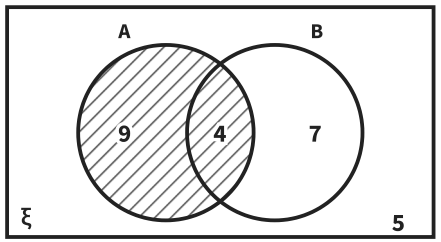
Probability from Venn Diagrams

ANSWERS

1

The Venn diagram shows how many are in each region. One is picked at random. Find P(A).

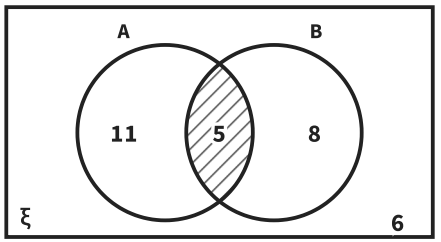


P(A) = 13 / 25 — 13 the region you want; 25 the whole box

Answer $\frac{13}{25}$

2

The Venn diagram shows how many are in each region. One is picked at random. Find P(A ∩ B).

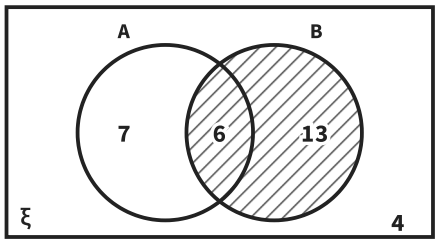


P(A ∩ B) = 5 / 30 — 5 the region you want; 30 the whole box

Answer $\frac{5}{30} = \frac{1}{6}$

3

The Venn diagram shows how many are in each region. One is picked at random. Find P(B).

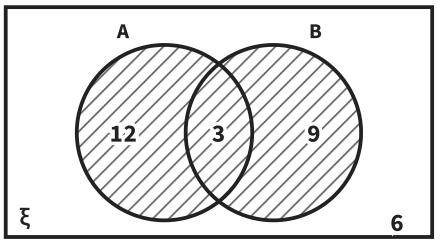


P(B) = 19 / 30 — 19 the region you want; 30 the whole box

Answer $\frac{19}{30}$

4

The Venn diagram shows how many are in each region. One is picked at random. Find P(A ∪ B).

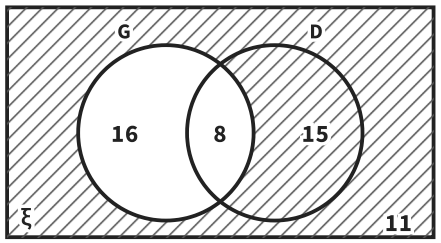


P(A ∪ B) = 24 / 30 — 24 the region you want; 30 the whole box

Answer $\frac{24}{30} = \frac{4}{5}$

5

ξ = 50 people. G = people who play guitar. D = people who play drums. One person is picked at random. Find P(G′).

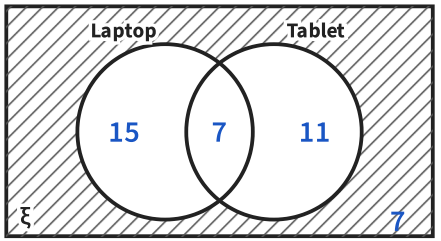


not in G: 15 + 11 = 26

Answer $\frac{26}{50} = \frac{13}{25}$

6

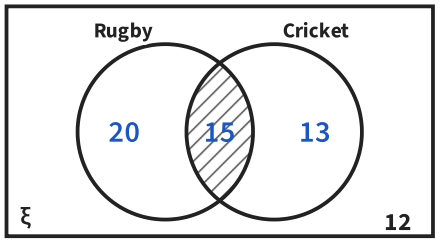
40 students: 22 have a laptop, 18 have a tablet and 7 have both.
Complete the Venn diagram. A student is picked at random. Find the probability they have neither.



Answer $\frac{7}{40}$

7

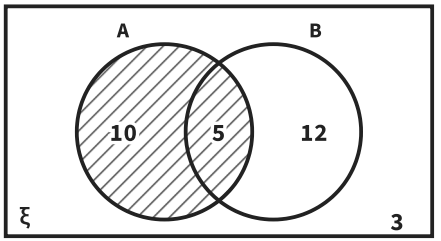
60 people: 35 like rugby, 28 like cricket and 12 like neither.
Complete the Venn diagram. A person is picked at random. Find the probability they like both.



Answer $\frac{15}{60} = \frac{1}{4}$

8

Ali uses this Venn diagram and says P(A) = $\frac{10}{30}$. Explain Ali's mistake.
Then find P(A).



