Advanced Topics in Math NAME
Unit 6 Probability Review DATE

1. A couple has narrowed down the choice of a name for their new baby to 3 first names and 5 middle names. How many different first- and middle-name arrangements are there?
2. Part of the General Education Requirements at NKU is taking one Literature and one Language course. The campus offers five options for the Literature requirement, and eight options for the Language requirement. How many different ways can a student meet the requirement?
3. Your test tomorrow will consist of 8 multiple choice questions. Since each question has four options, and assuming you must answer each question, how many different ways can you answer the test?
4. Ten athletes compete in the finals for the Olympic Skiing Slope-style event. How many different podium options are possible? That is, how many different ways can they receive the gold, silver, and bronze medal?
5. Jemma has a 62% free throw average.
	1. What is the probability Jemma will hit two free throws in a row?
	2. What is the probability Jemma will miss one free throw?
	3. What is the probability Jemma will miss two free throws?
	4. Jemma has missed her last 4 free throws. What is the probability she will make the next free throw?
6. From 10 names on a ballot, four will be elected to a political party.
	1. How many ways can the four be elected if they are selected to the same committee?
	2. How many ways can the four be selected if each person has a different responsibility?
7. At Cooper High, most freshmen take 6 classes. If freshmen have forty classes to choose from, how many different schedules can be made?
NOTE: taking English 1 first and Algebra 1 second is different from taking Algebra 1 first and English second.
8. Each of the 200 students at the Extra Flex Day is given a ticket with their name on it. If three names are chosen at random for a door prize, how many different ways are there to award prizes if…
	1. The prizes are all identical.
	2. The prizes are all different.
9. You are selecting five cards from a Standard Deck of playing cards. Fill in the table below for each situation.

|  |  |  |
| --- | --- | --- |
|  | How many ways? | What is the probability? |
| All five are face cards. |  |  |
| All five are non-face cards |  |  |
| Only four are face cards |  |  |
| Only one is a face card |  |  |

1. A club has thirty members, eighteen men and twelve women.
	1. How many committees of four people are possible?
	2. How many committees of four people are possible if there must be four women?
	3. How many committees of four people are possible if there must be three women?

ANSWERS

1. 15
2. 40
3. $4^{8}= $65536
4. $10\*9\*8= $720
5. 62% \*62% = 38.4% 38% 38%\*38% = 14.4% 62%
6. 210 (10 C 4) 5040 (10 P 4)
7. 2,763,633,600
8. 200 C 3 = 1,313,400 200 P 3 = 7,880,400
9. \*\*\*For Probability, take # ways and divide by 2,598,960

|  |  |
| --- | --- |
| 12 C 5 = 792 | .03% |
| 40 C 5 = 658008 | 25% |
| 12 C 4 \* 40 = 495\*40 = 19800 | .76% |
| (40 C 4) \* 12 = 1096680 | 42% |

1. 27405 (30 C 4) 495 (12 C 4) 220 (12 C 3) \* 18 = 3960