

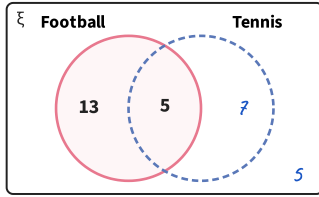
# Venn Diagrams and Probability

ANSWERS

1

30 students: 18 play football, 12 play tennis and 5 play both.

(a) Complete the Venn diagram. (b) One is chosen at random. Find the probability that they play tennis only.

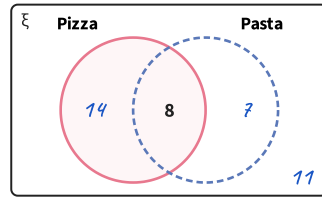


(b)  $\frac{7}{30}$

2

40 people: 22 like pizza, 15 like pasta and 8 like both.

(a) Complete the Venn diagram. (b) One is chosen at random. Find the probability that they like neither.

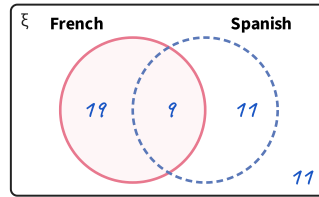


(b)  $\frac{11}{40}$

3

50 students: 28 study French, 20 study Spanish and 9 study both.

(a) Complete the Venn diagram. (b) One is chosen at random. Find the probability that they study exactly one of the languages.

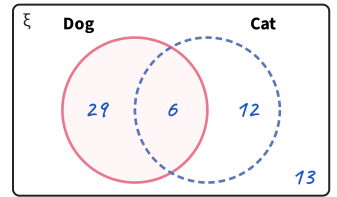


(b)  $\frac{30}{50} = \frac{3}{5}$

4

60 people: 35 have a dog, 18 have a cat and 6 have both.

(a) Complete the Venn diagram. (b) One is chosen at random. Find the probability that they have a cat.

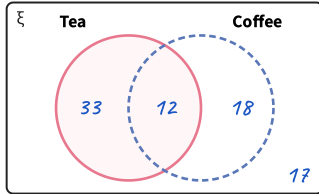


(b)  $\frac{18}{60} = \frac{3}{10}$

5

80 people: 45 drink tea, 30 drink coffee and 12 drink both.

(a) Complete the Venn diagram. (b) One is chosen at random. Find the probability that they drink tea but not coffee.

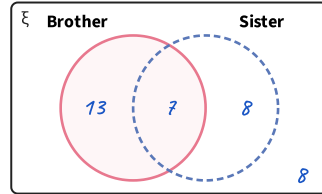


(b)  $\frac{33}{80}$

6

36 students: 20 have a brother, 15 have a sister and 7 have both.

(a) Complete the Venn diagram. (b) One is chosen at random. Find the probability that they have a brother or a sister.

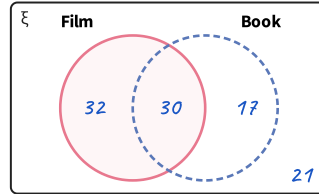


(b)  $\frac{28}{36} = \frac{7}{9}$

7

100 people: 62 watched the film, 47 read the book and 30 did both.

(a) Draw and complete a Venn diagram. (b) One is chosen at random. Find the probability that they did neither.

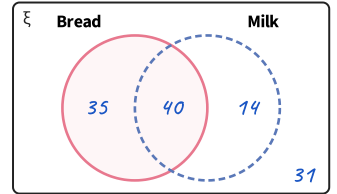


(b)  $\frac{21}{100}$

8

120 shoppers: 75 bought bread, 54 bought milk and 31 bought neither.

(a) Draw and complete a Venn diagram. (b) One is chosen at random. Find the probability that they bought both.



(b)  $\frac{40}{120} = \frac{1}{3}$

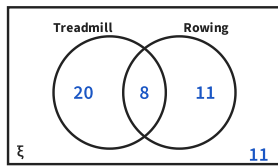
## Venn Diagrams and Probability *further practice*

ANSWERS

9

Of 50 people at a gym, 28 used the treadmill, 19 used the rowing machine and 8 used both.

(a) Complete the Venn diagram. (b) Find the probability that a person chosen at random used exactly one of the two machines.



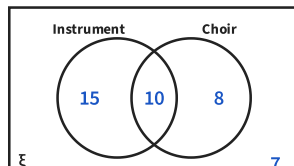
$20 + 11 = 31$ , so  $\frac{31}{50}$

(b)  $\frac{31}{50}$

10

40 students were asked about music. 25 play an instrument, 18 sing in the choir and 7 do neither.

(a) Complete the Venn diagram. (b) Find the probability that a student chosen at random plays an instrument and sings in the choir.

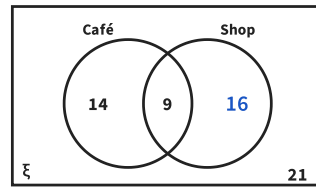


$25 + 18 + 7 = 50$ , so 10 do both

(b)  $\frac{1}{4}$

11

The Venn diagram shows how many of 60 visitors to a museum went to the café and to the shop. Find the probability that a visitor chosen at random went to the shop but not to the café.

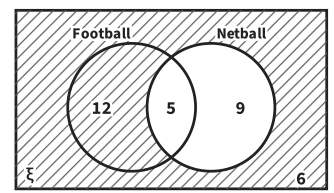


$60 - 44 = 16$ , so  $\frac{16}{60}$

Answer  $\frac{4}{15}$

12

The Venn diagram shows how many of a class play football and netball. Find the probability that a student chosen at random does not play netball.



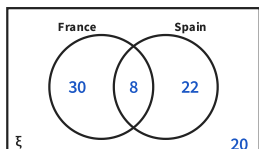
$12 + 6 = 18$ , so  $\frac{18}{32}$

Answer  $\frac{9}{16}$

13

Of 80 people, 38 have been to France and 30 have been to Spain. The probability that a person chosen at random has been to neither is  $\frac{1}{4}$ .

(a) Complete the Venn diagram. (b) Find the probability that a person chosen at random has been to both.

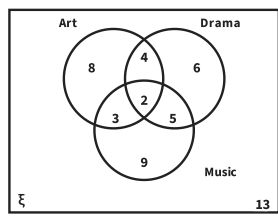


$80 - 20 = 60$ , and  $68 - 60 = 8$

(b)  $\frac{1}{10}$

14

The Venn diagram shows which of three clubs 50 students go to. Find the probability that a student chosen at random goes to exactly two of the clubs.

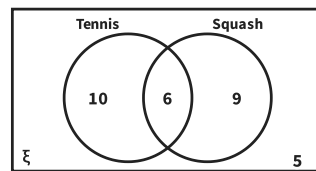


$4 + 3 + 5 = 12$ , so  $\frac{12}{50}$

Answer  $\frac{6}{25}$

15

The Venn diagram shows the 30 members of a club who play tennis and squash. At a second club, 8 of the 50 members play both. A member is chosen at random from each club. Which member is more likely to play both? Show how you know.

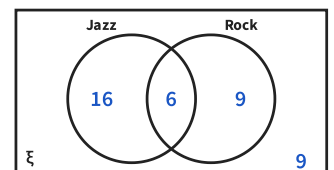


$\frac{6}{30} = 0.2$  and  $\frac{8}{50} = 0.16$

Answer *the first club*

16

Of 40 people, 22 like jazz, 15 like rock and 6 like both. Ravi says the probability that a person chosen at random likes jazz but not rock is  $\frac{22}{40}$ . Is Ravi right? Explain.



22 includes the 6 who like both

Answer *No, it is  $\frac{2}{5}$*