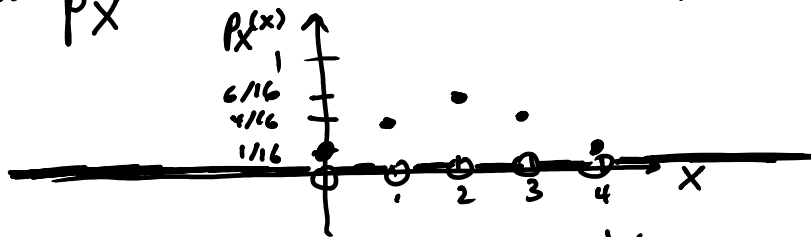


Example: Let  $X$  denote the number of girls born in 4 independent births. Notice  $X$  takes on 5 possible values: 0, 1, 2, 3, 4.

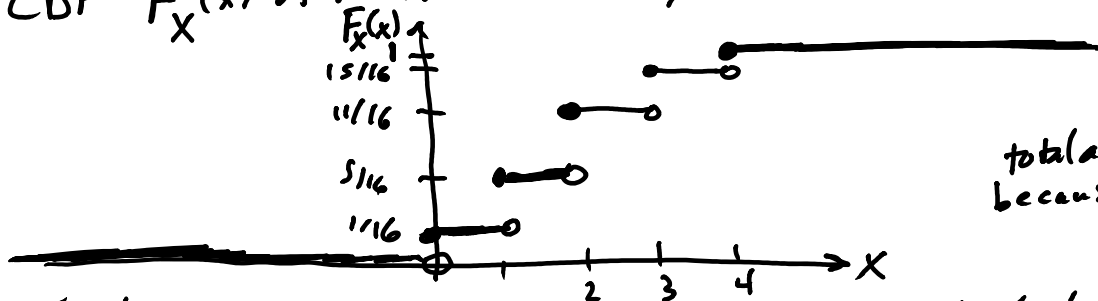
16 possible outcomes. 1 outcome  $\rightarrow X=0$   $P(X=0) = \frac{1}{16}$   
 4 outcomes  $\rightarrow X=1$   $P(X=1) = \frac{4}{16}$   
 6 outcomes  $\rightarrow X=2$   $P(X=2) = \frac{6}{16}$   
 4 outcomes  $\rightarrow X=3$   $P(X=3) = \frac{4}{16}$   
 1 outcome  $\rightarrow X=4$   $P(X=4) = \frac{1}{16}$

mass  $p_X(x)$  of the random variable  $X$  looks like:



like:  
 $P(X=x) = 0$  for all other values of  $X$   
 often leave off the 0 values altogether.

CDF  $F_X(x)$  of random variable  $X$



total amount of jumps is 1 because the mass must sum to 1.

Think: CDF approaches 0 as  $x \rightarrow -\infty$  i.e. to the left  
 approaches 1 as  $x \rightarrow +\infty$  i.e. to the right  
 has step sizes of the same heights as the mass.

