

Test 2  
Show all your work

Name: \_\_\_\_\_  
Number: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Score: \_\_\_\_/36

**Problem 1:** Answer each question to two decimal place accuracy when appropriate. Write out steps for each.

a. Convert the fraction  $3\frac{7}{8}$  into a percent.

b. Find 27.5 % of 360.

c. When Brian buys a 300-dollar couch, how much including taxes does he need to pay the store? Hint: Stores need to charge a 5 % GST and 7 % PST.

d. If there is a 1 in 200 chance that Janette will pick the numbers correctly in CSU’s lottery, what is the probability she will NOT pick the numbers correctly?

e. The residents of a small town and the surrounding areas are divided over the proposed construction of a dog park in town, as shown in the table. A reporter randomly selects a person to interview from a group of residents. If the person selected lives in the surrounding areas, what is the probability that the person supports the dog park?

	Support dog park	Oppose dog park
Live in town	7252	6316
Live in surrounding areas	518	461

f. When you flip three coins, what is the probability of getting at least one tail?

g. When you draw a single card from a deck of 52 cards, what is the probability of getting a black jack?

h. Assume that  $A$  and  $B$  are events. If  $P(A \cap B) = 0.20$ ,  $P(A) = 0.40$ , and  $P(B) = 0.65$ , find  $P(A \cup B)$ .

**Problem 2:** Solve for the indicated variable.

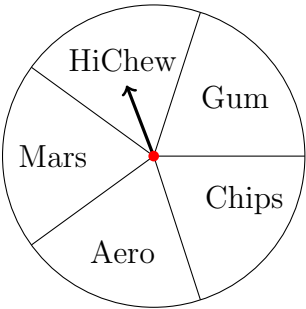
a. Solve for  $r$  in  $A = P(1 + rt)$

b. Solve for  $x$  in  $(1.25)^x = 23$

c. Solve for  $r$  in  $A = P(1 + r/m)^n$

Score:     /5

**Problem 3:** Dad constructed a spinner with five equal sectors the morning after Halloween for Hamlet and Samlet. Assume that the pointer never lies on a border line, answer the following questions.

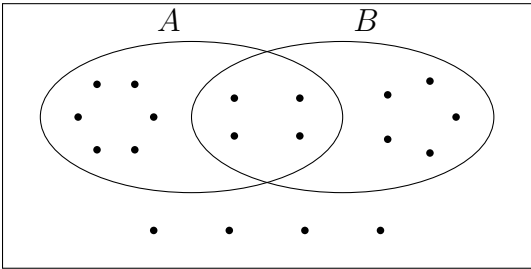


a. Find the probability for the event of getting no Aero after two spins.

b. Find the probability for the event of getting at least one Gum after three spins.

Score:     /4

**Problem 4:** Dad drew a big rectangle representing a sample space containing two events,  $A$  and  $B$ . Assume that the outcomes (as dots) were all equally likely, answer the following questions.



a.  $P(A)$

b.  $P(A \cap \bar{B})$

c.  $P(A \mid B)$

d. Are  $A$  and  $B$  mutually exclusive?

Score:     /4

**Problem 5:** The table relates the amount of time consumers engage in online shopping per month with their annual income. Find the probability that a randomly selected consumer spends 0–2 hours per month shopping online OR has an annual income below \$40 000.

Annual income	10 h or more	3 h–9 h	0 h–2 h	Total
Above \$60 000	188	179	129	496
\$40 000–\$60 000	147	216	160	523
Below \$40 000	129	188	253	570
Total	464	583	542	1589

Score:     /2

**Problem 6:** A candy jar contains 30 green jelly beans, 10 pink jelly beans, and 20 purple jelly beans. Two jelly beans are randomly selected without replacement. Let  $P$  be the event *you select a pink jelly bean first*, and let  $N$  be the event *the second jelly bean is not purple*. Find  $P(N \mid P)$  with a probability tree.

Score:     /3

**Problem 7:** Hamlet woke up with a high fever and a bad cough. When Sam brought him to the doctor, a rapid antigen test from a throat swab sample was performed. From the table below, draw a probability tree with probabilities assigned on the branches to answer the probability of HAVING a strep throat given a negative test result.

		Streptococcus	
		Have Strep A	No Strep A
Test	+	240	35
Results	−	40	4560

**Problem 8:** Suppose Brian’s brother purchased a used boat for \$8000 and agreed to pay off the boat in 24 monthly payments of \$455 each.

Score: /4

- a. Find the total amount of interest charged in this boat loan.
- b. Assume the payments were computed using the add-on interest method, find the annual interest rate applied.

**Problem 9:** David’s grandparents want to establish a fund for their grandchildren’s university education. What lump sum must they deposit at a 5 % annual interest rate, compounded monthly, in order to have \$25 000 in the fund at the end of 16 years?

Score: /3

Score: /3