

#1

$$n(D) = 900$$

$$n(D \cap S) = 500$$

$$n(D \cup S) = 1000$$

N.

#1a

$$n(D \cup S) = n(D) + n(S) - n(D \cap S)$$

$$1000 = 900 + n(S) - 500$$

$$1500 = 900 + n(S)$$

$$n(S) = 600$$

#1b

$$n(S \cap D) = 600 - 500$$

$$= 100$$

#2

$$P(A, B) = 2A$$

#3

$$C(12, 4) = 495$$

#4a

$$C(32, 4) = 35960$$

#4b

$$C(30, 4) = 27405$$

#5a

$$\begin{aligned} P(E \cup F) &= P(E) + P(F) - P(E \cap F) \\ &= 0.1 + 0.6 - 0 \\ &= 0.7 \end{aligned}$$

#5b

$$P(E^c) = 1 - P(E) = 1 - 0.1 = 0.9$$

#6

$$\frac{C(5, 3) C(3, 1)}{C(8, 4)} = \frac{10 \cdot 3}{70} = \frac{30}{70}$$

$$\#7a \quad 8120/10730$$

$$\#7b \quad 6101/10730$$

$$\#7c \quad 4222/10730$$

$$\#7d \quad 4222/8120$$

$$\#8 \quad \underbrace{8120/10730 + 6101/10730}_{\approx 0.43} \stackrel{?}{=} \underbrace{4222/10730}_{\approx 0.39}$$

Not independent

#9

$$1 - P(\text{no defectives})$$
$$= 1 - \frac{C(74, 20)}{C(80, 20)}$$

$$\approx 0.83$$