2. A department supervisor is considering purchasing one of two comparable photocopy machines, A or B. Machine A costs \$10,000 and machine B costs \$10,500. This department replaces photocopy machines every three years. The repair contract for machine A costs \$50 per month and covers an unlimited number of repairs. The repair contract for machine B costs \$200 per repair. Based on past performance, the distribution of the number of repairs needed over any one-year period for machine B is shown below.

Number of Repairs	0	1	2	3
Probability	0.50	0.25	0.15	0.10

You are asked to give a recommendation based on overall cost as to which machine, A or B, along with its repair contract, should be purchased. What would your recommendation be? Give a statistical justification to support your recommendation.

3. A local arcade is hosting a tournament in which contestants play an arcade game with possible scores ranging from 0 to 20. The arcade has set up multiple game tables so that all contestants can play the game at the same time; thus contestant scores are independent. Each contestant's score will be recorded as he or she finishes, and the contestant with the highest score is the winner.

After practicing the game many times, Josephine, one of the contestants, has established the probability distribution of her scores, shown in the table below.

Josephine's Distribution				
Score	16	17	18	19
Probability	0.10	0.30	0.40	0.20

Crystal, another contestant, has also practiced many times. The probability distribution for her scores is shown in the table below.

Crystal's Distribution			
Score	17	18	19
Probability	0.45	0.40	0.15

(a) Calculate the expected score for each player.

(b) Suppose that Josephine scores 16 and Crystal scores 17. The difference (Josephine minus Crystal) of their scores is −1. List all combinations of possible scores for Josephine and Crystal that will produce a difference (Josephine minus Crystal) of −1, and calculate the probability for each combination.

(c) Find the probability that the difference (Josephine minus Crystal) in their scores is −1.

(d) The table below lists all the possible differences in the scores between Josephine and Crystal and some associated probabilities.

Distribution (Josephine minus Crystal)						
Difference	−3	−2	−1	0	1	2
Probability	0.015			0.325	0.260	0.090

Complete the table and calculate the probability that Crystal's score will be higher than Josephine's score.

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