More than just binomial distribution

Exercise 1. Urn Models

An urn contains 1 ***R****ed ball,* 2 ***G****reen balls, and* 4 ***B****lue balls. For each of the following events, construct an urn model with a probability space that contains the event and calculate the probability of this event. Each of the* 4 *urn models ((un)ordered + with(out) replacement) will be used exactly twice.*

a) $\Big\{(\boldsymbol{R},\boldsymbol{R},\boldsymbol{B},\boldsymbol{G}),(\boldsymbol{R},\boldsymbol{B},\boldsymbol{B},\boldsymbol{G})\Big\}$

b) $\Big\{(\boldsymbol{R},\boldsymbol{G},\boldsymbol{G},\boldsymbol{B})\Big\}$

c) $\Big\{(\boldsymbol{R},\boldsymbol{G},c)\colon c\in\{\boldsymbol{G},\boldsymbol{B}\}\Big\}$

d) $\Big\{(1,2,1),(0,2,2)\Big\}$

e) $\Big\{(\boldsymbol{G},\boldsymbol{B},\boldsymbol{R},\boldsymbol{R}),(\boldsymbol{B},\boldsymbol{B},\boldsymbol{G},\boldsymbol{R})\Big\}$

f) $\Big\{(1,2,4),(2,3,2)\Big\}$

g) $\Big\{\{\boldsymbol{R},\boldsymbol{G}\},\{\boldsymbol{B},\boldsymbol{G}\}\Big\}$

h) $\Big\{(a,b,1)\colon a+b=3\Big\}$