

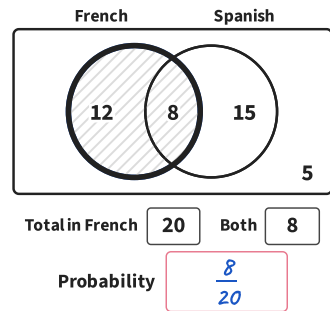
Conditional Probability: Venn Diagrams

ANSWERS

1 'given' shrinks the group to one circle

A student is chosen at random.

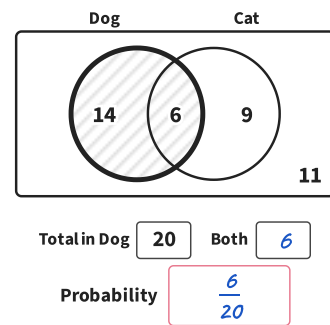
Given that the student studies French, find the probability that the student also studies Spanish.



2

A person is chosen at random.

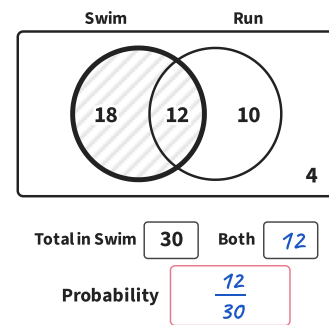
Given that the person has a dog, find the probability that the person also has a cat.



3

A member is chosen at random.

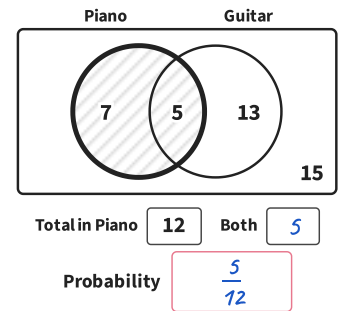
Given that the member swims, find the probability that the member also runs.



4

A student is chosen at random.

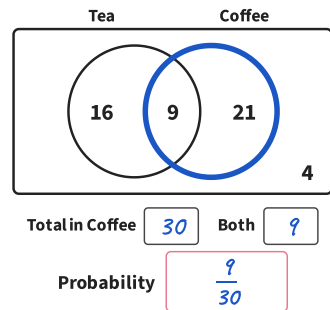
Given that the student plays the piano, find the probability that the student also plays the guitar.



5 Notice the change!

A customer is chosen at random.

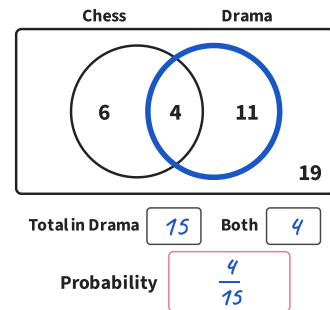
Given that the customer likes coffee, find the probability that the customer also likes tea.



6

A student is chosen at random.

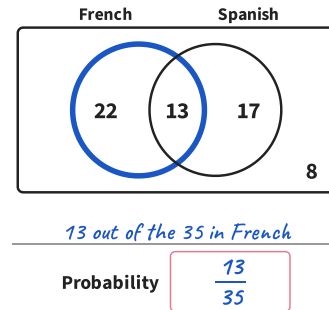
Given that the student is in the drama club, find the probability that the student also is in the chess club.



7

A student is chosen at random.

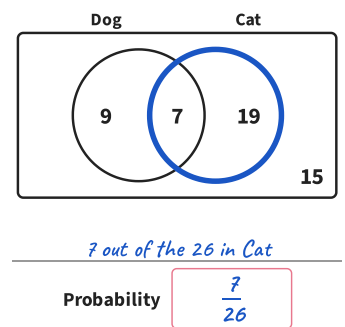
Given that the student studies French, find the probability that the student also studies Spanish.



8

A person is chosen at random.

Given that the person has a cat, find the probability that the person also has a dog.

