

7.4.1 Solutions to the Introductory Example

(i)

$$\begin{aligned}p(T) \times p(O) &= \frac{3}{7} \times \frac{2}{7} \\&= \frac{6}{49}\end{aligned}$$

(ii)

$$\begin{aligned}p(T) \times p(O) + p(O) \times p(T) &= \frac{3}{7} \times \frac{2}{7} + \frac{2}{7} \times \frac{3}{7} \\&= \frac{6}{49} + \frac{6}{49} \\&= \frac{12}{49}\end{aligned}$$

(iii)

$$\begin{aligned}p(T) \times p(T) &= \frac{3}{7} \times \frac{3}{7} \\&= \left(\frac{3}{7}\right)^2 \\&= \frac{9}{49}\end{aligned}$$

(iv)

$$\begin{aligned}p(v) \times p(c) &= \frac{3}{7} \times \frac{4}{7} \\&= \frac{12}{49}\end{aligned}$$

(v)

$$\begin{aligned}p(v) \times p(c) + p(c) \times p(v) &= \frac{3}{7} \times \frac{4}{7} + \frac{4}{7} \times \frac{3}{7} \\&= \frac{24}{49}\end{aligned}$$

(vi)

$$\begin{aligned}p(c) \times p(c) &= \frac{4}{7} \times \frac{4}{7} \\&= \left(\frac{4}{7}\right)^2 \\&= \frac{16}{49}\end{aligned}$$

7.4.2 Solutions to 7.3 Exercise

Answer 1

(i)

$$\frac{3}{25}$$

(ii)

$$\frac{6}{25}$$

(iii)

$$\frac{9}{25}$$

Answer 2

(i)

$$\frac{6}{49}$$

(ii)

$$\frac{12}{49}$$

(iii)

$$\frac{9}{49}$$

(iv)

$$\frac{10}{49}$$

(v)

$$\frac{20}{49}$$

(vi)

$$\frac{4}{49}$$

Answer 3

(i)

$$\frac{2}{49}$$

(ii)

$$\frac{4}{49}$$

(iii)

$$\frac{4}{49}$$

(iv)

$$\frac{12}{49}$$

(v)

$$\frac{24}{49}$$

(vi)

$$\frac{16}{49}$$

Answer 4

(i)

$$\frac{1}{16}$$

(ii)

$$\frac{1}{16}$$

(iii)

$$\frac{4}{49}$$

(iv)

$$\frac{6}{16}$$

Answer 5

(i)

$$\frac{1}{49}$$

(ii)

$$\frac{2}{49}$$

(iii)

$$\frac{1}{49}$$

(iv)

$$\frac{12}{49}$$

(v)

$$\frac{24}{49}$$

(vi)

$$\frac{16}{49}$$

Answer 6

(i)

$$\frac{10}{25}$$

(ii)

$$\frac{4}{100}$$

(iii)

$$\frac{48}{100}$$

Answer 7

(i)	(ii)	(iii)	(iv)
$\frac{8}{121}$	$\frac{8}{121}$	$\frac{16}{121}$	$\frac{12}{121}$

Answer 8

(i)	(ii)
$\frac{1}{25}$	$\frac{2}{25}$

Answer 9

(i)	(ii)	(iii)
$\frac{1}{16}$	0	$\frac{4}{16}$

Answer 10

(i)	(ii)	(iii)	(iv)
$\frac{1}{144}$	$\frac{4}{144}$	$\frac{1}{144}$	$\frac{2}{144}$
(v)	(vi)	(vii)	(viii)
$\frac{6}{144}$	$\frac{36}{144}$	$\frac{72}{144}$	$\frac{36}{144}$

Answer 11

(i)	(ii)	(iii)
$\frac{1}{25}$	$\frac{2}{25}$	$\frac{4}{25}$

Answer 12

$$\left(\frac{9}{60} \right)^2 = \left(\frac{3}{20} \right)^2 = \frac{9}{400}$$

Answer 13

$$\frac{1}{10000} \text{ or } 0.0001 \quad \text{which is a } 0.01 \% \text{ chance}$$