



Assignment

Total ____/31 marks

Multiple Choice: (11 marks)

1. If all the letters in the word **JOUSTING** are used, then the number of different 8-letter arrangements that can be made beginning with the 3 vowels can be evaluated using the expression

- A. 3×5
 - B. $3! \times 5!$
 - C. 3×6
 - D. $3! \times 6!$
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2. Evaluate $\frac{8!}{2!4!}$

- A. 1
 - B. 4
 - C. 840
 - D. 3360
-

3. Which expression represents the value of 6P_4 ?

- A. $\frac{6!}{4!}$
- B. $\frac{6!}{2!}$
- C. $\frac{6!}{4!2!}$

D. $\frac{6!4!}{2!}$

4. How many different arrangements can be made using all the letters in ALBERTA?

A. $\frac{6!}{2!}$

B. $\frac{7!}{2!}$

C. $6!$

D. $7!$

5. Assume that in a given set of 3 digit area codes, the middle digit of each code is a 5. Which of the following conditions on digits would result in exactly 90 area codes?

A. All three digits cannot repeat.

B. The first and last digit cannot be a zero and repetition is allowed.

C. The first digit cannot be a zero and repetition is allowed.

D. There are no restrictions on the possible values.

6. A Phys. Ed. Teacher can remove 3 students at a time for testing. If there are 27 students in the class, the number of ways he can choose a group of three, is:

A. ${}_{27}C_3$

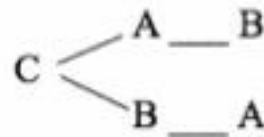
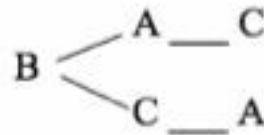
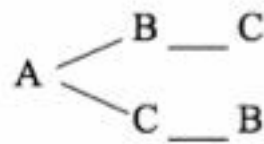
B. ${}_{27}P_3$

C. $\frac{27!}{3!}$

D. $9!$

7. Martha wants to use the digits 2, 3, 4 and 5 for her personal banking identification number. If repetitions are NOT allowed, how many different four-digit numbers can she create?

- A. 256
 - B. 120
 - C. 24
 - D. 16
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8. A student models a problem with the following diagram.

The model allows the student to list all of the

- A. A permutation of 3 items
- B. A combination of 3 items
- C. A permutation of 6 items
- D. A combination of 6 items

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9. Six distinct points are on the circumference of a circle as shown below. The number of quadrilaterals that can be formed using these 6 points is



- A. 360
B. 30
C. 24
D. 15

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10. A Bingo cage contains 4 different B balls and 15 different N balls. Suppose Veronica reaches in grabs 2 B balls and 3 N balls. Which expressions can be used to calculate how many different combinations of these balls there are?

- A. ${}^{19}C_5$
B. ${}^{19}P_5$
C. ${}^4C_2 + {}^{15}C_3$
D. ${}^4C_2 \times {}^{15}C_3$

11. A league consists of 12 teams. If each team plays each other once, how many games must be scheduled?

A. ${}_{12}C_2$

B. ${}_{12}P_2$

C. 121

D. 144

Numerical Response: (5 marks)

1. The number of 3-digit numbers more than 800 that can be formed if the last digit is a 2 or a 3, and no digit can be repeated is is _____.

Record your answer in the numerical response box below.

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2. There are two values for r in the expression ${}_{34}C_r = 1$. What are the two values?

Record your answer in the numerical response box below.

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3. The number of five-card hands from a standard deck of 52 cards with exactly three jacks is _____.

Record your answer in the numerical response box below.

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4. A hockey team has 3 right-wingers, 4 left-wingers and 2 centres. The number of different lines with 1 right-winger, 1 centre and 1 left-winger that the coach can form is _____.

Record your answer in the numerical response box below.

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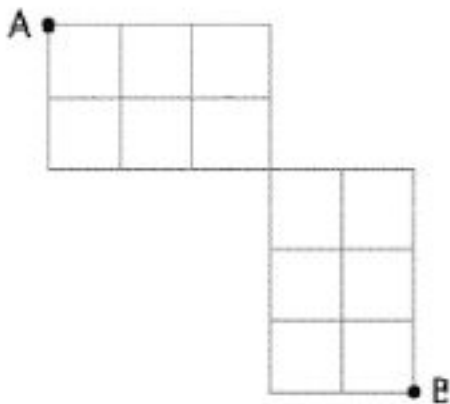
$$\begin{pmatrix} 14 \\ 12 \end{pmatrix}.$$

5. Evaluate

Record your answer in the numerical response box below.

