Year 9 Summer 2

KEYWORDS:

Independent event	When the outcome of one thing is not affected by the outcome of another thing	**Dependent event**	When the outcome of one thing IS affected by the outcome of a previous thing happening
Probability tree	A tree diagram to show all the outcomes of an event with their probabilities	**Intersection**	The area that includes anything that is in BOTH
		Union	The area that includes anything that is in EITHER or BOTH groups
Frequency tree	A tree diagram showing frequencies	**Compliment**	The area of everything that was not in the original area

Conditional Probability:

P(A | B) ← Read this as "A given B"

Notation

P(A | B) means the probability of A occurring given the fact that B also occurs/has occurred.

P(B | A) means the probability of B occurring given the fact that A also occurs/has occurred.

Dependent/conditional events

Events A and B are **dependent/conditional** if the probability of either event occurring **is affected** by the other event occurring.

$P(A \mid B) \neq P(A)$

$P(B \mid A) \neq P(B)$

Independent events

Events A and B are **independent** if the probability of either event occurring **is not affected** by the other event occurring.

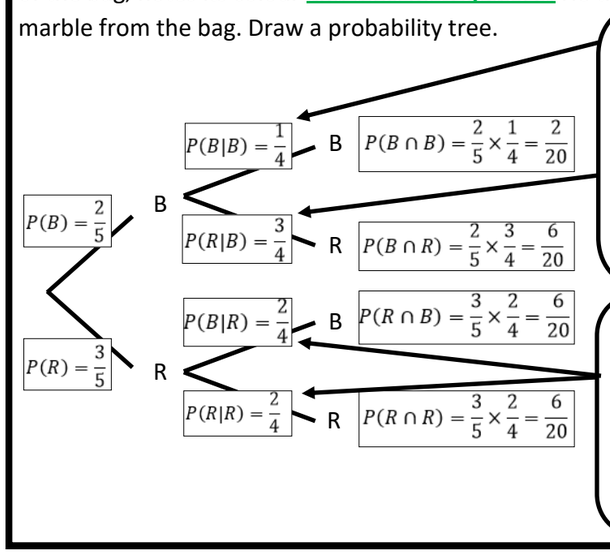
$P(A \mid B) = P(A)$

$P(B \mid A) = P(B)$

Dependent Probability:

Videos 364 & 365

There is a bag filled with **2 blue** and **3 red** marbles. Paul picks a marble out of the bag, notes its colour **and does not replace it.** He then takes another marble from the bag. Draw a probability tree.



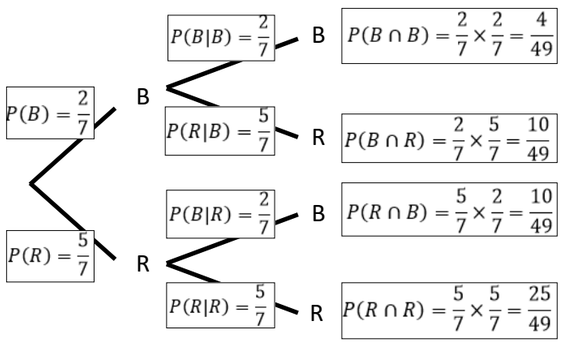
These have changed too. Note the denominator is one smaller on the second pick as there is one less marble.

Note that the numerator is different from above as a different colour was removed.

Independent Probability:

Videos 366 & 367

There is a bag filled with **2 blue** and **5 red** marbles. Paul picks a marble out of the bag, notes its colour **and replace it.** He then takes another marble from the bag. Draw a probability tree.

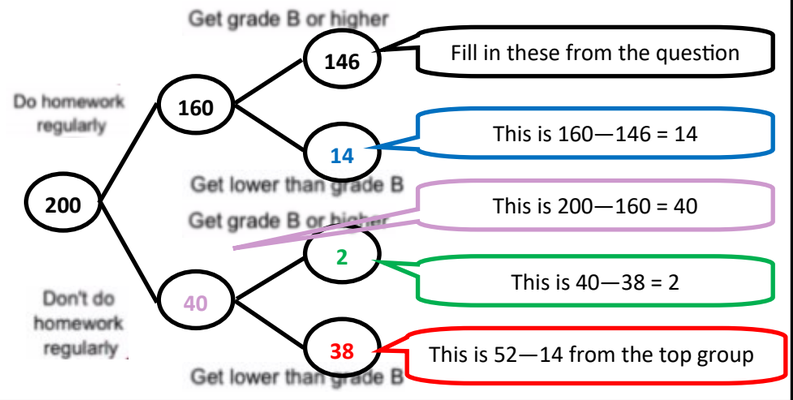


Note that the second set of probabilities are the same as the first draw as the marble is replaced. This is because each pick is independent from the previous pick.

Frequency trees:

Videos 368—369

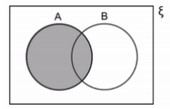
A school carried out a report on their 200 Year 11 students to see the impact doing homework has on the final grade a student achieves in maths. Out of the 160 students that did homework regularly, 146 get a grade B or higher. 52 students get lower than grade B. Complete the tree.



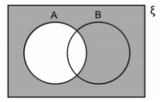
Shading/naming Venn diagrams:

Videos 374—376

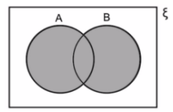
A - Means all the terms in set A



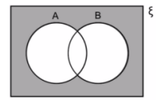
A' - Means all the terms NOT in set A (compliment of A)



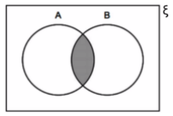
A u B - Means the all the terms in A or B or BOTH (the union)



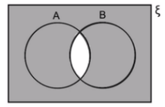
(A u B)' - Means all the terms NOT in A or B or BOTH (the compliment of the union)



A n B - Mean all the terms in A and B (the intersection)

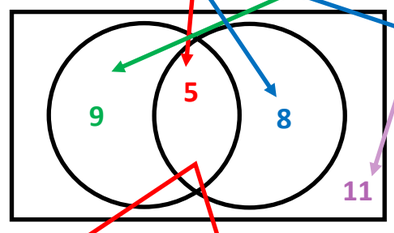


(A n B)' - Means all the terms NOT in A and B



Counting with Venn diagrams:

In a class of pupils, 5 play the flute and piano, 9 play the flute only, 13 play the piano and 11 play neither instrument. Show this information on a Venn diagram.



Notice how the question says 13 play the piano NOT 13 play the piano ONLY. To work out this section: 13 - 5

Be careful with the wording of a question. Always start from the intersect and work out.

Videos 378—380

https://www.hegartymaths.com/

Login: ***School, Name and DOB*** Password: ***Create your own!***