Global Teacher Empowerment Network GTEN
TREES, TABLES and VENN DIAGRAMS

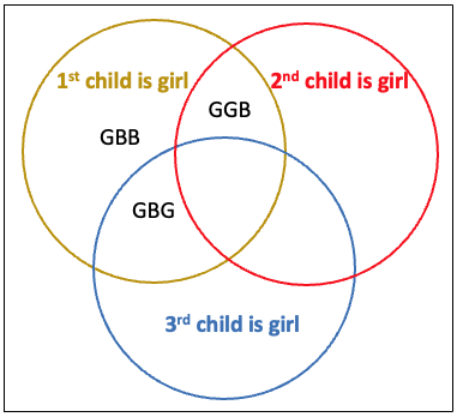
Saturday 22 March 2023 18:00 in South Africa, 16:00 in UK
Join Zoom Meeting https://zoom.us/j/96000484207

RESOURCES REQUIRED: *This Worksheet to fill in during the workshop*, Paper, Pencil, calculator.

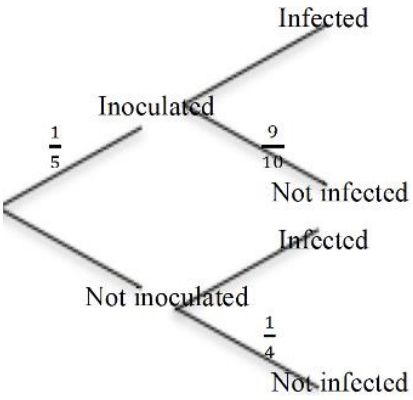
1. **AT LEAST ONE**

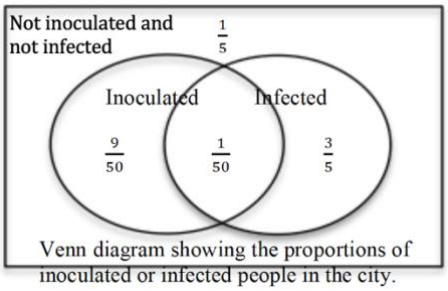
Family size	All possible outcomes for boys and girls in family in age order
1 child	B or G
2 children	BB, BG, GB or GG
3 children	
4 children	

Complete the lists in the table of all possible outcomes for boys and girls in families of 3 children and 4-children.
Fill in the labels that describe the families for the 5 regions in the Venn diagram that are unlabeled.
Complete the following:
The probability of no girls =
The probability of at least one girl =



2. **EPIDEMIC**





Venn diagram showing the proportions of inoculated or infected people in the city.

	Inoculated	Not inoculated	Totals
Infected			
Not infected			
Totals	20%	80%	100%

Fill in all the probabilities on the tree diagram.
Use this information to fill in the contingency table.
Compare the 3 diagrams.
Work out the probabilities of the 4 outcomes?

3. SAME SWEETS

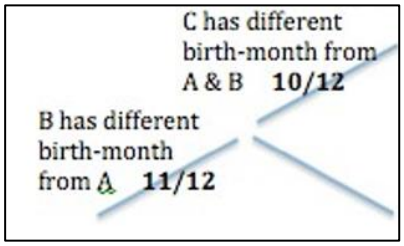
WW	OW	YW	GW	RW
W0	OO	YO	GO	RO
				RY
				RG
				RR

Find all the possible combinations of colours when you pick 2 sweets at random from different bags. Work out the probabilities that the 2 sweets chosen are the same colour. Fill in the table below. Then work out the probabilities for 3, 4, 5 and 6 sweets that the 2 sweets chosen are the same colour.

In the last two columns one probability is 1 minus the other probability because one is the probability that an event happens and the other is the probability of that event not happening.	Number of sweets you pick out without looking	**Probability that no two sweets picked are the same colour**	Probability that, of the sweets picked, there are two sweets of the same colour
	2		
	3		
	4		
	5	$\frac{4}{5}\times\frac{3}{5}\times\frac{2}{5}\times\frac{1}{5}=0.00384$	0.9616
	6	0	1

