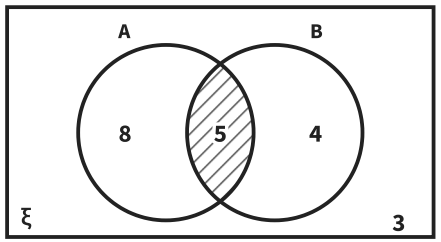
Venn Diagrams: Set Notation

ANSWERS

1

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

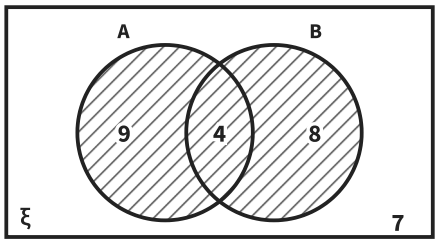


P(A ∩ B) = 5 / 20 (5 in the shaded region; 20 in the whole box)

Answer $\frac{5}{20} = \frac{1}{4}$

2

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

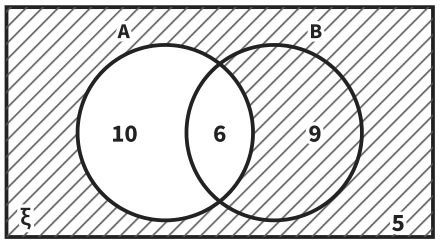


P(A ∪ B) = 21 / 28 (21 in the shaded region; 28 in the whole box)

Answer $\frac{21}{28} = \frac{3}{4}$

3

The Venn diagram shows the number in each region. Shade A′ on the diagram.
One is picked at random. Find P(A′).

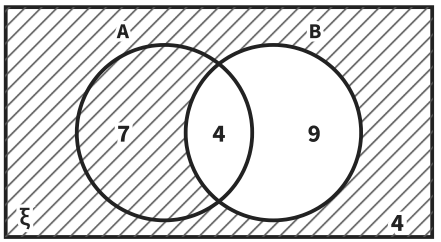


P(A′) = 14 / 30 (14 in the shaded region; 30 in the whole box)

Answer $\frac{14}{30} = \frac{7}{15}$

4

The Venn diagram shows the number in each region. Shade B′ on the diagram.
One is picked at random. Find P(B′).

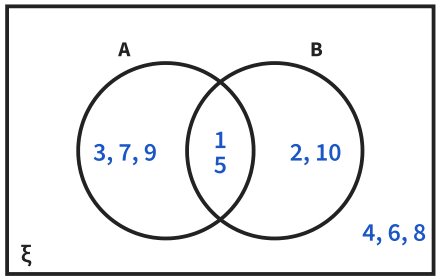


P(B′) = 11 / 24 (11 in the shaded region; 24 in the whole box)

Answer $\frac{11}{24}$

5

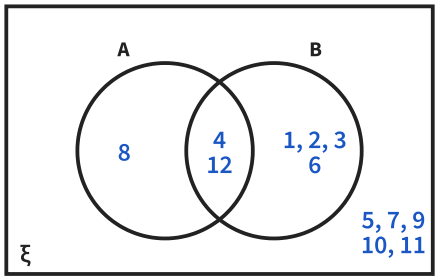
ξ = whole numbers from 1 to 10.
A = odd numbers. B = factors of 10.
Write each number in the Venn diagram.
List the numbers in A ∩ B.



A ∩ B = {1, 5}

6

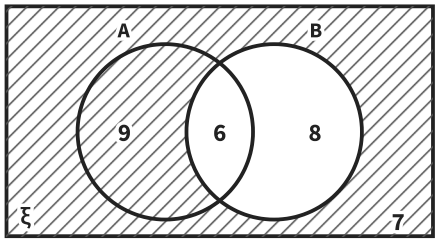
ξ = whole numbers from 1 to 12.
A = multiples of 4. B = factors of 12.
Write each number in the Venn diagram.
One number is picked at random.
Find P(A′).



P(A′) = $\frac{9}{12} = \frac{3}{4}$

7

Write the set notation for the shaded region. One is picked at random.
Find the probability that it is in the shaded region.

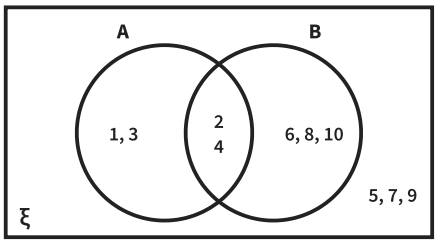


Notation B′

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

8

ξ = whole numbers from 1 to 10.
A = numbers less than 5.
B = even numbers. Ella says B′ = {1, 3}.
Explain Ella's mistake.
Then write B′ correctly.



she left out 5, 7 and 9

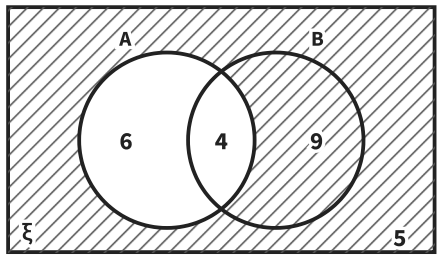
B′ = {1, 3, 5, 7, 9}

Venn Diagrams: Set Notation *further practice*

ANSWERS

9

ξ = 24 students. A = students who play an instrument. B = students who sing. One student is picked at random. Find P(A′).

