26. Let L = "Harry is late" and S = "Harry is shouted at". We are told that $P(L) = \frac{2}{5}$, $P(S|L) = \frac{7}{10}$ and $P(S|L^c) = \frac{1}{5}$. We are asked to find $P(L|S)$.

We calculate that

$$P(L|S) = \frac{P(L)P(S|L)}{P(S)} = \frac{P(L)P(S|L)}{P(S \cap L) + P(S \cap L^c)} = \frac{P(L)P(S|L)}{P(L)P(S|L) + P(L^c)P(S|L^c)} = \frac{\frac{2}{5} \cdot \frac{7}{10}}{\frac{2}{5} \cdot \frac{7}{10} + \frac{3}{5} \cdot \frac{1}{5}} = \frac{7}{10} = 0.7$$

27. (a). Since

$$P(\text{strawberry}|\text{chocolate}) = \frac{P(\text{chocolate and strawberry})}{P(\text{chocolate})}$$
$$= \frac{0.35}{0.7} = 0.5$$

   it follows that the probability that Neil likes strawberry ice cream is 0.5.

   (b). This is in the question: 40% of the lecturers like pistachio ice cream, so the probability that Neil likes it is 0.4.

   (c). Since

$$P(\text{strawberry}|\text{pistachio}) = \frac{P(\text{pistachio and strawberry})}{P(\text{pistachio})}$$
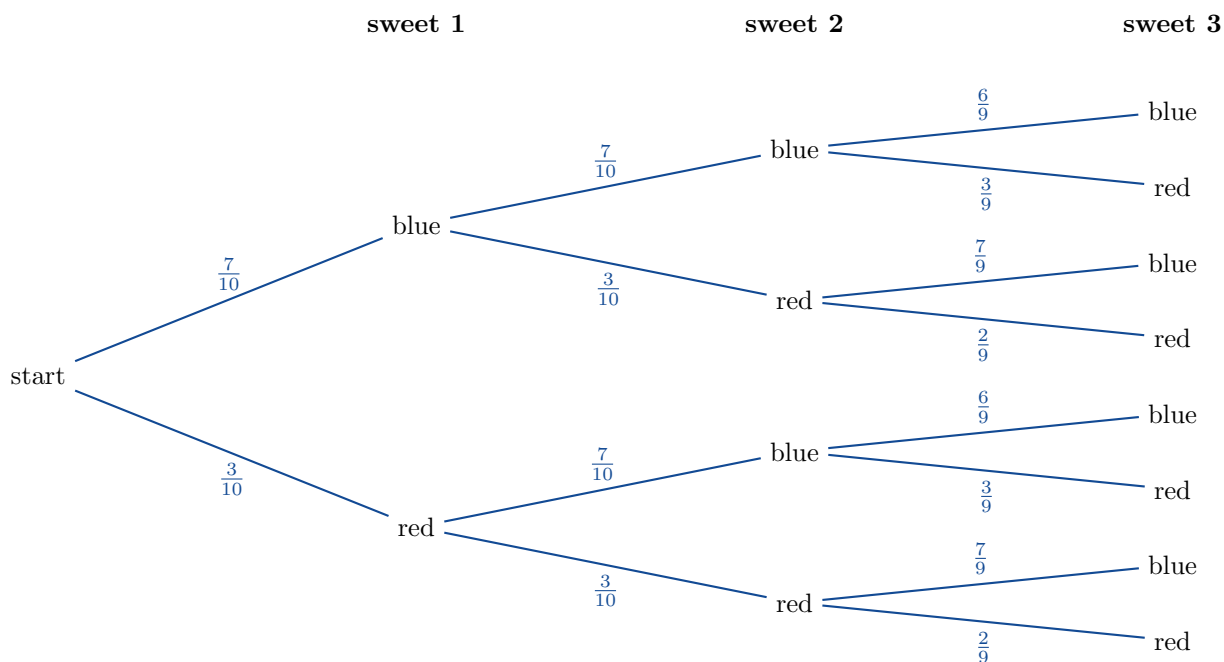$$= \frac{0.1}{0.4} = 0.25$$

   it follows that the probability that Asuman likes chocolate ice cream is 0.25.

28. (a). K_n has $\frac{n(n-1)}{2}$ edges.

   (b). K_{nm} has $\frac{nm(nm-1)}{2}$ edges.

   (c). C_n has n edges.

   (d). W_n has $2n$ edges.

29. (a). We calculate that

$$P(B) = P(RMB) + P(RNB) + P(SOB) + P(SB)$$

$$= \left(\frac{3}{10} \cdot \frac{2}{5} \cdot \frac{1}{3}\right) + \left(\frac{3}{10} \cdot \frac{3}{5} \cdot \frac{2}{3}\right) + \left(\frac{7}{10} \cdot \frac{1}{5} \cdot \frac{1}{2}\right) + \left(\frac{7}{10} \cdot \frac{4}{5}\right)$$

$$= \frac{6}{150} + \frac{18}{150} + \frac{7}{100} + \frac{28}{50} = \frac{79}{100}.$$

(b).

sweet 1	**sweet 2**	**sweet 3**

30. Graph G does contain an Eulerian trail. One example is $d, e_5, e, e_6, a, e_1, b, e_9, g, e_{10}, c, e_3, d, e_4, a, e_7, f, e_8, b, e_2, c$.

Graph H does not contain an Eulerian trail. Note that the vertices a, c, d and f all have degree 3. Since there are more than two vertices of odd degree, it follows by a theorem from the course that this graph does not contain an Eulerian trail.