4. SAME BIRTH MONTH

Pr(A, B and C are born in different months) =



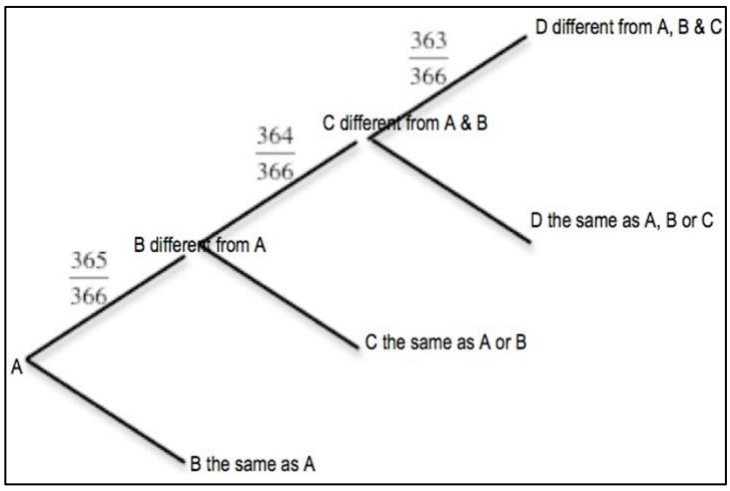
The probability that two of A, B and C were born in the same month =

5. SAME BIRTDAY

Pr(probability A, B, C and D all have different birthdays) =

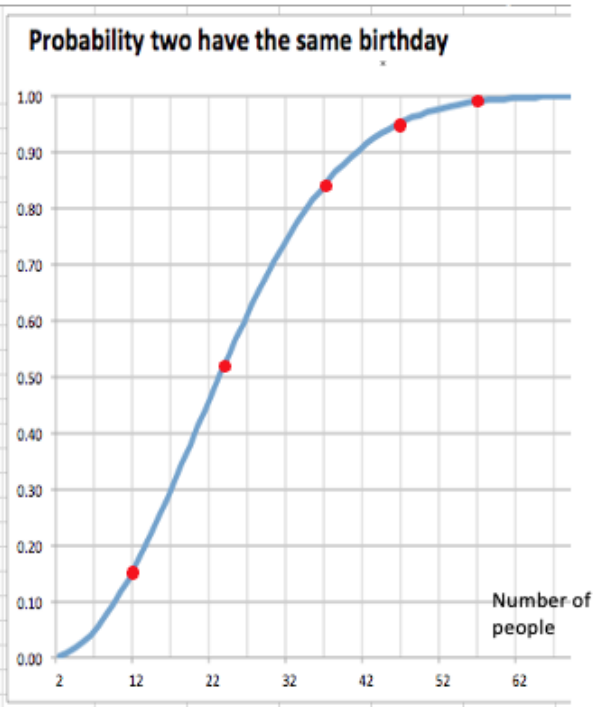
The probability that 2 in the group of 4 have the same birthday =

For 23 people, the probability that all have different birthdays =



The probability that 2 in the group of 23 have the same birthday =

Probability all have different birthdays	Number of people in group	Probability 2 have the same birthday
1.00	2	0.00
0.99	3	0.01
0.98	4	0.02
0.97	5	0.03
0.96	6	0.04
0.94	7	0.06
0.93	8	0.07
0.91	9	0.09
0.88	10	0.12
0.86	11	0.14
0.83	12	0.17
0.81	13	0.19
0.78	14	0.22
0.75	15	0.25
0.72	16	0.28
0.69	17	0.31
0.65	18	0.35
0.62	19	0.38
0.59	20	0.41
0.56	21	0.44
0.53	22	0.47
0.49	23	0.51
0.46	24	0.54
0.43	25	0.57
0.40	26	0.60
0.37	27	0.63
0.35	28	0.65
0.32	29	0.68
0.29	30	0.71



5. **SAME BIRTHDAY**
Write down the readings from the graph for the marked points.

AT LEAST ONE https://aiminghigh.aimssec.ac.za/at-least-one/

SAME SWEETS https://aiminghigh.aimssec.ac.za/same-sweets/

SAME BIRTH MONTH https://aiminghigh.aimssec.ac.za/same-birth-month/

SAME BIRTHDAY https://aiminghigh.aimssec.ac.za/same-birthday/

EPIDEMIC https://aiminghigh.aimssec.ac.za/epidemic/