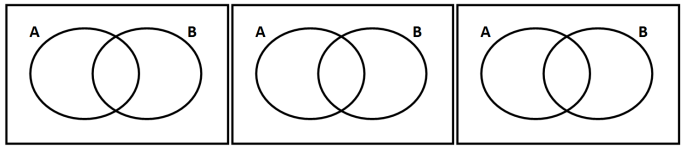
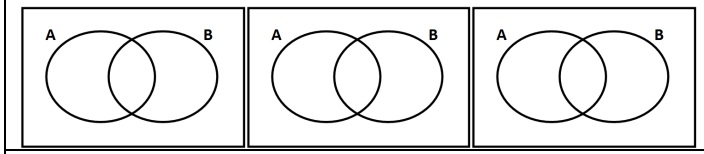
Probability and Set Notation overview to A/A* GCSE standard
Show workings in your book and write the answer on the sheet

Shade Each Venn Diagram below using the information given

$A \cap B'$ $A \cup B$ $A' \cap B'$

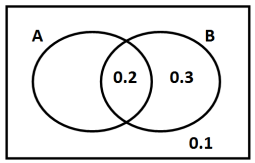


$(A \cap B)'$ $(A' \cap B')'$ $A' \cup B$



From the Venn diagram below find:

(1) $P(A)$ (2) $P(A' \cap B)$ (3) $P(A \cup B)$ (4) $P(A \cap B)'$



Show the following sets in a Venn diagram:

$C = \{1, 3, 4, 6, 8, 10\}$

$D = \{5, 6, 9, 12\}$

$\xi = \{\text{Positive Integers to 14}\}$

State the members of the sets:

(1) $C \cap D$ (2) $C \cup D$ (3) $C' \cap D$ (4) $(C \cup D)'$

John often looks out the window at home throughout the day. When he is at the window the probability it is dark is 0.2. He also looks at his watch when at the window. The probability its PM is 0.3. Find:
(a) The probability he looks out the window and its light and past midday. (b) The probability that if he looks out the window three times in a day and its light on all 3 occasions.

There are 80 nuts and bolts in an unmarked box. Some information is shown below about them:

	Black	Silver	Chrome	
Nuts		11		52
Bolts			12	
	35		25	

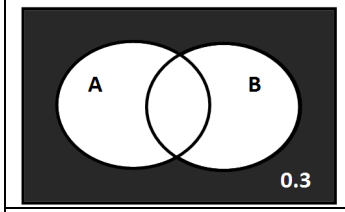
(a) Complete the table
(b) Find the probability that if one item is taken at random it's a bolt
(c) Find the probability of pulling 3 bolts out in a row if they are thrown back in each time.
(d) If 800 items were draw out (and replaced each time) how many would you expect to be chrome nuts?
(e) Find the probability of not getting a Chrome bolt if only one item is taken out.

The probability of a football team's game being called off is 0.01.
What is the probability the game will go ahead?

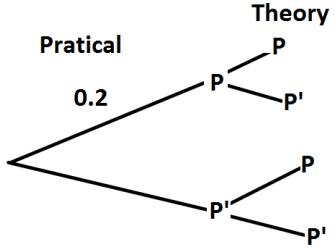
Bag A contains 10 black balls. Bag B contains 5 black balls.
5 green balls are then placed in bag A and 10 green balls are placed in bag B
Mike takes one ball from bag A and one ball from bag B.
(a) What is the probability they are both black?
(b) What is the probability one is red?
All of the balls are now placed in one bag together called bag C.
(c) One ball is taken from Bag C and replaced. (a) Find the probability its black. (b) Find the probability is not Green. (d) Two balls are taken and not replaced and the balls taken were both different colours. Mike says the probability of this happening will be 7/12 + 6/12. Explain what is wrong with his statement. (e) Find the probability they were both different colours.
Bonus question:
10 black counters are added to bag C. Draw a Venn diagram with only two circles to shown the information about the items contained in the bag.

The probability of landing on a black segment on a spinner if 0.3. The probability of landing on a yellow segment is 0.2
(a) What is the probability of landing on a black or yellow segment
(b) State why landing on a black and landing on a yellow segment are mutually exclusive.

(a) Use set notation to describe the shading below. (b) Find $P(A \cup B)$



The tree diagram below shows 2 independent events. The first is passing the practical driving test first time. The second event is passing the theory driving test first time. Given the probability of passing both the theory and practical first time is 0.16 (a) complete the tree diagram and explain what P' means.



(b) Find the probability of failing both the first time.
(c) Why is it not conditional probability?

Which is more likely? (You must show full workings)
(1) rolling 3 number 4s on a fair six sided die in a row **or**
(2) flipping 7 heads in a row on a fair standard 10p coin

A survey was carried out amongst 100 students. 42 owned Bipods, 20 owned laptops and 10 owned both. Draw a Venn diagram to show the information.
Find:
(a) What is the probability of one student being chosen owning neither?
(b) What is the probability the student chosen at random owned an Ipod but not laptop?
(c) What is the probability that someone chosen at random didn't own just a laptop? (Be careful here!!)

If a darts player loses his last math the probability he will lose the next is 0.4. If a darts player wins his last match the probability he will lose the next is 0.1
Given he lost his last match, what is the probability he wins the next 2?