⇒ Batch Testing

↳ save money

5% → 100 → 5 ⇒ (0.05)

⇒ (1) 15

+ve

$[1-(0.95)^{15}]$

$(0.05)^{15}$

$(0.05)^{14}(0.95)$

$(0.05)^{13}(0.95)^{2}$

-ve

$(0.95)^{15}$ ⇒

+

↳ 10 → $(0.95)^{10}$ -ve

↳ $[1-(0.95)^{10}]$ +ve

⇒ Expected value: $\sum x f(x)$

$\frac{1}{6}[1+2+3+4+5+6] = \frac{7\times 6}{2}\times\frac{1}{6} = 3.5$

⇒ $\boxed{(0.95)^{15} + 16\left[1-(0.95)^{15}\right]}$

⇒ 9.0506

⇒ batch size: 12

+ve $1-(0.95)^{12}$

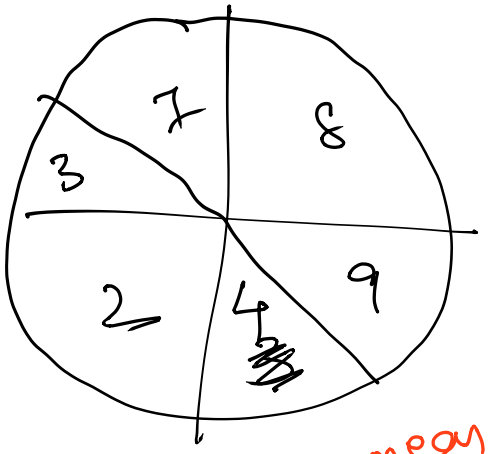
-ve $(0.95)^{12}$

expected number of tests per batch

(12)

$$13\left(1-(0.95)^{12}\right) + 1 \times (0.95)^{12}$$

⇒



⇒

x	f(x)
2	1/6
3	1/6
4	1/6
7	1/6
8	1/6
9	1/6

⇒ μ ⇒ 5.5 ⇒ $\frac{1}{6}[2+3+4+7+8+9]$

mean

⇒ Batch Testing ⇒ 2% ⇒ 0.02

Problem 1.1

(b) → $n = 10$ batch size

(c) → 0.02

(d) ⇒ 1 − 0.02
⇒ 0.98

(e) $(0.98)^{10}$

⇒

0.02

1.2

a) 1

b) → 11

c) ⇒ $\mu = E[x] = 1 \times (0.98)^{10} + 11\left[1 - (0.98)^{10}\right]$

Problem 2

-ve +ve

$1x(0.941C) + 12 \times (1 - 0.941C)$

↳ single ⇒ $6100

2nd

Jobs	0	1	2	3	4 or m.
f(x)	0.1	0.15	0.25	0.4	0.1
X	0	0	0	$1000	$1000

$\Rightarrow \quad \mu = E[x] = x f(x)$

$= 0.4 \times 1000 + 0.1 \times 1000$

$\Rightarrow$ $500