

Pre - Calculus  
Mathematics 40S



STANDARDS TEST PRACTICE EXAM

Probability

**1.** In a Manitoba school, 10% of the students were born in Saskatchewan, 75% were born in Manitoba, and the rest were born in Ontario. John decides to run for student president. The results of the election are as follows:

35% of the students born in Saskatchewan voted for John.

70% of the students born in Manitoba voted for John.

25% of the students born in Ontario voted for John.

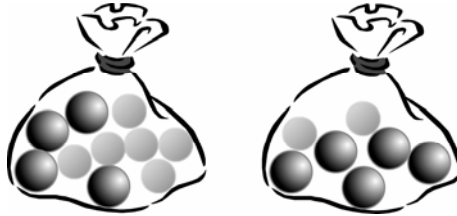
**a)** What is the probability a student born in Manitoba did not vote for John?

**b)** If a student voted for John, what is the probability the student was born in Manitoba?

**2.** The probability of rolling a five on a six-sided die is  $\frac{1}{6}$ . Therefore, the probability of rolling three consecutive five's is  $\frac{1}{216}$ . If a six-sided die is rolled three times, what is the probability of not rolling three consecutive five's?

3. A box contains 3 orange, 2 blue, and 3 purple marbles. If a marble is randomly selected from the box, determine the probability it is not purple.

4. Bag A contains four metal balls and six glass balls, and Bag B contains five metal balls and two glass balls.



A ball is randomly selected from Bag A and placed in Bag B. A ball is then pulled at random out of Bag B. Determine the probability that the ball from Bag B is metal.

**5.** Jim and Mary share the job of washing the windows in their house. Jim washes the windows 45% of the time, and Mary washes the windows 55% of the time. The probability of streaks being left on the window is 40% when Jim cleans the windows, and 35% when Mary cleans the windows. A visitor to the house notices streaks on the window. The probability Mary washed the windows that day is

**6.** The probability Kristen brings a soft drink to school is 0.3. The probability she brings a chocolate bar to school is 0.35. If the events are independent, what is the probability she brings both a soft drink *and* a candy bar to school?

**7.** A student writes letters of the alphabet on some cards and places those cards in two different bags. The letters A, C, E, G, I are in Bag 1, and B, C, D, F, H, I are in Bag 2. A card is randomly chosen from each bag. Determine the probability

**a)** Both cards are the same letter

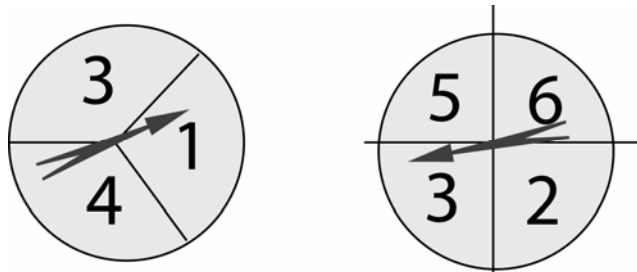
**b)** The cards are different letters

8. Dave plays video games 40% of the time on his home console system, 25% of the time on the computer, and 35% of the time on his cell phone. If he is playing on the computer, there is a 70% chance he is playing an RPG (*role-playing game*). If he is playing on his console or cell phone, there is a 10% chance he is playing an RPG.

a) What is the probability Dave chooses to use his home console and then selects an RPG to play?

b) A friend comes over and finds Dave not playing an RPG. What is the probability he is on the computer?

9. A number is randomly picked using Spinner 1, and another number is randomly picked using Spinner 2.



**10.** The probability that the first light bulb on a string of Christmas lights blinks is 0.4. The probability the second light bulb blinks is 0.65. If the probabilities are independent, determine the probability neither bulb blinks.

**11.** Bags 1 & 3 contains four metal balls (*darker*) and six glass balls (*lighter*). Bag 2 contains five metal balls and two glass balls.



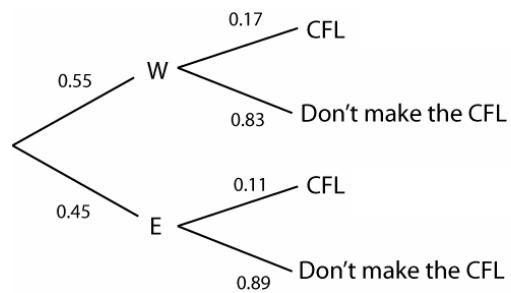
In a game, a person rolls a die to determine which bag to pull a ball out of. If the die rolls a 1, 2, or 3, the ball is pulled from Bag 1. If the die comes up 4 or 5, the ball is pulled from Bag 2. If the die comes up 6, the ball is pulled from Bag 3. The probability of selecting a metal ball is:

**12.** The probability a student has to perform in a violin recital next Wednesday is 0.7. The probability the student has a hockey game that same night is 0.6. The events are independent.

**a)** Determine the probability the student will have to attend both events next Wednesday.

**b)** Determine the probability the student will have to attend one event or the other next Wednesday.

**13.** In a junior football league, 55% of the players come from Western Canada and 45% are from Eastern Canada. From this league, 17% of the Western players and 11% of the Eastern players will go on to the CFL. The following diagram contains the results:



If a randomly chosen CFL player who came from the junior league is selected, the probability he came from Eastern Canada is:

**14.** A student randomly selects a marble from of the boxes below.

<b><u>Box 1</u></b>
2 metal
2 glass

<b><u>Box 2</u></b>
3 metal
2 glass

<b><u>Box 3</u></b>
2 metal
4 glass

Given that a metal marble is selected, determine the probability it came from Box 3.

**15.** Box A contains 3 blue and 2 yellow balls, and Box B contains 3 blue and 3 yellow balls. A ball is pulled from Box A, then a ball is pulled from Box B. The probability both balls are the same color is

**16.** Seven people are randomly selected from a group of 10 men and 11 women to form a committee. The probability exactly 5 males are on the committee is

**17.** The probability Chelsea wears a blue coat is 0.32. The probability Chelsea goes to the movies is 0.4. Determine the probability Chelsea goes to the movies but does not wear her blue coat.

**18.** Clarissa, Liz, and Jon sell luggage. Clarissa sells 40% of the luggage, Liz sells 35% of the luggage, and Jon sells 25% of the luggage. Of the luggage Clarissa sells, 32% have a sticker price over \$300. Of the luggage Liz sells, 28% have a sticker price over \$300. Of the luggage Jon sells, 47% has a sticker value over \$300. If a piece of luggage over \$300 is sold, what is the probability it was sold by Clarissa?

**19.** If four coins are tossed, determine the probability all four will come up heads.

**20.** The probability Steve scores a goal is  $\frac{1}{3}$ . The probability Adam scores a goal is  $\frac{3}{7}$ . If Steve and Adam each take one shot at the net, what is the probability they both miss?

**22.** A unique tetrahedral die has one side marked 1, two sides marked 2, and one side marked 3.

**a)** What is the sample space for this die?

**b)** If the die is thrown twice, determine the probability the sum is even.

**23.** A student council consisting of eight people is to be randomly chosen from a group of 12 students. Brittany, Elisha, and Gwen are three of the twelve students. Determine the probability that Brittany, Elisha, and Gwen are on the student council.

**24.** There are 7 men and 9 women available for selection to a committee. Two of the men and one of the women are good friends. If the committee requires three men and 4 women, what is the probability that all three friends will be on the same committee?