1.

$$E(y) = k + \frac{nl}{2}$$

$$V(y) = \frac{l^2(n^2 - 1)}{12}$$

2.

$$E(x) = \frac{N}{2}$$

$$V(x) = \frac{N(N+2)}{12}$$

3.

(1)0.0338
(2)0.1849

4.

$$(1)\, E(x) = \frac{35}{18}$$

$$(2) V(x) = 2.052$$

5.

$$E(x) = 5.5$$

$$V(x) = 8.25$$

6.

(1)0.302
(2)0.6242

7.

$$E(x) = 1$$

$V(x)=0.98$

8.

$\frac{10}{21}$

9.

$f(x|y=3)=\frac{3!}{x!(3-x)!}(\frac{1}{3})^{x}(\frac{2}{3})^{3-x}, x=0,1,2$

10.

(1) $f_Y(y)=C_y^n p_2^y(1-p_2)^{n-y}$

(2) $f_Z(z)=\frac{n!}{(n-z)!z!}\cdot(1-p_1-p_2)^{n-z}(p_1+p_2)^{z}, z=0,1,2,\cdots,n$

(3) $f(x|x+y=z)=\frac{z!}{x!(z-x)!}(\frac{p_1}{p_1+p_2})^{x}(1-\frac{p_2}{p_1+p_2})^{z-x}$

11.

(1) $f(x)=C_9^{x-1}(0.6)^{10}(0.4)^{x-10}$

(2 $E(x)=16.667$ ，表示平均投 16.667 球可投進 10 球

(3)$V(x)=11.11$

(4)0.124

12.

(1)0.0193

(2)6 次

13.

(1)0.598

(2)至少需投擲 4 次

(3)$(\frac{5}{6})^{7}$

14.

$\frac{9}{5}$

15.

0.1912

16.

(1) $f(x)=C_x^{10}(\frac{1}{5})^x(\frac{4}{5})^{10-x}, x=0,1,2,\cdots,10$

(2)0.678

(3) $E(x)=2$

$V(x)=\frac{8}{5}$

17.

(1)5

(2)10.8

18.

0.741

19.

(1)0.0815

(2)0.9886

(3)0.9844

20.

至少要發射 3 次

21.

0.00837

22.

(1) $f(x)=C_x^n(\frac{1}{6})^x(\frac{5}{6})^{n-x}, x=0,1,2,\ldots,n$

(2)0.8039
(3)0.1921

23.

(1) e^{-1}
(2) $1-481e^{-30}$

24.

(1)0.3679
(2)0.981
(3)0.1353

25.

(1)0.0106
(2)0.9983
(3)6 位

26.

(1) $p=\frac{-1+\sqrt{5}}{2}$
(2) $X \sim Ber(1,\frac{3-\sqrt{5}}{2})$

27.

$p=\frac{1}{10}$
$n=900$

28.

(1)2.4 個工作
(2)12000 元

29.

0.0166

30.

0.7361

31.

0.983

32.

0.6

33.

0.178

34.

0.371

35.

(1) 0.4^n
(2)至少需射擊 8 發子彈

36.

(1)0.1406
(2)0.5625
(3)0.5625

37. 略