ALGEBRA I – Finals Review
Chapter 13 – Probability

PART ONE: Constructed Response

1. If the scenario is flipping a coin, what is an example of an event?

2. What is the sample space for rolling a six-sided die?

3. Martha has a bag of marbles that contains two red marbles, three purple marbles, and four green marbles. Create an event A such that P(A) = 0.

4. Martha has a bag of marbles that contains two red marbles, three purple marbles, and four green marbles. Create an event A such that P(A) = 1.

PART TWO: Solve. Remember to show all work and leave answers as most-reduced fractions.

5. If you roll a six-sided die twice, what is the probability of rolling a 3, and then a 4?

6. If you roll a six-sided die once, what is the probability of rolling a 3 or a 4?

7. Thomas is creating a five-digit password such that the first two terms are numbers and the last three terms are letters. If repetition is allowed, how many passwords can Thomas make?

8. Using the information from #7, if repetition is not allowed, how many passwords can be made?

9. Student Council is electing a president and a vice president from their group of ten students. How many different ways can this pair be chosen?

Use the following cards for problems 10-12.

3 4 6 7 8

10. After you draw one card, you replace it and draw another.
P(even, odd) =

11. After you draw one card, you remove it and then draw another.
P(4, even) =

12. After you draw one card, you remove it and then draw another.
P(even, even) =

PART THREE: Short Answer

For problems 7-10, state whether the given scenario is a combination or a permutation, write the scenario in the proper notation, then use your calculator to solve.

13. Thomas is packing for vacation. He has a total of ten different shirts, but is only going to bring six. How many different ways can he choose shirts to pack?

14. Nicole is applying to colleges, and plans to apply to ten colleges this week. Each night this week (Monday through Friday), she is going to apply to two colleges. On Monday night, how many different ways can she choose which colleges to apply to?

15. Using the information from problem 8, and given that Nicole will only apply to a college once, how many different ways can she choose which colleges to apply to on Thursday night? (HINT: Once she applies to two colleges on Monday night, the total number of colleges to choose from changes.)

16. Brian is creating a seating chart for his classroom. He has a total of ten desks but only seven students. How many different seating charts can he create?

CHALLENGE:
Use the below information to answer the following questions.
Brennan is a pediatrics nurse who conducts the first neonatal exam on newborn patients. He makes note of the newborns' height, weight, eye color, and heart rate, among other things.

	Brown eyes	Blue eyes	Green eyes
Slow heart rate (<100 bpm)	2	5	5
Fast heart rate (>100 bpm)	8	3	2

bpm = beats per minute

17. What is the most common eye color, according to Brennan's data?

18. If a baby is selected at random, what is the probability the baby does **not** have blue eyes?

19. If a baby is selected at random, what is the probability the baby has brown eyes **and** has a slow heart rate (<100 bpm)?

20. If a baby is selected at random, what is the probability the baby has green eyes **or** a fast heart rate (>100 bpm)?

21. If a baby is selected at random, what is the probability the baby has blue eyes **given** the baby has a fast heart rate.