



The questions you read next will require you to answer in writing.

1. Write your answers on separate paper.

2. Be sure to write your name on each page.

- 1 The chart below shows the amount of insulin in a person's bloodstream after a certain amount of time, t .

t (minutes)	3	15	24	45
Units of Insulin	8.6	4.9	3.1	1.0

Create a best fit exponential function to answer the questions.

- To the nearest tenth, how many units of insulin are in the person's bloodstream at $t = 0$?
- To the nearest percent, what is the absolute value of the percent change per minute of insulin?

- 2 A geologist is analyzing the erosion of a coastline over the past five years. The table below shows the relationship.

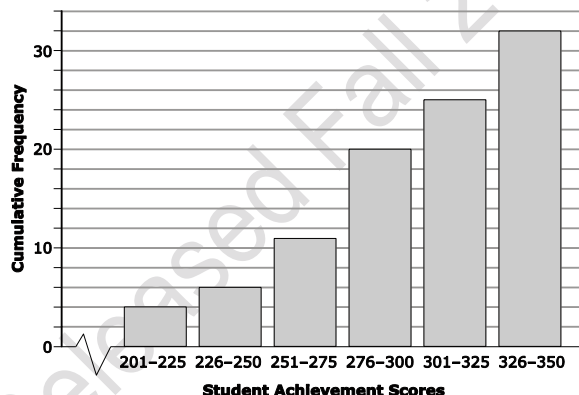
Time (years)	1	2	3	4	5
Cumulative Erosion (feet)	1.01	2.81	6.51	10.14	16.32

- Does a linear, exponential, or power function best fit the data? Explain.
- Write the equation of the function that best models the data.
- Using the equation created, how much erosion can be expected after 8 years?

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- 3 A restaurant determined that the calories of its meals are normally distributed. The mean is 680 calories with a standard deviation of 63 calories.
- Give a range of calories, centered on the mean, that includes 95% of the restaurant's meals.
 - The cook creates a meal with 617 calories. What percentage of meals has more calories than this meal?
- 4 The table below shows the cumulative frequency of student achievement scores for a particular class.



- Which 25-point interval contains the median achievement score?
- How many students scored at least a 276 on the achievement test?

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- 5 A professor of a statistics class has the following scores for her students: 296, 332, 290, 308, 343, 371, 336, 384, 361, 350.

- If 10 points are added to each score, what is the new mean and standard deviation?

- 6 Use the piecewise function below to answer each question.

$$h(x) = \begin{cases} -2x^2 + 5x + 10 & \text{for } -4 \leq x < 3 \quad \text{Step 1} \\ 3x + 2 & \text{for } 3 \leq x < 7 \quad \text{Step 2} \\ \sqrt{2x - 5} & \text{for } 7 \leq x < 16 \quad \text{Step 3} \end{cases}$$

- What is the range for step 1?
- What is the domain for the entire function?
- What is $h(10.5)$?

- 7 For the following problem, round each answer to the nearest hundredth.

- Write the equation of the power function that passes through the points (1, 6) and (3, 14).
- Based on the above function, what is the value of x when $y = 8$?

- 8 Power functions can be written in the form $f(x) = ax^b$, where $b > 1$.

- Write an equation for an odd, positive-integer power function of this form.
- Graph the equation including enough of the domain to show the graph's important features.

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