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6. How many different routes are there from A to B, if you only travel south or east?



Record your answer in the numerical response box below.

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Written Response: (14 marks)

1. A band sells shirts and CDs at their concerts. They have 3 CDs and there are 2 different styles of shirt available in small, medium, large, and extra large.

- How many ways could you buy one CD and one shirt using the two methods below? **(2 marks)**
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Using a Tree Diagram	Using Fundamental Counting Principle

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b. Which method did you like better? Explain your reasoning. **(1 mark)**

2. A combination lock opens with the correct three-letter code. Each wheel rotates through the letters A to O.

a. How many different three-letter codes are possible? **(1 mark)**

b. What assumptions did you make when answering the question? **(1 mark)**

3. Owners of vehicles in North America are required to purchase license plates in Alberta, a standard license plate consists of 3 letters followed by 3 digits.

a. Determine the maximum number of different standard license plates available. State any assumption(s) that you make.
(2 marks)

b. It has becomes necessary to increase the number of available license plates. New licence plates in Alberta now consist of 3 letters and 4 digits. How many more licence plates can be made? **(2 marks)**

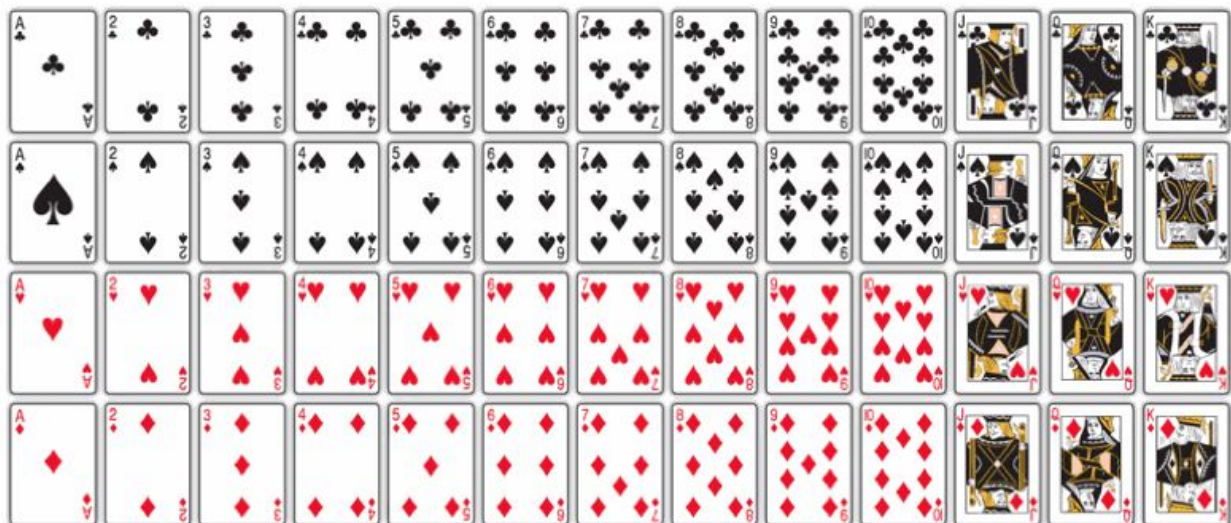
4. Euchre is played with a deck of 24 cards that is similar to a standard deck of 52 playing cards, but with only the ace, 9, 10, jack, queen, and king for all four suits.

a. Count the number of possibilities of drawing a single card from a euchre deck and getting either a face card **or** a red card. (2 marks)

b. Does the Fundamental Counting Principle apply to this situation? Explain. (1 mark)

5. Use the diagram of a standard deck of cards to answer the question below.

A standard deck of cards contains 52 cards as shown.



From a standard deck of 52 cards, how many different three-card hands are there with **at most** one ace? (2 marks)

