

# VENN DIAGRAM PROBABILITY MAT



## KEY IDEA

Use a Venn diagram to organise outcomes and find probabilities.

## NOTATION

$A^c$  : Not in A  
 $A \cap B$  : In both A and B  
 $A \cup B$  : In A or in B (or both)  
 $n(X)$  : Number of outcomes in set X  
 $P(X)$  : Probability of X

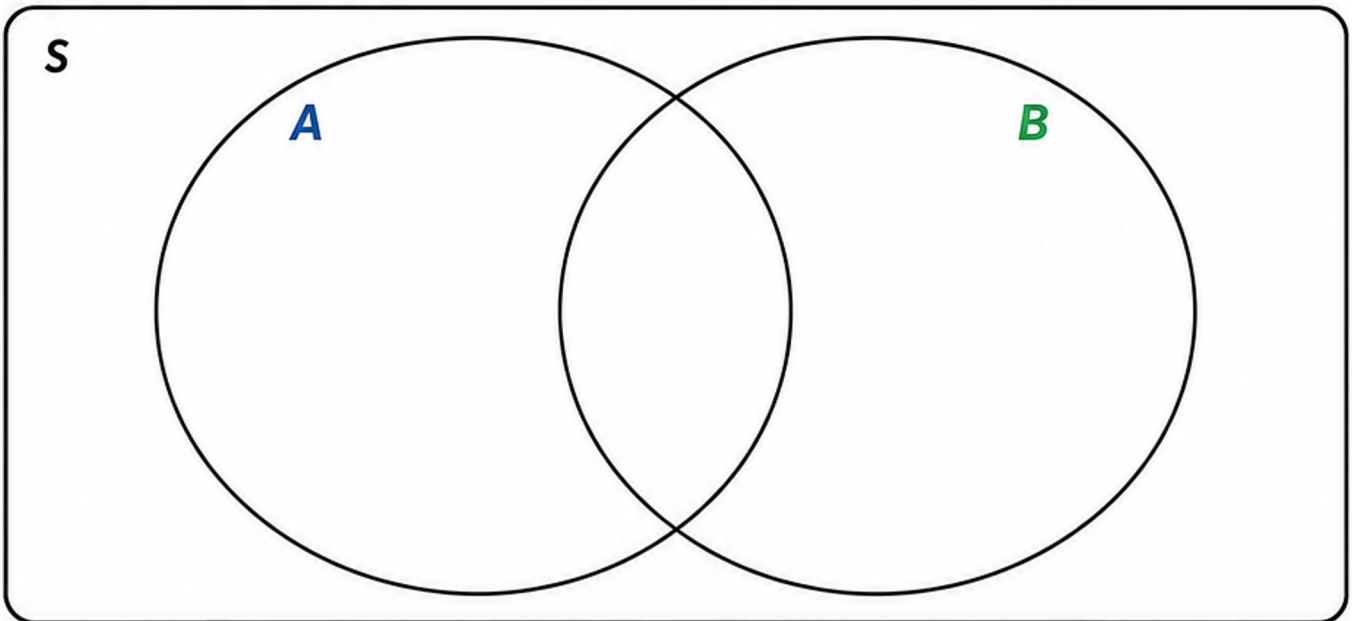
## FORMULA REMINDERS

$$P(A) = \frac{n(A)}{n(S)}$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A^c) = 1 - P(A)$$

## 1 VENN DIAGRAM



## 2 REGION GUIDE

<b>A only</b>	$n(\text{---}) = \text{---}$ $P(\text{---}) = \text{---}$
<b>B only</b>	$n(\text{---}) = \text{---}$ $P(\text{---}) = \text{---}$
<b><math>A \cap B</math></b>	$n(\text{---}) = \text{---}$ $P(\text{---}) = \text{---}$
<b>Neither A nor B</b> (outside both)	$n(\text{---}) = \text{---}$ $P(\text{---}) = \text{---}$
<b>Total (S)</b>	$n(S) = \text{---}$ $P(S) = \text{---}$

## 3 EXAMPLE / NOTES

## 4 QUICK CHECK



All outcomes are inside S.



Overlap shows  $A \cap B$ .



Regions are disjoint and cover S.



Probabilities add to 1:  
 $P(A) + P(A^c) = 1$