

**The data represents circumferences of trees and their height (in feet).**

X (circ)	1.8	1.9	1.8	2.4	5.1	3.1	5.5	5.1	8.3	13.7	5.3	4.9	3.7	3.8
Y (ht)	21.0	33.5	24.6	40.7	73.2	24.9	40.4	45.3	53.5	93.8	64.0	62.7	47.2	44.3

1. Is there significant linear correlation? Explain
2. What proportion of the variation in height can be explained by the linear relationship between circumference and height of the tree?
3. Find the regression equation.
4. Predict the height of a tree when the circumference is 4 ft.

**The data represents number of cigarettes smoked per day and the cotinine level in the body.**

X (cig. per day)	60	10	4	15	10	1	20	8	7	10	10	20
Y (cotinine)	179	283	75.6	174	209	9.51	350	1.85	43.4	25.1	408	344

5. Is there significant linear correlation? Explain.
6. Find the regression equation.
7. Predict the cotinine level when the number of cigarettes per day is 40.

**One hundred bacteria are started in a culture and the number of bacteria is counted each hour for 5 hours. The results are shown in the table, where x is the time in hours.**

x (time)	0	1	2	3	4	5
y (# bacteria)	100	126	151	198	243	297

8. Identify the mathematical model that best fits the given data (linear, quadratic, exponential, or power).
9. Use the model to estimate the number of bacteria after 8 hours.

Honors Statistics  
Chapter 9 Review Answers

1.  $r = 0.828$  ;  $r_{cv} = 0.532$ ; sig. linear corr.
2. 0.686
3.  $\hat{y} = 5.34x + 22.5$
4. 43.86 feet
5.  $r = 0.262$ ;  $r_{cv} = 0.576$ ; not sign. linear corr.
6.  $\hat{y} = 2.48x + 139$
7.  $\bar{y} = 175.2$
8. Quadratic:  $y = 3.93x^2 + 19.9x + 100$
9. 511 bacteria