Ali left out the 5 in the middle

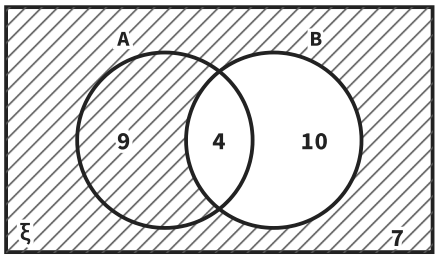
P(A) = $\frac{15}{30} = \frac{1}{2}$

Probability from Venn Diagrams *further practice*

ANSWERS

9

The Venn diagram shows how many are in each region. One is picked at random. Find P(B′).

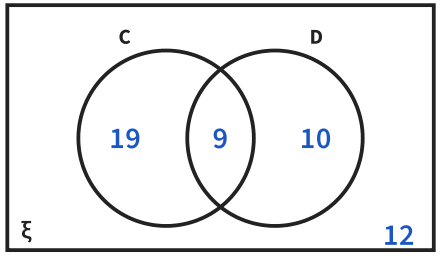


9 + 7 = 16 not in B

Answer $\frac{16}{30} = \frac{8}{15}$

10

ξ = 50 people. C = people with a cat. D = people with a dog. 28 have a cat, 19 have a dog and 9 have both. One person is picked at random. Find P(C ∪ D).

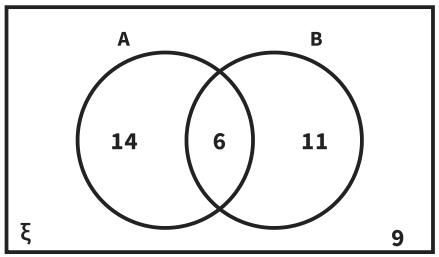


19 + 9 + 10 = 38

Answer $\frac{38}{50} = \frac{19}{25}$

11

One is picked at random. Is it more likely to be in A or in B? Show how you know.

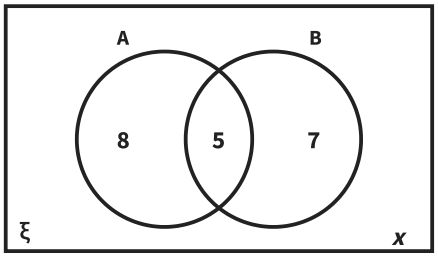


$\frac{20}{40} = \frac{1}{2}$, more than $\frac{17}{40}$

Answer A

12

One is picked at random. P(A ∪ B) = $\frac{4}{5}$. Find *x*.

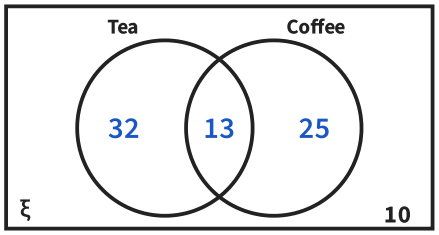


20 is $\frac{4}{5}$ of 25, so 25 − 20 = 5

Answer x = 5

13

80 people: 45 drink tea, 38 drink coffee and 10 drink neither. One person is picked at random. Find the probability they drink exactly one of them.

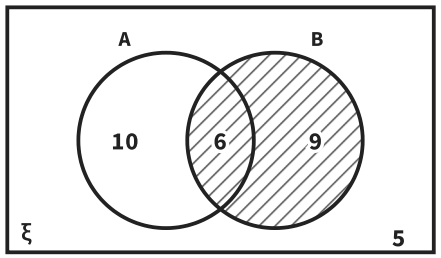


13 both, so 32 + 25 = 57

Answer $\frac{57}{80}$

14

Higher. One is picked at random. It is in B. Find the probability it is also in A, P(A | B).

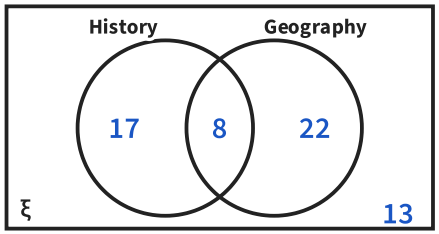


circle B: 6 + 9 = 15

Answer $\frac{6}{15} = \frac{2}{5}$

15

Higher. 60 students: 25 study history, 30 study geography and 8 study both. A geography student is picked at random. Find the probability they also study history.

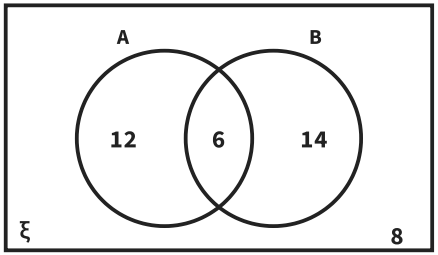


the total is the 30 who study geography

Answer $\frac{8}{30} = \frac{4}{15}$

16

Jo says P(A ∪ B) = $\frac{18}{40} + \frac{20}{40} = \frac{38}{40}$. Is Jo right? Explain.



the 6 in A ∩ B are counted twice

Answer No, it is $\frac{4}{5}$