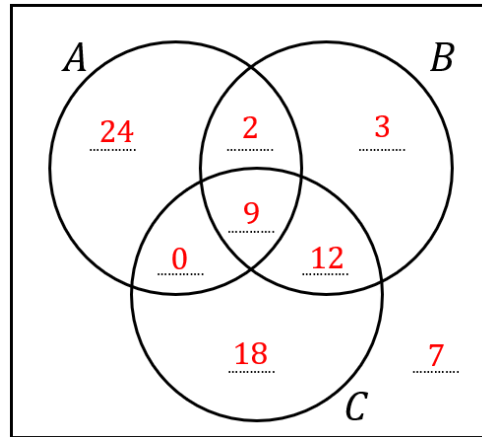


(a)

Complete the Venn diagram to show the number of elements in each set, given the information below.

$$\begin{aligned} n(A \cap B \cap C) &= 9 \\ n(A \cap B) &= 11 \\ n(B \cap C \cap A') &= 12 \\ n(A \cup B \cup C)' &= 7 \\ n(A) &= 35 \\ n(A \cup B) &= 50 \\ n(A \cap C \cap B') &= \emptyset \\ n(\xi) &= 75 \end{aligned}$$



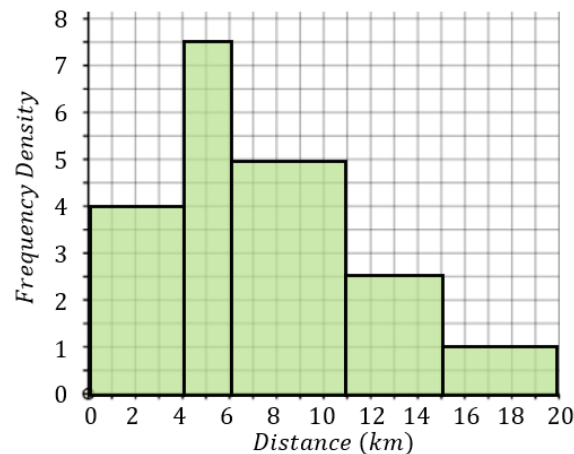
(b)

There are 12 pens in a pencil case. 6 pens are red, 2 are black and the rest are green. Dottie chooses two pens from the pencil case at random. Work out the probability that both the pens chosen are the same colour.

$$\frac{44}{132} = \frac{1}{3}$$

(c)

The histogram shows information on the distance in km that some workers commute to work each morning. Estimate the proportion of workers who commute more than 10 km.



$$\frac{20}{71}$$

(d)

A biscuit tin contains 8 bourbons and some digestives. There are  $n$  biscuits in total in the tin. Roy chooses two biscuits at random from the tin. Given that the probability that Roy chooses two different types of biscuit is  $\frac{48}{95}$ , find the total number of biscuits in the tin.

$$\begin{aligned} 3n^2 - 98n + 760 &= 0 \\ n &= 20 \end{aligned}$$