(a) pmf.

X	2	3	4	5
$\mathbb{P}\{X=k\}$	$\frac{1}{10}$	$\frac{2}{10}$	$\frac{3}{10}$	$\frac{4}{10}$

(b) cdf

$$F_X(x) = \mathbb{P}\{X \le x\}.$$

$x = 1.5$

① step function.

② disjoint / jumps at 2, 3, 4, 5.

③ $F(\infty) = 1$ $\quad F(-\infty) = 0.$

$x < 2$

$2 \le x$

$$\mathrm{Var}(X) = E(X^2) - E(X)^2$$

from n, choose k → balls.

order replacement

order ✓
replacement ×

permutation

order ✓
replacement ✓

n^k

order ×
replacement ✓

$\binom{n+k-1}{n-1}$

order ×
replacement ×

combination.

n distinct books.

k

Each book selected how many times.

$x_1, \ldots, x_n$.

$\sum_{i=1}^{n} x_i = k$

○○○○○

k