Q1

(i) $\frac{3099.2}{40} - \left[\frac{\Sigma(x-c)}{40}\right]^2 = 3.2^2$

$\left(\frac{\Sigma(x-c)}{40}\right) = 8.2$

$\Sigma(x-c) = 328.$

(ii) $\Sigma(x-50) = 328.$

$\Sigma x - 40 \times 50 = 328$

$\Sigma x = 2328$

$\bar{x} = \frac{2328}{40} = 58.2$

Q2

(i) $P(X > 0) = 0.25$

$P(Z > \frac{3}{\sigma}) = 0.25.$

$P(Z < \frac{3}{\sigma}) = 0.75$

$\frac{3}{\sigma} = 0.674$

$\sigma = 4.45$

(ii) $X \sim B(8, 0.25)$

$P(X < 2) = P(X = 0, 1)$

$= 0.75^8 + {}^8C_1 \times 0.75^7 \times 0.25$

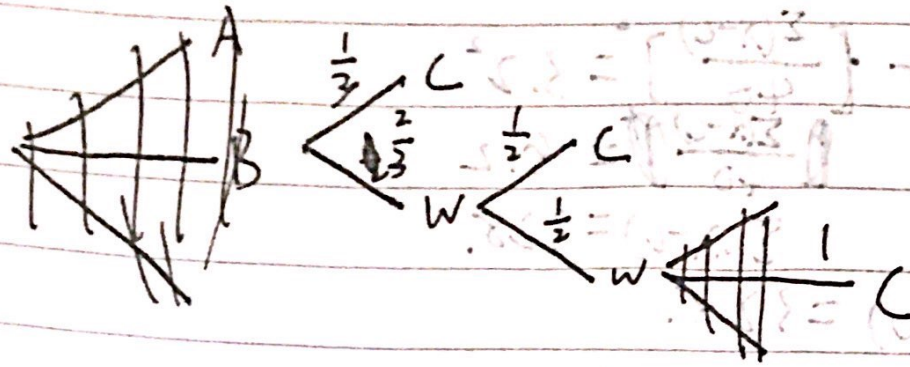
$= 0.367$

No.

Date

Q3

(i)



(ii) $P(X=1)=\frac{1}{3}$

$P(X=2)=\frac{2}{3}\times\frac{1}{2}=\frac{1}{3}$

$P(X=3)=\frac{2}{3}\times\frac{1}{2}\times 1=\frac{1}{3}$

x	1	2	3
$P(X=x$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$

$E(X)=1\times\frac{1}{3}+2\times\frac{1}{3}+3\times\frac{1}{3}=2$

Q4

(i) $5P5\times 3P3=720$

(ii) $3\times 5P2=60$

(iii) $1+7+7\times 7=57$

Q5.

(i) $1 \div \frac{1}{3} = 3$

(ii) $P(X>8) = \frac{1}{3}(1-\frac{1}{3})^{9-1}$

$= 0.013$

(iii) $P(X<n) \geq 0.99$.

$1-(\frac{2}{3})^{n-1} > 0.99$.

$(\frac{2}{3})^{n-1} < 0.01$

$n-1 > 11.36$

$n > 12.36$.

$\therefore n = 13$

Q6.

(ii) 28

(iii) 36.

(iv) $\frac{5\times16+15\times34+25\times56+40\times40+60\times30+80\times24}{200}$

$= 36.55$

Date

Q7.

(i) $X \sim B(6, 0.35)$

$P(X>3) = P(X=4,5,6)$

$= {}^6C_4 \times 0.35^4 \times 0.65^2 + {}^6C_5 \times 0.35^5 \times 0.65 + 0.35^6$

$= 0.117$

ii $P(X>1) \geq 0.95$

$P(X=0) \leq 0.05$.

