

10.1.1

a.  $\boxed{\frac{1}{4}}$

HH.HH

THHHH ?

b.  $\boxed{\frac{1}{2}}$

HH.TH

THHT = 8

c.  $\boxed{\frac{3}{16}}$

HH TT

TT HH  $2^4 = 16$

HT HT

HT TH

THHT

THHT

THHT

10.1.2

a.  $\boxed{\frac{1}{n}}$

b.  $\frac{(n-2)!}{n!}$

$\boxed{\frac{1}{n(n-1)}}$

c.

$\frac{2(n-1)(n-2)!}{n!} = \boxed{\frac{2}{n}}$

10.1.4

a.  $\boxed{252}$

b.  $2(8) = 112 \div 252 = \boxed{\frac{4}{9}}$

c.  $\boxed{\frac{1}{252}}$



10.2.1

a.  $\frac{n+1}{2^n}$

b.  $1 - \frac{1}{2^n - 1}$

c.  $1 - \frac{\binom{n}{2}}{2^n}$

10.2.2

a.  $\frac{2}{n}$

b.  $\frac{2n-3}{n(n-1)}$

c.  $1 - \frac{2}{n}$

d.  $\frac{2(2n-3)}{n(n-1)}$

$$\frac{2(n-1)!}{n!}$$

$$\frac{2}{n} + \frac{2}{n} - \frac{2(n-2)!}{n!}$$

10.2.5

a.  $26 + 26 + 16 = 62$   $62^{10}$

$$\frac{26 \cdot 26 \cdot 10 \cdot 62^7}{62^{16}} = 0.0284$$



10.3.1

a.  $p(A) = \frac{1}{2}$   $p(B) = \frac{1}{6}$   $p(C) = \frac{1}{6}$

b.  $p(A|C) = \boxed{\frac{1}{2}}$

c.  $p(B|C) = \boxed{\frac{1}{3}}$

d.  $p(A|B) = \boxed{\frac{2}{3}}$

10.3.3

a.  $\frac{2 \cdot 2!}{8!} = \boxed{\frac{1}{4}}$

b.  $\boxed{\frac{1}{8}}$

c.  $\frac{2 \cdot 6!}{8!} = \frac{1}{28} \neq \frac{1}{4} \cdot \frac{1}{4} \cdot \frac{1}{32}$  Not independent

10.4.1

a.  $p_p(B) = \frac{1}{2}$

$p(B|D) = 0.25 \cdot 0.75^3$

$p(B|D) = \boxed{0.0256}$

10.4.4

a.  $p(p) = 0.0001$   $p(!p) = 0.9999$

$p(D|T) = \frac{0.0001}{0.0001 + 0.025 \cdot 0.9999} = \boxed{0.003984}$