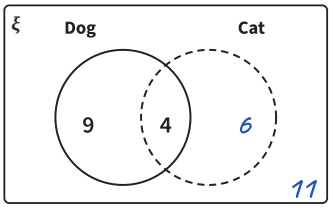
# Conditional probability: Venn diagrams

ANSWERS

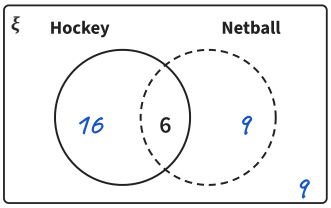
**1**

30 people: 13 have a dog, 10 have a cat and 4 have both.
Complete the Venn diagram.



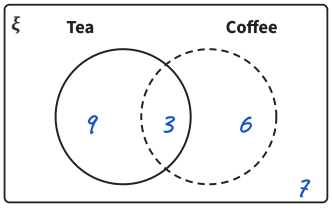

**2**

40 students: 22 play hockey, 15 play netball and 6 play both.
Complete the Venn diagram.



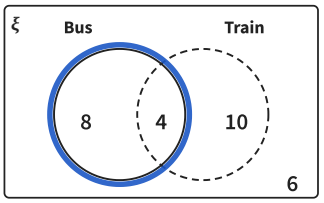

**3**

25 people: 12 drink tea, 9 drink coffee and 3 drink both. Complete the Venn diagram.




**4**

A person is chosen at random.
**Given that** the person takes the bus, find the probability that they also take the train.

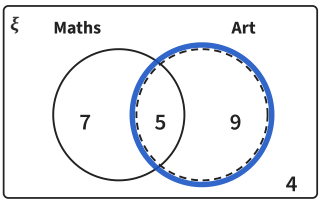



8 + 4 = 12

Answer $\frac{4}{12} = \frac{1}{3}$

**5**

A student is chosen at random.
**Given that** the student likes art, find the probability that they also like maths.

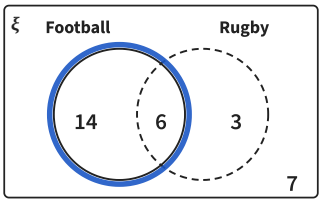



5 + 9 = 14

Answer $\frac{5}{14}$

**6**

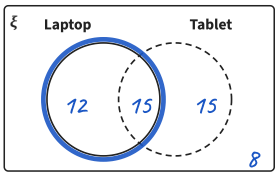
A student is chosen at random.
**Given that** the student plays football, find the probability that they also play rugby.




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

**7** *Notice the change!*

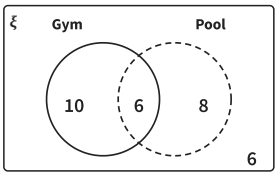
50 people: 27 have a laptop, 30 have a tablet and 15 have both. **Given that** a person has a laptop, find the probability that they also have a tablet.




Answer $\frac{15}{27} = \frac{5}{9}$

**8**

A person is chosen at random.
**Given that** the person uses the pool, Leah says the probability that they also use the gym is $\frac{6}{30}$. Explain her mistake.




she used all 30 people

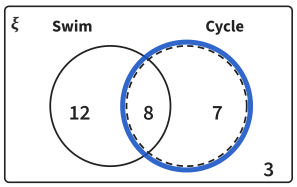
Answer $\frac{6}{14} = \frac{3}{7}$

# Conditional probability: Venn diagrams *further practice*

ANSWERS

**9**

The Venn diagram shows 30 people.
**Given that** a person cycles, find the probability that they also swim.

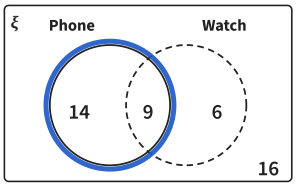



the Cycle circle: 8 + 7 = 15

Answer $\frac{8}{15}$

**10**

The Venn diagram shows 45 people.
**Given that** a person has a phone, find the probability that they also have a watch.

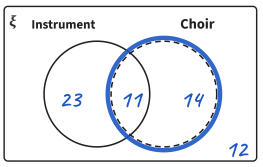



the Phone circle: 14 + 9 = 23

Answer $\frac{9}{23}$

**11**

60 students: 34 play an instrument, 25 sing in a choir and 11 do both.
**Given that** a student sings in the choir, find the probability that they also play an instrument.

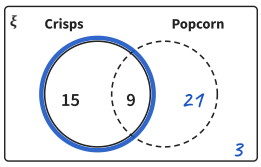



23, 11, 14 and 12 outside

Answer $\frac{11}{25}$

**12**

48 people: 15 like only crisps, 9 like crisps and popcorn, and 30 like popcorn. **Given that** a person likes crisps, find the probability that they also like popcorn.

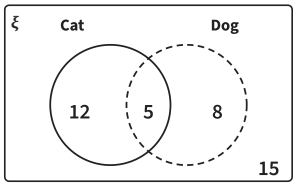



15, 9, 21 and 3 outside

Answer $\frac{9}{24} = \frac{3}{8}$

**13**

The Venn diagram shows 40 people.
**Given that** a person does **not** have a cat, find the probability that they have a dog.

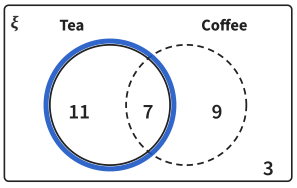



not a cat: 8 + 15 = 23

Answer $\frac{8}{23}$

**14**

The Venn diagram shows 30 people.
**Given that** a person drinks tea, find the probability that they do **not** drink coffee.




the Tea circle: 11 + 7 = 18

Answer $\frac{11}{18}$

**15**

20 people have a bike and 14 have a scooter. **Given that** a person has a bike, the probability that they also have a scooter is $\frac{3}{10}$.
How many people have a scooter but not a bike?

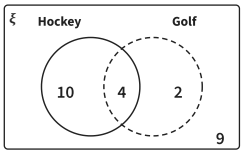
$\frac{3}{10}$ of 20 = 6 have both

14 − 6 = 8

Answer 8

**16**

Max says a hockey player is as likely to play golf as a golfer is to play hockey.
Is Max right? Show how you know.




$\frac{4}{14}$ and $\frac{4}{6}$: the circles hold 14 and 6

Answer No