$0.65^n < 0.05$

$n > \frac{\ln 0.05}{\ln 0.65}$

$n > 6.95$

$\therefore n = 7$.

iii $\mu = 100 \times 0.35 = 35$

$\sigma^2 = 35 \times 0.65 = 22.75$

$\therefore X \sim N(35, 22.75)$

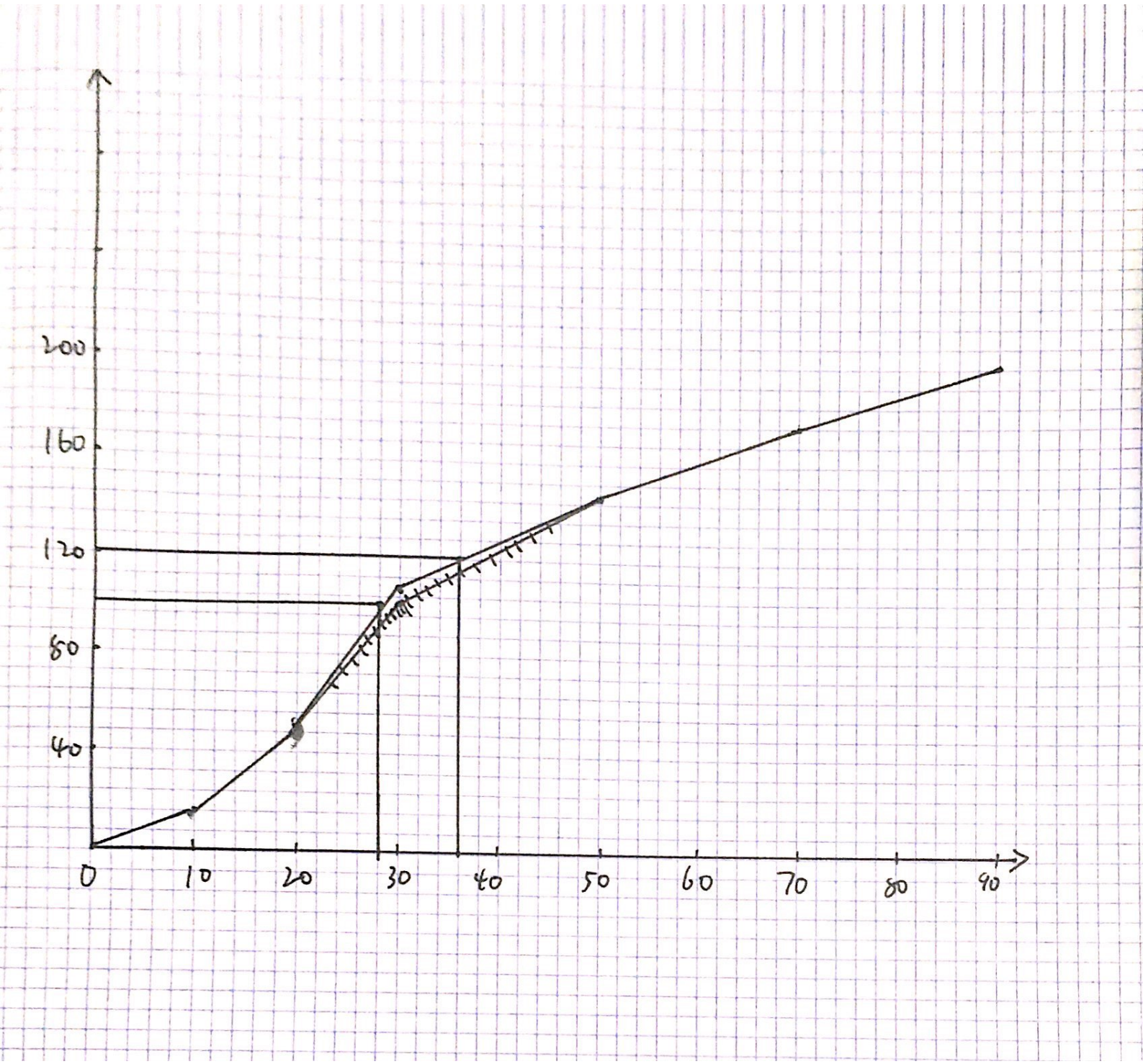
$P(X>39) = P\left(Z > \frac{39.5 - 35}{\sqrt{22.75}}\right)$

$= P(Z > 0.9435)$

$= 1 - P(Z < 0.9430)$

$= 1 - 0.8272$

$= 0.1728$.



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