

SOLUTIONS - CHAPTER 5 EXERCISES

5.1 First, the sets you are given are equivalent to the following:

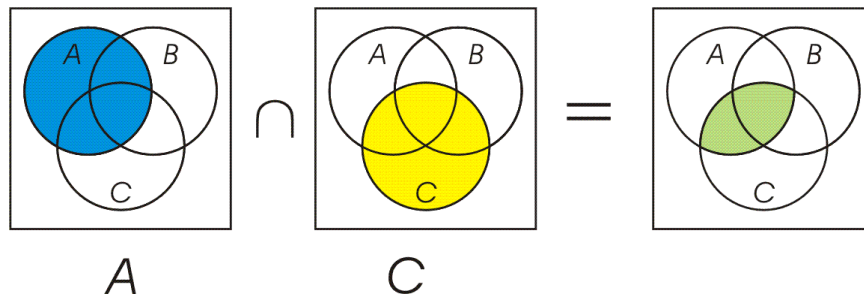
$$E = \{E, A, S, T, R\} \text{ and } H = \{H, A, L, O, W, E, N\}.$$

Finding their intersection we have, $E \cap H = \{A, E\}$. Counting the number of elements in these sets we have,

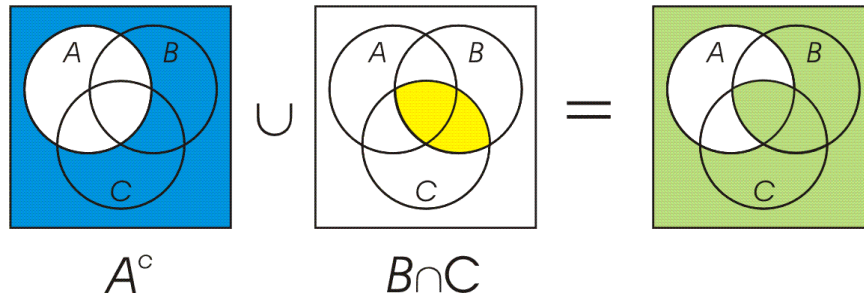
$$\begin{aligned} n(E \cup H) &= n(E) + n(H) - n(E \cap H) \\ &= 5 + 7 - 2 \\ &= 10 \end{aligned}$$

5.3 d \rightarrow An intersection between sets is what the sets have in common; here that would be Texans who also own trucks.

5.5



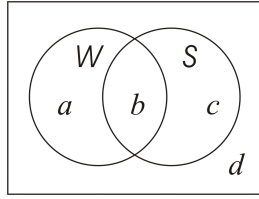
5.7



5.9 Let W = the set of white candles and let S = the set of scented candles. We are then given the following information:

$$n(W \cup S) = 70 \quad n(W) = 40 \quad n(S) = 34$$

We are looking to find $n(S \cap W^c)$. An easy way to solve this problem is to draw and label each section of a Venn diagram containing the sets W and S .



We are looking for c . To do so, convert the given information into equations involving a, b, c , and d :

$$a + b + c = 70$$

$$a + b = 40$$

$$b + c = 34$$

Since $a + b = 40 \Rightarrow (40) + c = 70 \Rightarrow c = 30$. Thus, 30 candles are scented, but not white.