Name: _____
MATH 108
Spring 2024
HW 10: Due 03/04

"If you have a problem with the majestic Canadian Goose, then you have a problem with me."

— Wayne, Letterkenny

Problem 1. (10pts) Suppose you play a game with a larger spinner. The spinner has four possible outcomes given by numbered regions on the spinner. However, these regions are not all the same size. The probability that the spinner lands on a particular region is given in the table below. If the spinners lands on one, you win \$10. If the spinner lands on two, you win \$1. If you spin a three or four, you lose \$5 or \$8, respectively.

n	1	2	3	4
$P(n)$		$\frac{4}{9}$	$\frac{2}{9}$	$\frac{1}{9}$

(a) Find $P(1)$.

(b) Find the probability that if spin three times, you lose money each time.

(c) Find the average amount you win per game.

(d) Should you play this game? Explain.

Problem 2. (10pts) Your firm is trying to determine whether to invest in increased advertisements. If they decide to increase their advertisements, they plan on spending at least an additional $25,000 in advertising. A colleague in sales estimates that if they increase advertising, there is a 8% chance there is no increase in sales, a 29% that there is an increase in sales of between $1 and $15,000, a 48% chance they increase sales between $15,001 and $30,000, and a 15% chance they increase sales between $30,001 and $40,000 with no chance that they increase sales more than $40,000. Based on these estimates, should the firm take out additional advertising? Be sure to justify your answer.