1.3 p(fruit = apple) = p(fruit = apple | box = red)*p(box = red)
$\qquad$ + p(fruit = apple | box = blue)*p(box = blue)
$\qquad$ + p(fruit = apple | box = green)*p(box = green)

$$= \frac{3}{10} * 0.2 + \frac{1}{2} * 0.2 + \frac{3}{10} * 0.6$$

$$= 0.3 * 0.2 + 0.1 + 0.18$$

$$= 0.06 + 0.1 + 0.18$$

$$= 0.34$$

Next, we find the probability that the box was green, given that the fruit we selected was an orange.

Using Baye's rule,

$$\text{p(box = green | fruit = orange)} = \frac{\text{p(fruit = orange | box = green)*p(box = green)}}{\text{p(fruit = orange)}}$$

p(fruit = orange) = p(fruit = orange | box = red)*p(box = red)
$\qquad$ + p(fruit = orange | box = blue)*p(box = blue)
$\qquad$ + p(fruit = orange | box = green)*p(box = green)

$$= \frac{4}{10} * 0.2 + \frac{1}{2} * 0.2 + \frac{3}{10} * 0.6$$

$$= 0.4 * 0.2 + 0.1 + 0.3 * 0.6$$

$$= 0.08 + 0.1 + 0.18$$

$$= 0.36$$

p(fruit = orange | box = green)*p(box = green) = 0.18

Therefore, p(box = green | fruit = orange) = $\frac{0.18}{0.36}$ = 0.5.