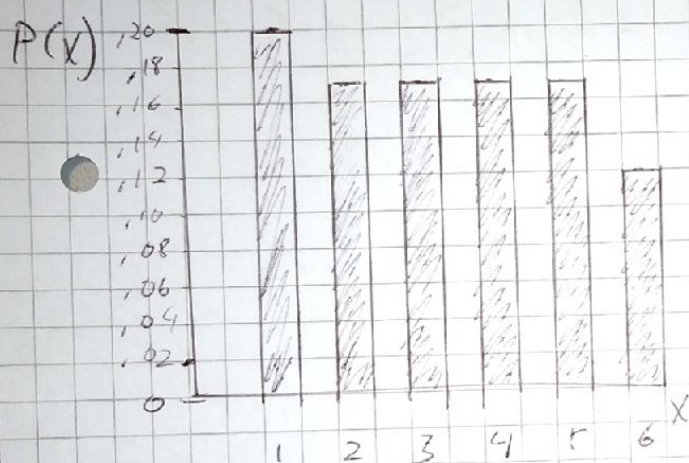


## Realteg-øving 3

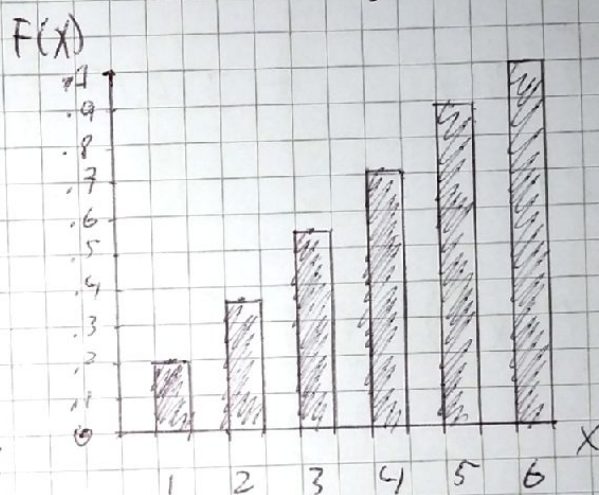
2)	X	1	2	3	4	5	6
	P(X)	0,2	0,17	0,17	0,17	0,17	0,12

$$V_x = \{0,2, 0,17, 0,12\}$$

sannsynlighetsfordeling



fordelingsfunksjon



$$\mu = E(X) = \sum x P(X=x) = 1 \cdot 0,2 + 2 \cdot 0,17 + 3 \cdot 0,17 + 4 \cdot 0,17 + 5 \cdot 0,17 + 6 \cdot 0,12 = 3,3$$

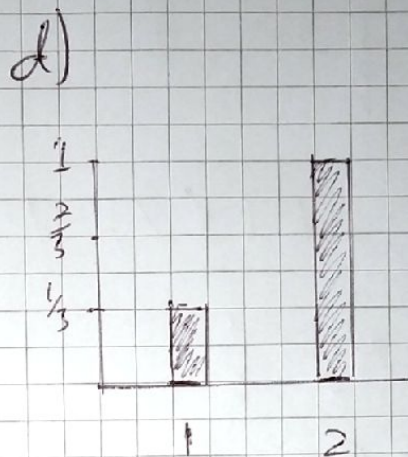
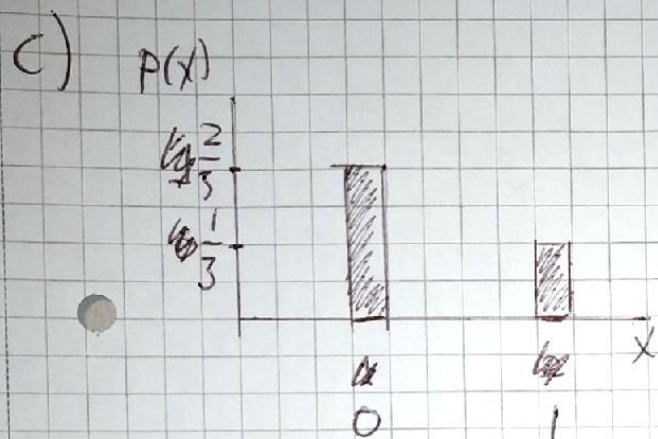
$$\sigma^2 = \text{Var}(X) = E(X^2) - \mu^2 = 1^2 \cdot 0,2 + 2^2 \cdot 0,17 + 3^2 \cdot 0,17 + 4^2 \cdot 0,17 + 5^2 \cdot 0,17 + 6^2 \cdot 0,12 - 3,3^2 = 2,81$$



4)

a) diskret fordi utfallsrommet er endelig

b)  $V_x = \{0, 1\}$



e)

$$E(X) = \sum x P(X=x) = 0 \cdot \frac{2}{3} + 1 \cdot \frac{1}{3} = \frac{1}{3}$$

$$\text{Var}(X) = E(X^2) - \mu^2 = \frac{1}{3} - \frac{1}{9} = \frac{2}{9}$$

f) like mange grønne som røde baller.

g)  $\bar{P}(X=0 \wedge Y=0) = 1 - (P(X=1) + P(Y=1)) = 1 - \frac{2}{3} = \frac{1}{3}$

$$P(X=0 \wedge Y=1) = P(Y=1) = \frac{1}{3}$$

h)  $P(X=0 \wedge Y=0) = P(X=0) \cdot P(Y=0)$

$$\frac{1}{3} = \frac{2}{3} \cdot \frac{2}{3} \Rightarrow \frac{1}{3} = \frac{4}{9}$$

ikke like  $\Rightarrow X$  og  $Y$  er uavhengige



i)

$Y \backslash X$	0	1	$P(Y=y)$
0	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{2}{3}$
1	$\frac{1}{3}$	0	$\frac{1}{3}$
$P(X=x)$	$\frac{2}{3}$	$\frac{1}{3}$	1

j)  $\text{COV}(X, Y) = E(XY) - \mu_X \cdot \mu_Y$

$$E(X) = \mu_X = \frac{1}{3}$$

$$E(XY) = \sum x y P(X=x \cap Y=y)$$

$$= 0 \cdot 0 \cdot \frac{1}{3} + 1 \cdot 0 \cdot \frac{1}{3} + 0 \cdot 1 \cdot \frac{1}{3} + 1 \cdot 1 \cdot 0$$

$$= 0$$

$$\text{COV}(X, Y) = 0 - \frac{1}{3} \cdot \frac{1}{3} = -\frac{1}{9}$$