Quiz   Akash

11) $P(D) = P(D|A) \, P(A) + P(D|B) \cdot P(B)$

$P(D) = .01(.1) + .05(.9)$

$= .045$

$P(B|D) = .05(0.9) / .045$

Defective $B = 1$, 100%

12) Soil & Planting Conditions

13) a) mean $= \dfrac{0 + 1 + 5 + 5 + 8 + 11 + 13 + 13 + 10 + 6 + 3 + 1}{12}$

$= 76/12$ mean $= 6.33°C$

$Var = \dfrac{(0 - 6.33)^2 + \ldots (1 - 6.33)^2}{12 - 1} = \dfrac{238.66}{11}$

var $= 21.69°C$

b) $(6.33°C \times 9/5) + 32 = 43.39°F$

mean

$(21.69°C \times 9/5) + 35 = 71.04°F$

Var

14) a) $1/4(25+1) = \dfrac{71+72}{2} = 71.5$ 1st Q_1

$3/4(25+1) = \dfrac{88+86}{2} = 87$ 3rd Q_3

b) $87 - 71.5 = 15.5$ IQR

c) min: 36   1st quartile: 71.5

Med: 78   3rd quartile: 87   Max: 98

d) $87 + (1.5 \times 15.5)$ $71.5 - (1.5(15.5))$ Outlier = 36
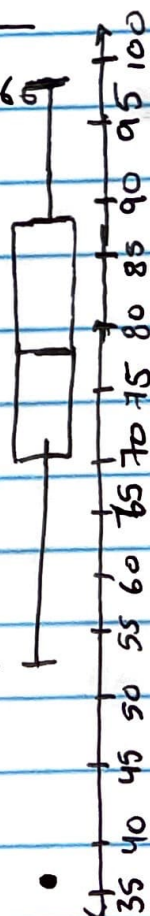
15) $\dfrac{3C_1}{12C_1}\left(\dfrac{2C_1}{11C_1}\right)=\dfrac{3}{12}\left(\dfrac{2}{11}\right)=\dfrac{1}{22}$

$\dfrac{9C_1}{12C_1}\left(\dfrac{3C_1}{11C_1}\right)=\dfrac{9}{44}$

$\dfrac{1}{22}+\dfrac{9}{44}=\dfrac{11}{44}=\dfrac{1}{4}=0.25$

16) a) sum 5

$6(36,45,54,57,63,65)$

Total = 36

~~Prob = 6/36 = 1/6~~

Prob = 4/36 = 1/9

b) greater than 7 & odd

$4(14,23,32,41)$

Total = 36

Prob = 6/36 = 1/6

c) sum < 4 or even

21 (< 4) (11, 12, 21)

18 (even) (11, 13, 15, 22, 24, 26, 31, 33, 35, 42, 44, 46, 51, 53, 55, 62, 64, 66)

Prob. 21/36 = 7/12

17)a) $\int_0^3 y \cdot \left(\frac{1}{12}(2y+1)\right)dy$

$= \frac{1}{12}\left(\frac{2}{3}(3^3) + \frac{3^2}{2}\right) = 1.875$

$y^2 = \int_0^3 y^2\left(\frac{1}{12}(2y+1)\right)dy$

$= \frac{1}{12}\left(\frac{3^4}{2} + 3^2\right) = 4.125$

$= 4.125 - (1.875^2) = 0.609375$

b) Not Independent

$\frac{3}{48} \cdot (2x^2 + x^2 + 2y + 1) \neq f(x,y)$

c) $\int_{x=0}^1 \int_{y=0}^3 xy \cdot \left(\frac{1}{12}\right)(3x^2 + 2y)\,dy\,dx$

d) $\int_{x=0}^1 x\left(\frac{3}{4}\right)(x^2+1)dx = \frac{9}{16}$

$= 0.5625$

$Cov(x,y) = \varepsilon(x - \varepsilon(x)) \times (y - \varepsilon(y)) =$

$\int_{x=0}^1 \int_{y=0}^3 (x - 0.5625)(y - 1.875)$

$\left(\frac{1}{12}(3x^2 + 2y)\right)dy\,dx$

18) a) $P(X=0) = .25 + .10 = 0.35$

$P(X=1) = .10 + .25 = 0.35$

$P(X=2) = .20 + .10 = 0.30$

$P(Y=0) = .25 + .10 + .20 = 0.55$

$P(Y=1) = .10 + .25 + .10 = 0.45$

b) $E(X) = 0(.35) + 1(.35) + 2(.30)$

$E(X) = 0.95$

$E(Y) = 0(.55) + 1(.45) = 0.45$

$E(XY) = 0(0)(.25) + 0(1)(.10) + 1(0)(.10)$
$+ 1(1)(.25) + 2(0)(.20) + 2(1)(.10)$

$= 0.45$

$E(XY) = 0.45$

$E(X) = 0.95$

$E(Y) = 0.45$