



# America's School of Heroes

## Middle School 137

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## 8<sup>th</sup> Grade Algebra February Assignment



Dear Students, Parents, and Guardians,

Attached to this letter is the math assignment to be completed over the course of the break. **The New York State Algebra I Regents Exam is scheduled for June 12<sup>th</sup>** and we must begin preparing for this very important assessment.

The content of this packet is review material on topics that our 8<sup>th</sup> grade students have been studying since the beginning of the year. Please make sure you take your time when completing this review by using your notes and textbook.

All work must be shown must be shown. This assignment will be counted towards your 2<sup>nd</sup> trimester class average.

Again, this assignment will be due on **Monday, February 26<sup>th</sup>, 2018!** Have a wonderful break!!

Sincerely,

Ms. Wilkins, Math Assistant Principal



# Module 3 Constructed-Response Review

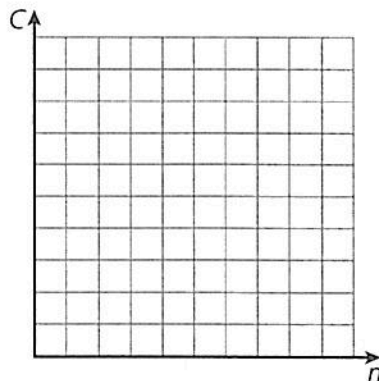
Read each problem. Write your answers.

- 1 Justin works at a shop that designs and prints custom mugs. The table shows how the cost of printing mugs depends on the number printed.

**MUG PRINTING COSTS**

Number of Mugs	Total Cost (dollars)
20	110
30	135
40	160
50	185
60	210

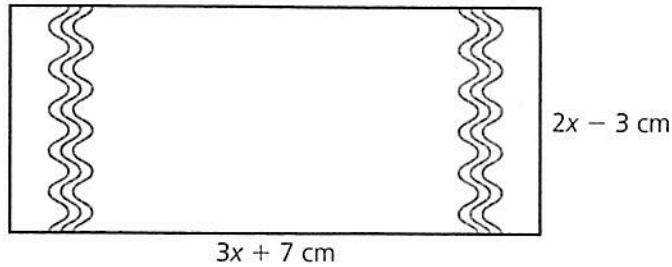
- A Write an equation to show the relationship between  $n$ , the number of mugs printed, and  $C$ , the total cost in dollars.
- B Graph your equation on the coordinate plane below. Be sure to include an appropriate scale on each axis.



C What is the  $y$ -intercept of the graph you drew in part B?

D What is the meaning of the  $y$ -intercept of the graph in relationship to the number of mugs printed and the total cost of printing?

- 2 A manufacturer makes rectangular blankets in several styles and sizes. The outline of a popular blanket in size A is shown below.



- A Write a polynomial expression, in simplified form, that represents the perimeter of the blanket.
- B Write a polynomial expression, in simplified form, that represents the area of the blanket.

The same style blanket in size B has width  $2x + 10$  and length  $4x - 10$ .

- C Write a polynomial expression, in simplified form, that expresses the difference in area of the blankets A and B. Show your work.

- 3 The number of units of two substances, X and Y, change each hour. The rates at which the number of units change are described below.

**SUBSTANCE X**

<b>Hours</b>	1	2	3	4	5
<b>Number of Units</b>	$\frac{1}{2}$	1	2	4	8

**SUBSTANCE Y**

There are 100 units of Substance Y to start. Every hour, the number of units of Substance Y increases by 100.

- A Does Substance X change by a linear or an exponential rate? Explain how you know.
- B Does Substance Y change by a linear or an exponential rate? Explain how you know.
- C Will the number of units of Substance X ever exceed the number of units of Substance Y? Explain how you know.



- 4 Vic and Eva buy used cars at the same time. Vic buys a car with 10,000 miles on it. He drives an average of 100 miles a week. The equation below can be used to determine how many miles,  $m$ , will be on the car after any number of weeks of driving,  $w$ .

$$m = 100w + 10,000$$

- A In how many weeks will Vic's car have 12,000 miles on it?

Eva buys a car with 7,000 miles on it. She drives an average of 400 miles a week.

- B Use the system of equations below to find in how many weeks Vic's and Eva's cars will have the same number of miles on them.

$$\begin{cases} m = 100w + 10,000 \\ m = 400w + 7,000 \end{cases}$$

- C How many miles,  $m$ , will the cars have on them when the number of weeks,  $w$ , is the same? Use the system of equations from part B. Show how you found your answer.

5 A sequence of numbers is shown below.

54, 48, 42, 36, 30, ...

A Write an expression for the  $n$ th term of the sequence. Specify what value of  $n$  your formula starts with.

B Write an equation using function notation for the  $n$ th term of the sequence.

C What is the domain of the function?

D What is the value of  $f(50)$ ?