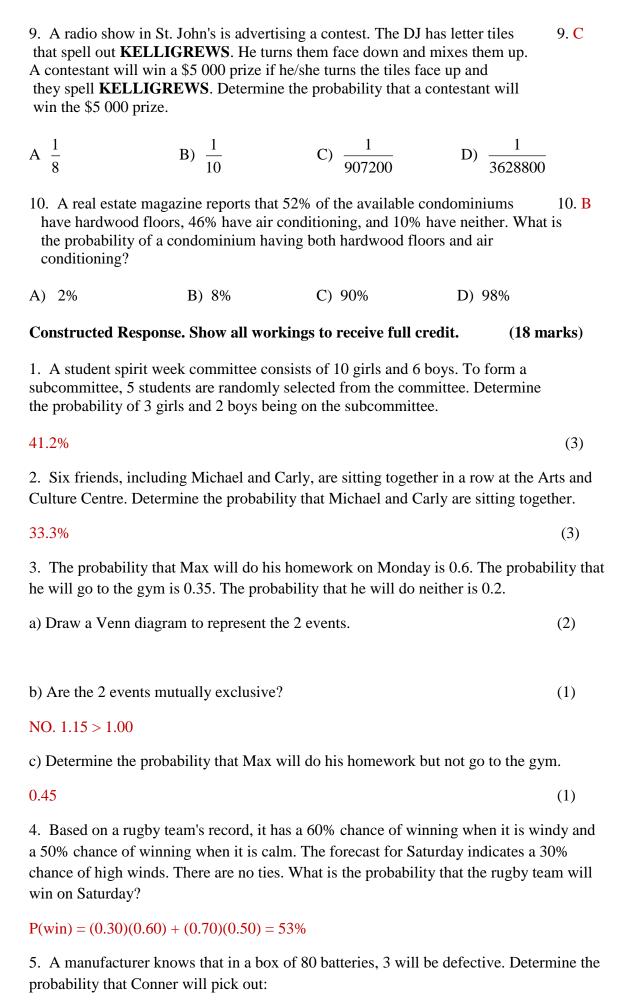**Math 3201 - Unit 3 Sample Test**   Name:_____

Multiple Choice. Place the letter of the correct response in the space provided at the right. Please use CAPITAL letters. **(10 marks)**

1. Candace has 11 coins in her pocket: 1 loonie, 4 quarters, 3 dimes and 3 nickels. She pulls out a coin at random. What is the probability that the coin is a quarter?

1. A

A) $\dfrac{4}{11}$ B) $\dfrac{4}{7}$ C) $\dfrac{7}{4}$ D) $\dfrac{11}{4}$

2. Given the following probabilities, which event is most likely to occur?   2. D

A) $P(A) = 0.2$ B) $P(B) = \dfrac{1}{6}$ C) $P(C) = 0.3$ D) $P(D) = \dfrac{1}{3}$

3. Julie draws a card at random from a standard deck of 52 playing cards. Determine the odds in favour of the card being a heart.

3. B

A) $3 : 1$ B) $1 : 3$ C) $1 : 1$ D) $3 : 13$

4. Charlotte notices that pomegranates are on sale at a local grocery store. The last eight times that they were on sale, they were available only three times. Determine the odds against pomegranates being available this time.

4. D

A) $3 : 5$ B) $3 : 8$ C) $5 : 8$ D) $5 : 3$

5. Cassie tosses four coins. Determine the probability that they all land as tails.   5. A

A) 6.25%   B) 12.50%   C) 18.75%   D) 25.00%

6. Which pair of events are dependent?   6. C

(The dice is six-sided, numbered 1 to 6. The deck of cards is a standard deck of 52.)

A) Event 1: Rolling a 2.
   Event 2: Rolling a 5

B) Event 1: Drawing an odd card and putting it back.
   Event 2: Drawing another odd card.

C) Event 1: Drawing a spade and not replacing it.
   Event 2: Drawing another spade.

D) Event 1: Rolling an even number
   Event 2: Rolling an odd number

7. Manny draws a card from a standard deck of 52 cards, and then draws another card. Determine the probability that both cards are spades, if the first card is not replaced.

7. C

A) $\dfrac{1}{16}$ B) $\dfrac{1}{2}$ C) $\dfrac{1}{17}$ D) $\dfrac{33}{68}$

8. You have a six-sided die with each side numbered one through six. You also have a coin with heads on one side and tails on the other. What is the probability of rolling a number greater than 4 with the die and tossing heads with the coin?   8. B

A) $\dfrac{1}{12}$ B) $\dfrac{1}{6}$ C) $\dfrac{1}{4}$ D) $\dfrac{1}{3}$

9. A radio show in St. John's is advertising a contest. The DJ has letter tiles that spell out **KELLIGREWS**. He turns them face down and mixes them up. A contestant will win a $5 000 prize if he/she turns the tiles face up and they spell **KELLIGREWS**. Determine the probability that a contestant will win the $5 000 prize.

9. C

A $\dfrac{1}{8}$
B) $\dfrac{1}{10}$
C) $\dfrac{1}{907200}$
D) $\dfrac{1}{3628800}$

10. A real estate magazine reports that 52% of the available condominiums have hardwood floors, 46% have air conditioning, and 10% have neither. What is the probability of a condominium having both hardwood floors and air conditioning?

10. B

A) 2%
B) 8%
C) 90%
D) 98%

Constructed Response. Show all workings to receive full credit.   **(18 marks)**

1. A student spirit week committee consists of 10 girls and 6 boys. To form a subcommittee, 5 students are randomly selected from the committee. Determine the probability of 3 girls and 2 boys being on the subcommittee.

41.2%   (3)

2. Six friends, including Michael and Carly, are sitting together in a row at the Arts and Culture Centre. Determine the probability that Michael and Carly are sitting together.

33.3%   (3)

3. The probability that Max will do his homework on Monday is 0.6. The probability that he will go to the gym is 0.35. The probability that he will do neither is 0.2.

a) Draw a Venn diagram to represent the 2 events.   (2)

b) Are the 2 events mutually exclusive?   (1)

NO. 1.15 > 1.00

c) Determine the probability that Max will do his homework but not go to the gym.

0.45   (1)

4. Based on a rugby team's record, it has a 60% chance of winning when it is windy and a 50% chance of winning when it is calm. The forecast for Saturday indicates a 30% chance of high winds. There are no ties. What is the probability that the rugby team will win on Saturday?

P(win) = (0.30)(0.60) + (0.70)(0.50) = 53%

5. A manufacturer knows that in a box of 80 batteries, 3 will be defective. Determine the probability that Conner will pick out:

a) 2 defective batteries $\dfrac{3}{80} \bullet \dfrac{2}{79} = \dfrac{6}{6320} = 0.09\%$ (2)

b) 2 non-defective batteries $\dfrac{77}{80} \bullet \dfrac{76}{79} = \dfrac{5852}{6320} = 92.6\%$ (2)