1. $P_x(x) = \dfrac{x^2}{a}$

a. $\dfrac{4}{a} + \dfrac{1}{a} + \dfrac{1}{a} + \dfrac{4}{a} = \dfrac{10}{a} = 1$

$a = 10$

b)

X	$P_x(x)$	Y
-2	$\frac{4}{10}$	0
-1	$\frac{1}{10}$	2
1	$\frac{1}{10}$	6
2	$\frac{4}{10}$	8

c)

X	$P_x(x)$	Z
-2	$\frac{4}{10}$	4
-1	$\frac{1}{10}$	1
1	$\frac{1}{10}$	1
2	$\frac{4}{10}$	4

$\begin{cases} P(Z = 4) = \dfrac{8}{10} \\ P(z = 2) = \dfrac{2}{10} \end{cases}$