Math 373 Hw 5 Recommended problems, don't turn this in.

Hw 156: 4.68, 4.70. 166: 4.90, 4.92. 189: 5.4, 5.6, 5.8, 5.12. Rec. 156: 4.69, 4.71. 166: 4.86, 4.95. 189: 5.5, 5.7, 5.13.

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4.69 A worker-operated machine produces a defective item with probability .01 if the worker follows the machine's operating instructions exactly, and with probability .03 if he hoes not. If the worker follows the instructions 90% of the time, what proportion of the items will be defective?

4.71 A particular football team is known to run 30% of its plays to the left and 70% to the right. When a play goes to the right their right guard shifts his stance most of the time (80%) and uses a balanced stance the remainder of the time. When plays go to the left, the guard takes a balanced stance 90% of the time and a shift stance the remaining 10%. On a particular play, the right guard takes a balanced stance.

(a) Find the probability that the play will go to the left?

(b) Find the probability the play will go to the right?

(c) If you were a linebacker for the opposing team, which direction would you prepare to defend if you saw the guard take a balanced stance?

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4.86 A piece of electronic equipment contains six computer chips, two of which are defective. A subset of three chips is selected at random, removed from the piece of equipment, and inspected. Let x equal the number of defectives observed, where x = 0, 1, or, 2. Find the probability distribution for x. Give the probability distribution table for x.

4.95 From experience, a shipping company knows that the cost of delivering a small package within 24 hours is \$14.50. The company charges \$15.50 for shipment but guarantees to refund the charge if delivery is not made within 24 hours. If the company fails to deliver only 2% of its packages within 24 hours, what is the expected gain per package?

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5.5 In a binomial distribution for a random variable x, n = 6 and p = .8. Construct a probability distribution table for x.

5.7 Let x be a binomial random variable with n = 10 and p = .4. Find

(a) P(x=4) (b) P($x\geq4$) (c) P(x>4)

(d) P($x\leq4$) (e) μ (f) σ

5.13 Find the mean and standard deviation for a binomial distribution with the given values.

(a) p = .01 (b) p = .0 (c) p = .3

(d) p = .7 (e) p = .5

Answers

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4.69 **.012**

4.71

(a) Go to the left? **.66**

(b) Go to the right? **.34**

(c) Which direction? **left**

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4.86

x	0	1	2
p(x)	**0.2**	**0.6**	**0.2**

4.95 69¢

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5.5 In a binomial distribution for a random variable x, n = 6 and p = .8. Construct a probability histogram x.

x	0	1	2	3	4	5	6
p(x)	**0**	**0.002**	**0.015**	**0.082**	**0.246**	**0.393**	**0.262**

5.7 Let x be a binomial random variable with n = 10 and p = .4. Find

(a) P(x=4) = **.251** (b) P($x\geq4$) = **.681** (c) P(x>4) = **.367**

(d) P($x\leq4$) = **.633** (e) μ=**4** (f) σ = **1.55**

5.13 Find the mean and standard deviation for a binomial distribution with the given values.

(a) p = .01 μ = **1** σ = **.99**

(b) p = .9 μ = **9** σ = **3**

(c) p = .3 μ = **30** σ = **4.58**

(d) p = .7 μ = **70** σ = **4.58**

(e) p = .5 μ = **50** σ = **5**