Instructions: Show all work. If you use your calculator, state which functions and syntax was used as work.

1. Suppose that three cards are drawn from a deck of 52 cards. What is the probability that your three-card hand will contain all red cards?

2. What is the probability that a random rearrangement of the letters in "abstruse" will begin and end with a vowel?

3. Find the expected value of the probability distribution below. What is the variance?

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Numb pe	er of Orders er Week x _i	Probability <i>p_i</i>
	41	.03
	42	.10
	43	.15
	44	.17
	45	.25
	46	.15
	47	.10
	48	.05

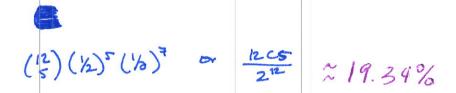
$$41 \pm .03 \pm .42 \pm .10 \pm .43 \pm .15 \pm .44 \pm .17 \pm .45 \pm .25 \pm .46 \pm .15 \pm .47 \pm .10 \pm .48 \pm .05 = .44.61$$

$$0^{2} = 2.9979$$

4. Suppose that a dice game, using two standard dice, pays you \$5 if you roll a sum of 4, 7 or 11. You pay \$1 for any other outcome. What is the expected value of the game?

$$5\left(\frac{11}{36}\right) - 1\left(\frac{25}{36}\right) = \frac{30}{36} > \frac{5}{6}$$

5. Calculate the probability of a binomial experiment of exactly 5 successes in 12 trials if $p = \frac{1}{2}$.



6. Calculate the probability of a binomial experiment of at least 5 successes in 12 trails if $p = \frac{1}{2}$.

1- binomailedf (12, 15, 4) \$ 80.6%