Exercise-1.3: Let X be the random variable denoting the fruit we choose, let Y be the random variable denoting the box we choose.

First part of the question asks p(X=a).

$$From\ the\ sum\ rule\ p(X = a) = \sum_{Y} p(X = a,\ \ Y)$$
$$= 0.2 * 0.3 + 0.2 * 0.5 + 0.6 * 0.3 = 0.34$$

Second part of the question asks p(Y=g|X=o). We will use Bayes' theorem, since we know p(X=o|Y=g) we can calculate the first probability.

$$p(Y = g|X = o) = \frac{p(X = o|Y = g)p(Y = g)}{p(X = o)} = \frac{0.3 * 0.6}{0.2 * 0.4 + 0.2 * 0.5 + 0.6 * 0.3}$$
$$= \frac{0.18}{0.36} = 0.5$$