

5.4

$$a) P(X > 10) = 1 - P(X \leq 10) = 1 - \sum_{x=0}^{10} \frac{e^{-14} (14)^x}{x!} \approx .82$$

$$b) \lambda t = 14$$

5.5

$$a) P(\text{pass}) = .7 \rightarrow (.2)(.3)(.7) = .042$$

$$P(\text{fail}) = .3$$

$$b) .7 + (.3)(.7) + (.2)(.3)(.7) \approx .923$$

5.62

$$a) P(X > 10) = 1 - P(X \leq 10) = 1 - \sum_{x=0}^{10} \frac{e^{-14} (14)^x}{x!} \approx .82$$

$$b) \lambda t = 14$$

5.5

$$a) P(\text{pass}) = .7 \rightarrow (.3)(.3)(.7) = .063$$

$$P(\text{fail}) = .3$$

$$b) .7 + (.3)(.7) + (.3)(.3)(.7) \approx .973$$

5.43

a) sample = 12

4 nationalities

therefore we get 1 from each

$$(2C_1)(3C_1)(5C_1)(2C_1)$$

$$12C_4$$

$$\rightarrow \boxed{.12}$$

$$b) (2C_2)(3C_1)(2C_1)$$

$$+ (2C_1)(3C_2)(2C_1)$$

$$+ (2C_1)(3C_1)(2C_2)$$

$$7C_4$$

$$2(1)(3)(2) + (2)(3)(2)$$

$$35$$

$$12 + 12 = \frac{24}{35} = \boxed{.68}$$

5.49) $P(\text{dog}) = .3$

sample size = 10 \rightarrow 5/10 have dogs

reduce size to 4 & dog owners to 4

$4C_4 \rightarrow$ order of the first 4 does not matter

$$4C_4 = 126 (.3)^5 (.7)^5 = \boxed{.17}$$

5.5) similar to 5.49

$$1) P(\text{heads}) = 1/2 \quad x = \text{heads}$$

$$P(x=2); 6 \text{ total trials} = (6C_2) \left(\frac{1}{2}\right)^2 \left(\frac{1}{2}\right)^4 = \boxed{.12}$$

$$a) P(x=0); 3 \text{ total trials} = (3C_0) \left(\frac{1}{2}\right)^0 \left(\frac{1}{2}\right)^3 = \boxed{.063}$$

$$5.61) P(6 \leq x \leq 8) = \sum_{x=6}^8 e^{-10} \left(\frac{10}{x!}\right)^x = 0.266$$

$P(\text{error}) = .001$

λ Poisson approx $\approx \mu = 10$

5.3 | $P(X < 4) = 3/10 = \boxed{.3}$

5.9 |
a) $P(3 \leq X \leq 6) = \sum_{x=3}^6 15C_x (.25)(1-.25)^{15-x} = \boxed{.70}$

b) $P(X < 4) = \sum_{x=0}^3 15C_x (.25)(1-.25)^{15-x} = \boxed{.46}$

c) $P(X > 5) = 1 - P(X \leq 5) = 1 - \sum_{x=0}^5 15C_x (.25)(1-.25)^{15-x} = \boxed{.15}$

5.21 | 7 throws

Bullseye : .01	occurrence	7!	= $\boxed{.0095}$
	0		
double : .10	2	4! 2! 1!	
triple : .05	0		
Miss : .02	1		
Single : .82	4		

5.29 | 9 total
6 selected
tulip : 4/5
daf : 2/4

$$\frac{(5C_4)(4C_2)}{(9C_6)} = \boxed{.35}$$

5.39 | $P(\text{object}) = .5$
Random sample = 10

(in favor) $P(X \geq 3) = 1 - P(X < 3) = 1 - \sum_{x=0}^2 10C_x (.5)(.5)^{10-x}$
Compliment
 $= .95$