box r	box b	box g
apple × 3	apple × 1	apple × 3
orange × 4	orange × 1	orange × 3
limes × 3	limes × 0	limes × 4
$P(r) = 0.2$	$P(b) = 0.2$	$P(g) = 0.6$

What is the probability of selecting an apple?

$$P(X = \text{apple}) = P(X = \text{apple} \mid Y = \text{box } r)\, P(Y = \text{box } r)$$
$$+ P(X = \text{apple} \mid Y = \text{box } b)\, P(Y = \text{box } b)$$
$$+ P(X = \text{apple} \mid Y = \text{box } g)\, P(Y = \text{box } g)$$
$$= 0.3 \times 0.2$$
$$+ 0.5 \times 0.2$$
$$+ 0.3 \times 0.6$$
$$= 0.34$$

if we observe that the selected fruit is in fact an orange, what is the probability that it come from the green box?

$$P(Y = \text{box } g \mid X = \text{orange}) = \frac{P(X = \text{orange} \mid Y = \text{box } g)\, P(Y = \text{box } g)}{P(X = \text{orange})}$$
$$= \frac{0.5 \times 0.6}{(P(X = \text{orange} \mid Y = \text{box } r)\, P(Y = \text{box } r)}$$
$$+ P(X = \text{orange} \mid Y = \text{box } g)\, P(Y = \text{box } g)$$
$$+ P(X = \text{orange} \mid Y = \text{box } b)\, P(Y = \text{box } b))$$
$$= \frac{0.3}{\quad}$$