PC 6-4 thru 6-5 Review **Name**_____

For Questions 1-3
A sample of 81 students at a high school was examined to investigage patterns of enrollment in language classes.

1. What percent of students who took no language were seniors?

$\frac{14}{40} = 35\%$

	Freshmen	Sophomore	Junior	Senior	
Spanish	9	12	6	3	30
French	3	6	0	2	11
No language	6	9	11	14	40
	18	27	17	19	81

2. What percent of students who were seniors took no language?

$\frac{14}{19} = 74\%$

3. What percent of students who took Spanish were freshmen or sophomores?

$\frac{9+12}{30} = \frac{21}{30} = 70\%$

4. Write ${}_{12}P_5$ as a product of integers.

$12 \cdot 11 \cdot 10 \cdot 9 \cdot 8$

5. How many four-letter permutations can be formed from the letters of the word BENJAMIN?

8

$8P_4$

$= \boxed{1680}$

6. A math team is sending 8 mathletes to the next math contest. Each mathlete takes a different test. How many different test line ups are possible if the only senior on the math team has to take the last test?

$7 \quad 6 \quad 5 \quad 4 \quad 3 \quad 2 \quad 1 \quad 1 = \boxed{5040}$

7. There are 33 participants in a sewing contest. What is the probability of correctly picking the top three sewers in order by randomly guessing?

$\frac{1}{33 \cdot 32 \cdot 31} = \boxed{\frac{1}{32736} = 3.05 \times 10^{-5} = 0.00305\%}$

8. Suppose a 9-character ID consists of 2 letters, followed by 5 digits from 0 to 9, and ends with 2 letters. What is the probability of randomly guessing an ID on the first try?

$\frac{1}{26 \cdot 26 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 26 \cdot 26} = \boxed{\frac{1}{4.57 \times 10^{8}} = 2.188 \times 10^{-11} = 2.188 \times 10^{-9}\%}$