§6.4#42
Let X be a r.v. whose value is the number of balls that end up in the first bin. Then

$$X = X_1 + X_2 + \cdots + X_m$$

where each $X_i = \begin{cases} 1 & \text{if ball i ends up in bin 1} \\ 0 & o/w \end{cases}$
Note that $E[X_i] = 1 \cdot P(X_i = 1) + 0 \cdot P(X_i = 0) = \frac{1}{n}$. So by linearity of expectations

$$E[X] = E[X_1] + \cdots + E[X_m] = \frac{m}{n}$$

§8.1#6
For this problem, R=Reflexive, S=Symmetric, T=Transitive, A=Antisymmetric. To get full credit, you would need to justify your answers.

(a) S

(b) R, S, T

(c) R, S, T

(d) A

(e) R, S

(f) S

(g) T, A

(h) S