

Find probabilities from Venn Diagrams including basic set notation

Maths

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Find probabilities from Venn Diagrams

1. 15 children were asked if they played cricket or badminton.

7 children played both, 3 children played neither and 9 played cricket.

a) Draw a Venn diagram to represent this information.

b) A child is chosen at random.

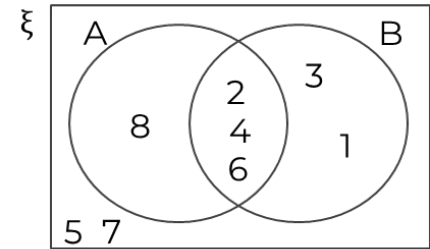
Calculate the $P(\text{A child who plays badminton is chosen})$.

2. The Venn diagram represents the following sets.

$$\xi = \{1,2,3,4,5,6,7,8\}$$

$$A = \{2,4,6,8\}$$

$$B = \{1,3\}$$



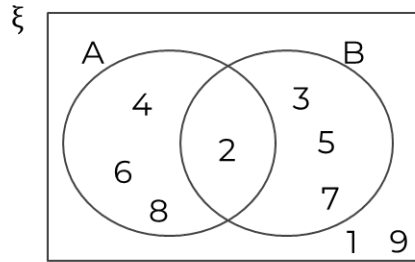
a) Calculate the $P(A \cup B)$.

b) Calculate $P(A')$



Find probabilities from Venn Diagrams

3. Here is a Venn diagram.

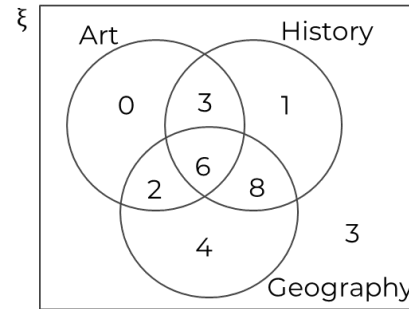


True or false?

- The probability of choosing a number from set $A \cap B$ is $\frac{2}{9}$
- The probability of choosing a number from set $A \cap B$ is $\frac{1}{9}$

What mistake has been made?

4. This Venn diagram shows the number of students who study art, history and geography.



A student is chosen at random.

Work out

- $P(\text{Geography} \cap \text{History})$
- $P(\text{Art} \cap \text{History})$
- $P(\text{Art} \cap \text{Geography} \cap \text{History})$

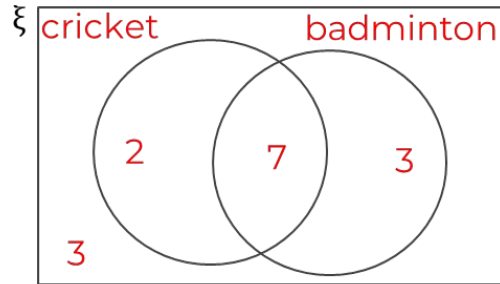


Answers



Find probabilities from Venn Diagrams

1.



a) Draw a Venn diagram to represent this information.

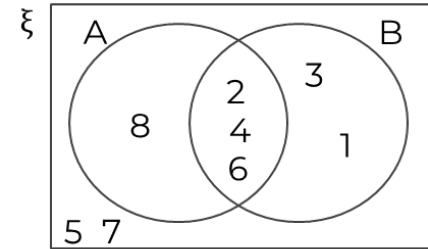
b) A child is chosen at random. Calculate the P(A child who plays badminton is chosen). $\frac{10}{15}$

2. The Venn diagram represents the following sets.

$$\xi = \{1, 2, 3, 4, 5, 7, 8\}$$

$$A = \{2, 4, 6, 8\}$$

$$B = \{1, 3\}$$



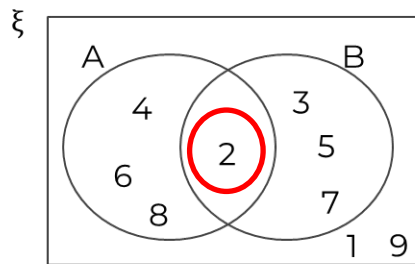
a) Calculate the $P(A \cup B)$. $\frac{6}{8}$

b) Calculate $P(A')$ $\frac{4}{8}$



Find probabilities from Venn Diagrams

3. Here is a Venn diagram.



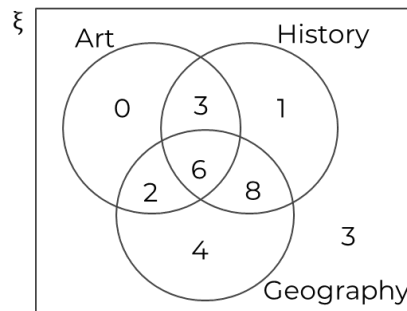
True or false?

- The probability of choosing a number from set $A \cap B$ is $\frac{2}{9}$ **False**
- The probability of choosing a number from set $A \cup B$ is $\frac{1}{9}$ **True**

What mistake has been made?

There is only 1 number in the intersection

4. This Venn diagram shows the number of students who study art, history and geography.



A student is chosen at random.
Work out

- $P(\text{Geography} \cap \text{History})$ $\frac{14}{27}$
- $P(\text{Art} \cap \text{History})$ $\frac{9}{27}$
- $P(\text{Art} \cap \text{Geography} \cap \text{History})$ $\frac{6}{27}$