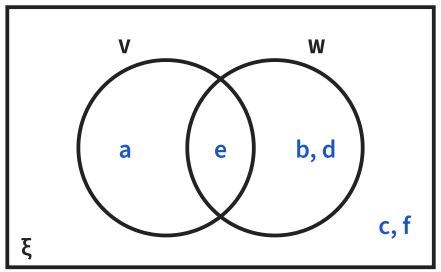


9 + 5 = 14 not in A

Answer $\frac{14}{24} = \frac{7}{12}$

10

ξ = the letters a to f. V = vowels. W = the letters in the word bed. Write each letter in the Venn diagram. One letter is picked at random. Find P(V ∪ W).

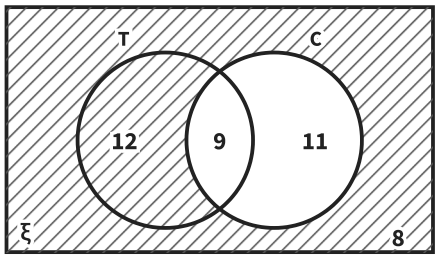


a, b, d and e: 4 of the 6

Answer $\frac{4}{6} = \frac{2}{3}$

11

ξ = 40 people in a café. T = people who ordered tea. C = people who ordered cake. One person is picked at random. Find P(C′).

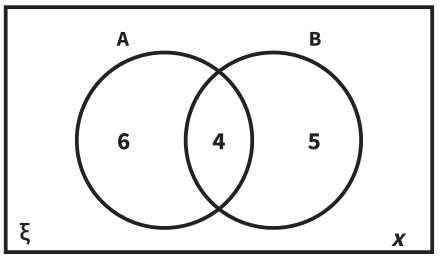


12 + 8 = 20 not in C

Answer $\frac{20}{40} = \frac{1}{2}$

12

The Venn diagram shows the number in each region. One is picked at random. $P(A \cup B) = \frac{3}{4}$. Find *x*.

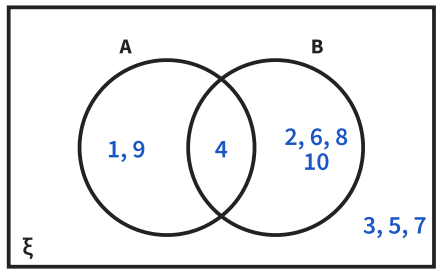


15 is $\frac{3}{4}$ of 20, so 20 − 15 = 5

Answer x = 5

13

ξ = whole numbers from 1 to 10. A = square numbers. B = even numbers. Write each number in the Venn diagram. One number is picked at random. Find P(A ∩ B).

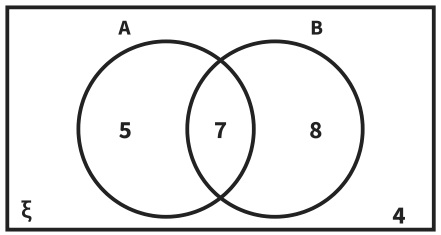


only 4 is in both

Answer $\frac{1}{10}$

14

ξ = the members of a book club. A = members who read crime. B = members who read poetry. One member is picked at random. Is the member more likely to be in A ∩ B or in B′? Show how you know.

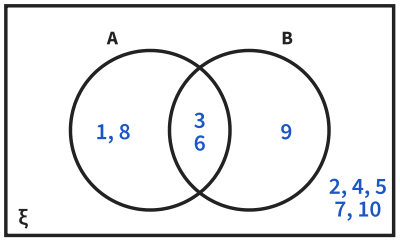


A ∩ B has 7, B′ has 5 + 4 = 9

Answer B′

15

ξ = whole numbers from 1 to 10. A = {1, 3, 6, 8}. A ∩ B = {3, 6}. A ∪ B = {1, 3, 6, 8, 9}. Complete the Venn diagram. One number is picked at random. Find P(B′).

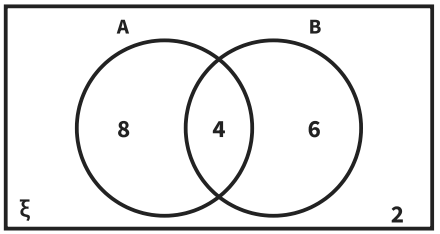


B′ = {1, 2, 4, 5, 7, 8, 10}

Answer $\frac{7}{10}$

16

Kofi says $P(A \cup B) = \frac{12}{20} + \frac{10}{20} = \frac{22}{20}$. Is Kofi right? Explain.



the 4 in A ∩ B are counted twice

Answer No, it is $\frac{9}{10}$