

APPLICATIONS OF REGRESSIONS

Use regression in your calculator to answer the following. Round to the nearest hundredth.

1) Two Scoops Ice Cream shop decides to track its ice cream sales and the outside temperature each day for one week. The data collected is shown in the table below.

Temperature (°F)	72.6	76.5	68.4	74.4	80.3	86.8	92.2
Ice Cream Sales (\$)	215	325	185	332	406	522	614

- a) The data appears to follow a Lin / Quad / Exp relationship.
- b) Use regression in the calculator to find the equation of the line of best fit.

y = _____

- c) Using the equation obtained in part b, predict the ice cream sales when the outside temperature is 90°F.

2) The following data represents approximate heights, y , for a ball thrown by a shot-putter as it travels a distance of x meters horizontally.

Distance (m)	7	20	33	47	60	67
Height (m)	8	15	24	26	24	21

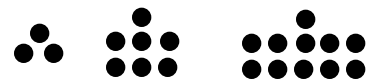
- a) The data appears to follow a Lin / Quad / Exp relationship.
- b) Use regression in the calculator to find the equation of the line of best fit.

y = _____

- c) Using the equation obtained in part b, estimate the height of the ball if it travels 80 meters.

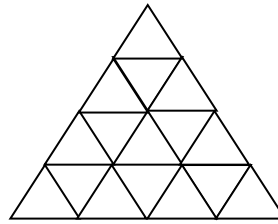
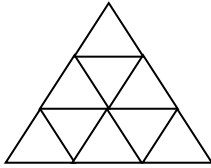
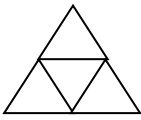
3) The figure below shows a pattern.

- a) Write an expression that can be used to determine how many circles will be in the n th figure.



- b) How many circles are in the 16th figure?

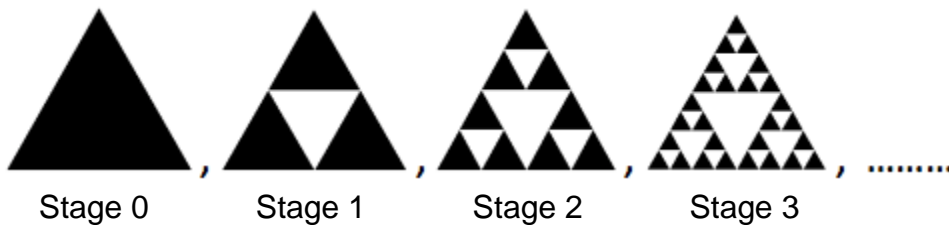
4) The given set of figures form a pattern.



Which expression can be used to determine the number of small triangles in the n th set?

- A. $5n - 1$ B. $n(n + 2) + 1$ C. $2 \cdot 2^n$ D. $2n(n + 1)$

5) Consider the following sequence of patterns.



- a) Write an equation that could be used to find how many black triangles, y , are in stage x .
- b) How many black triangles are in stage 12?
- c) At what stage will there be 729 black triangles?

6) The first 5 terms in a pattern are shown below.

7.5, 7, 6.5, 6, 5.5...

If this pattern continues what expression can be used to find the n th term?

Review. Show all work.

7) What is the slope of the given equation?

$$2x - 10y = -5y + 10$$

8) The points (2, 2), (3, 7), and (-1, -1) are on the graph of function. What is the graph's parent function?