

Name \_\_\_\_\_ ANSWER KEY \_\_\_\_\_ School Team \_\_\_\_\_

Event 5: Team Problems (with calculators)

7th/8th grade Math Meet '08

Problem 2: The Lottery

Several states now have a new type of lottery where you pick some numbers, the lottery picks some numbers, and you win depending upon how many numbers you match or do not match. The following problems will explore this type of lottery.

Lottery #1:

There are five numbers (1 through 5). You pick two numbers. The lottery picks two numbers. You win if you match all of your numbers or none of your numbers in no particular order.

Example:

The lottery picks 2, 5.

You picked 2, 5.      You win!

You picked 1, 4.      You win!

You picked 2, 4.      You lose.

Express each answer as a reduced fraction.

1) What are the chances of  
matching all of your numbers?

$\frac{1}{10}$

2) What are the chances of  
matching none of your numbers?

$\frac{3}{10}$

3 pts. each

Problem 2: The Lottery

Lottery #2:

There are ten numbers (1 through 10). You pick three numbers. The lottery picks five numbers. You win if you match all of your numbers or none of your numbers in no particular order.

Example:

The lottery picks 2, 5, 6, 7, 9.

You picked 2, 5, 9.      You win!

You picked 1, 4, 8.      You win!

You picked 2, 4, 9.      You lose.

Express each answer as a reduced fraction.

1) What are the chances of  
    matching all of your numbers?

$\frac{1}{12}$

2) What are the chances of  
    matching none of your numbers?

$\frac{1}{12}$

4 pts. each

## Problem 2: The Lottery

## Lottery #3:

There are twenty numbers (1 through 20). You pick five numbers. The lottery picks eight numbers. You win if you match all of your numbers or none of your numbers in no particular order.

## Example:

The lottery picks 2, 5, 6, 7, 9, 11, 15, 17.

You picked 2, 5, 9, 11, 17.      You win!

You picked 1, 4, 8, 13, 20.      You win!

You picked 2, 4, 9, 13, 17.      You lose.

Express each answer as a reduced fraction.

1) What are the chances of  
    matching all of your numbers?      7/1938      5 pts.

2) What are the chances of  
    matching none of your numbers?      33/646      6 pts.