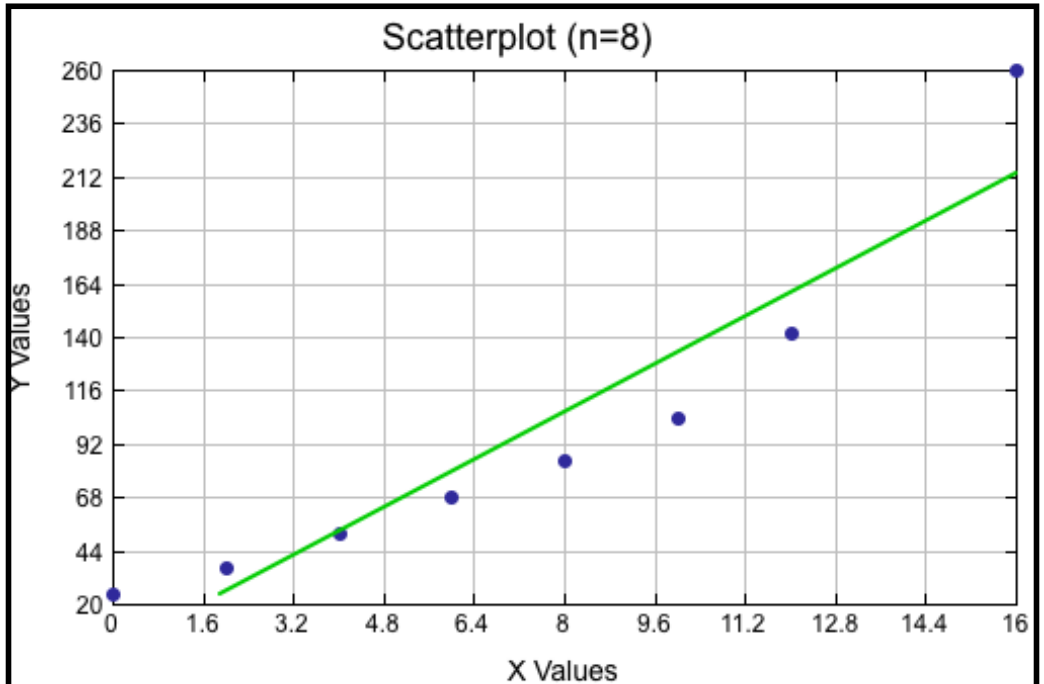
Determine the regression equation model for these data, rounding all values to the nearest ten-thousandth. Using this equation, predict the number of single-celled organisms, to the nearest whole number, at the end of the 18th hour.

```
Sample size, n:          8
Degrees of freedom:      6

Correlation Results:
Correlation coeff, r:    0.9404263
Critical r:              ±0.706734
P-value (two-tailed):    0.00051

Regression Results:
Y= b0 + b1x:
Y Intercept, b0:         -0.7117794
Slope, b1:               13.40852

Total Variation:         40556
Explained Variation:     35867.79
Unexplained Variation:   4688.206
Standard Error:          27.95295
```



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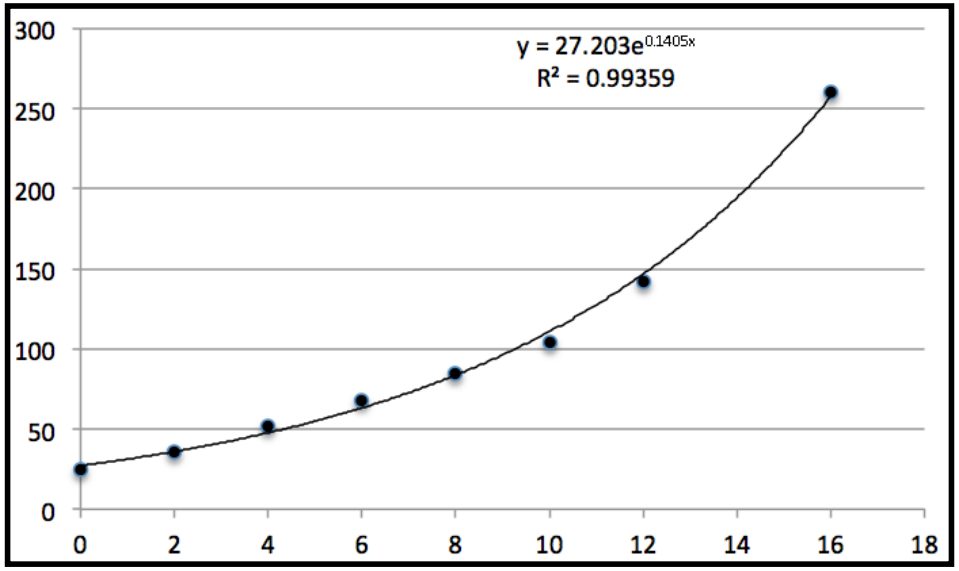

1	2	3
0	25	1.397940009
2	36	1.556302501
4	52	1.716003344
6	68	1.832508913
8	85	1.929418926
10	104	2.017033339
12	142	2.152288344
16	260	2.414973348

```
Sample size, n:      8
Degrees of freedom: 6

Correlation Results:
Correlation coeff, r: 0.9967914
Critical r:           ±0.706734
P-value (two-tailed): 0.000

Regression Results:
Y= b0 + b1x:
Y Intercept, b0:      1.434609
Slope, b1:            0.0610275

Total Variation:        0.7478008
Explained Variation:    0.7430097
Unexplained Variation: 0.0047911
Standard Error:         0.028258
```

intercept	1.434609	27.20251134	<- 10^1.434609			
slope	0.0610275	1.150873261	<- 10^ 0.0610275	0.69314718	1.15084908	<- e^0.1405
				0.1405	<- ln(1.15084908)	
	y = 27.2025(1.15087) ^ x					


mth_150