

NAME \_\_\_\_\_

DATE \_\_\_\_\_

PER. \_\_\_\_\_

**REGRESSIONS – Day 2**

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

1) Two Scoops Ice Cream shop finds that its ice cream sales and the outside temperature most closely models a linear relationship for temperatures between 70 and 100°F. The data in the table below represents one week of Two Scoops' sales.

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

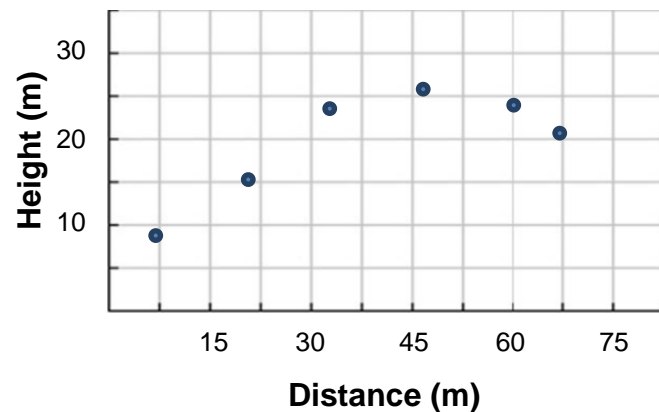
a) Use regression in the calculator to find the equation of the line of best fit.

$$y = \underline{\hspace{2cm}}$$

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

2) The quadratic function modeled below represents the approximate heights,  $y$ , for a ball thrown by a shot-putter as it travels a distance of  $x$  meters horizontally.

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



a) Use regression in the calculator to find the equation of the line of best fit.

$$y = \underline{\hspace{2cm}}$$

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

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

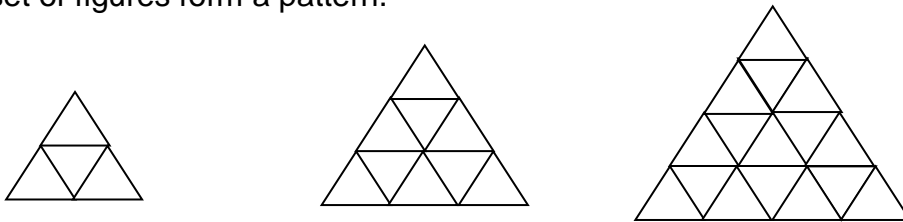
4) The figure below shows a pattern.

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 16<sup>th</sup> figure?

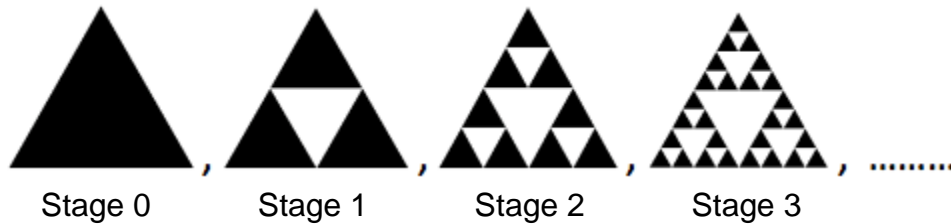
5) The given set of figures form a pattern.



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.  $2n(n + 1)$

6) 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?

7) 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?