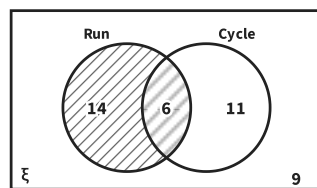


Conditional Probability: Venn Diagrams further practice

ANSWERS

9

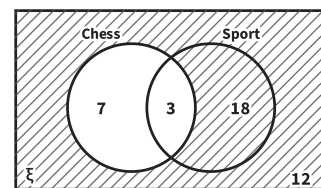
The Venn diagram shows the 40 members of a sports club. A member is chosen at random. **Given that** the member runs, find the probability that they also cycle.



Answer $\frac{6}{20} = \frac{3}{10}$

10

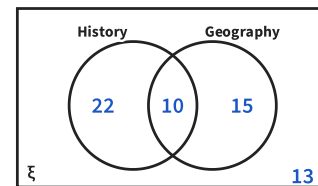
The Venn diagram shows 40 students. A student is chosen at random. **Given that** the student does not play chess, find the probability that they play a sport.



Answer $\frac{18}{30} = \frac{3}{5}$

11

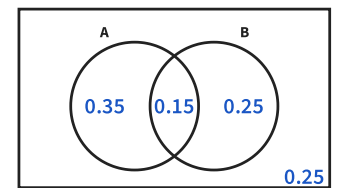
Of 60 students, 32 study History, 25 study Geography and 10 study both. Complete the Venn diagram. A student is chosen at random. **Given that** the student studies Geography, find the probability that they also study History.



Answer $\frac{10}{25} = \frac{2}{5}$

12

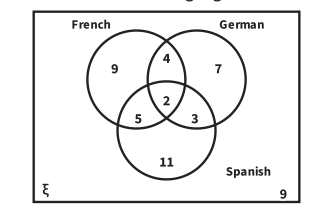
$P(A) = 0.5$, $P(B) = 0.4$ and $P(A \cap B) = 0.15$. Write the probabilities in the Venn diagram. Find the probability of A given B.



Answer $\frac{0.15}{0.4} = \frac{15}{40} = \frac{3}{8}$

13

The Venn diagram shows the languages studied by 50 students. **Given that** a student studies French, find the probability that they also study at least one of the other two languages.

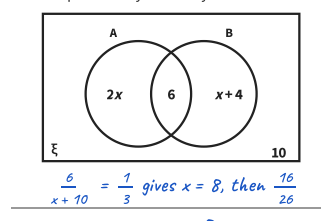


4 + 5 + 2 = 11, out of the 20 in French

Answer $\frac{11}{20}$

14

Given that a person is in B, the probability that they are in A is $\frac{1}{3}$.
(a) Find x. (b) **Given that** a person is not in B, find the probability that they are in A.



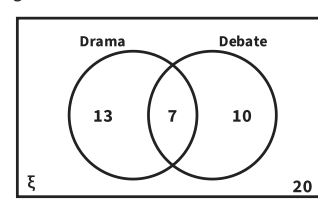
$\frac{6}{x+10} = \frac{1}{3}$ gives $x = 8$, then $\frac{16}{26}$

(a) $\frac{8}{13}$

(b) $\frac{8}{13}$

15

The Venn diagram shows 50 students and two clubs. A student is chosen at random. **Given that** the student goes to at least one of the clubs, find the probability that they go to both.

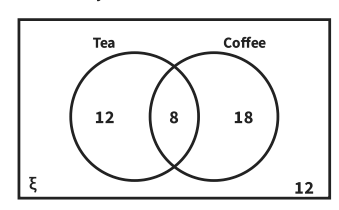


7 out of 13 + 7 + 10 = 30

Answer $\frac{7}{30}$

16

The Venn diagram shows what 50 people drink. Lara says that liking tea is independent of liking coffee for these people. Is Lara right? Show how you know.



$P(\text{tea}) = \frac{2}{5}$, $P(\text{tea given coffee}) = \frac{8}{26}$

Answer No