

15B

#2

| | | | | | |
|--------|---------------|---------------|---------------|-------------------|-------------------|
| z | 2 | 3 | 5 | 7 | 11 |
| $P(z)$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $x = \frac{3}{8}$ | $y = \frac{1}{8}$ |

$$E(z) = 5\frac{2}{3}$$

$$x + y = \frac{1}{2} \quad *$$

$$E(z) = \frac{1}{6}(2) + \frac{1}{6}(3) + \frac{1}{6}(5) + x(7) + y(11) = 5\frac{2}{3}$$
$$\frac{5\cancel{10}}{3\cancel{6}} + 7x + 11y = \frac{17}{3} \quad \leftarrow$$

$$7x + 11y = 4 \quad **$$

$$\begin{cases} x + y = \frac{1}{2} \\ 7x + 11y = 4 \end{cases} \rightarrow y = \frac{1}{2} - x$$

$$7x + 11\left(\frac{1}{2} - x\right) = 4$$

$$+4x = +\frac{3}{2}$$

$$x = \frac{3}{8}$$

$$y = \frac{1}{2} - \frac{3}{8}$$

$$y = \frac{1}{8}$$

#6

| | | | |
|--------|------------|-------|---------------------------|
| X | 1 | 2 | 3 |
| $P(X)$ | <u>0.2</u> | $1-k$ | <u>$k-0.2$</u> |

$$0 < 1-k < 0.8$$

$$\frac{-1}{-1} < \frac{-k}{-1} < \frac{-0.2}{-1}$$

$$1 > k > 0.2$$

\Rightarrow $0.2 < k < 1$ \swarrow $P(X=3)$

$$0.2 + (1-k) + \square = 1$$

$$1.2 - k + \square = 1$$

$$-k + \square = -0.2$$

$$\square = k - 0.2$$

$$E(X) = 1(0.2) + 2(1-k) + 3(k-0.2)$$
$$= 0.2 + 2 - 2k + 3k - 0.6$$

$$E(X) = 1.6 + \underline{k}$$

$$1.8 < E(X) < 2.6$$

Ex. Toss 4 coins. X = number of (H)