

x	$f(x)$	$x f(x)$
0	$81/625$	0
1	$216/625$	$216/625$
2	$216/625$	$432/625$
3	$\frac{96}{625}$	$288/625$
4	$\frac{16}{625}$	$64/625$

$$E(X) = \sum x f(x)$$

$$1170/625 = E(X) = \frac{8}{5} = 1\frac{3}{5}$$

x	$f(x)$	
0	$8/625$	$= 1 \cdot \binom{4}{0} \left(\frac{2}{5}\right)^0 \left(\frac{3}{5}\right)^4$
1	$216/625$	$= 4 \cdot \binom{4}{1} \left(\frac{2}{5}\right)^1 \left(\frac{3}{5}\right)^3 = \frac{4^1}{1 \cdot 3!} \binom{4}{1} \left(\frac{2}{5}\right)^1 \left(\frac{3}{5}\right)^3$
2	$216/625$	$= 6 \cdot \binom{4}{2} \left(\frac{2}{5}\right)^2 \left(\frac{3}{5}\right)^2$
3	$\frac{96}{625}$	$= 4 \cdot \binom{4}{3} \left(\frac{2}{5}\right)^3 \left(\frac{3}{5}\right)^1$
4	$\frac{16}{625}$	$= 1 \cdot \binom{4}{4} \left(\frac{2}{5}\right)^4 \left(\frac{3}{5}\right)^0$

3% are defective

Each gizmo has 5 such components

What is prob a gizmo has 2 defective?

$$b(2; 5, 0.03)$$

Bernoulli Process

Probabilities come from the binomial distribution

$$h = -16t^2 + v_0 t + h_0$$

$$b(x; n, p) = \binom{n}{x} p^x q^{n-x} \quad q = 1-p$$

$f(x)$ ${}_n C_x$