



# **Round 1: Free Response Questions**

There are 10 problems in this round. Make sure to write your answers on the answer sheet. Correct answers are worth 10 points each; incorrect and blank answers are given 0 points. You do not have to write units. All fractions must be written in simplest form. Have fun!!! ©

#### <u>Problem 1</u>

Mr. Yang baked 7 dozen cookies and sold them for \$4.25 per half-dozen. How much money would Mr. Yang make if he sold all of the cookies?

#### <u>Problem 2</u>

When Milton's chorus group is arranged in rows of five people each, the last row is one person short. When the group is arranged in rows of six people each, the last row is still short one person. What is the least possible number of people in the choir?

## Problem 3

Emily's age is three times Kaitlyn's age. Tessa is six years older than Kaitlyn. Emily and Tessa are twins. How old is Kaitlyn?

#### Problem 4

Elena scored 29 points in her school's basketball game. She made a combination of 2-point baskets and 3-point baskets during the game. If she made a total of 11 baskets, how many 3-point baskets did she make?

## Problem 5

The surface area of a cube is 726 square centimeters. What is the ratio of square centimeters in the area to the number of cubic centimeters in the volume of the cube? (Express your answer as a common fraction in lowest terms.)

## Problem 6

The mean (average) of seven positive integers is 16. When the smallest of these seven integers is removed, the sum of the remaining six integers is 108. What is the value of the integer that was removed?

## Problem 7

The minute hand of a 12-hour clock has rotated 810 degrees since noon. How many minutes have elapse since noon?

## Problem 8

It would take Harrison 6 hours to paint a particular room at Milton High School by himself. It would take Sean 12 hours to paint that same room by himself. If Harrison and Sean work together, each at his individual rate, how many hours will it take them to paint the room?

## Problem 9

A target consists of 3 circles of radii 1 cm, 2 cm, and 3 cm. The target is painted in Milton's school colors – the innermost circle is red, the middle ring is white, and the outer ring is blue. If a point is chosen at random on the target, what is the probability that is lies in the blue region? Express your answer as a common fraction.



## Problem 10

Square ABCD is constructed along diameter AB of a semicircle, as shown. Line segment AB has a length of 6 centimeters. If point M is the midpoint of arc AB, what is the length of segment MC? Express your answer in simplest radical form.

