The Maths of Voting Masterclass Worksheet 2 – Alternative Vote (AV)

Instead of just putting down their favourite pizzas (or their first preferences), each family member has ranked their preferences, based on the four toppings available. You can see these rankings below.

Start by determining what is the majority in this example.

Then consider only the 1st preferences row. Do any of the toppings obtain a majority of votes? If yes, that is the winner. If no pizza topping obtains a majority, you need to eliminate the topping with the least number of votes and redistribute their votes. You keep doing this until one of the pizzas has a majority.

Which pizza topping is the winner?

	A	B	C	D	E	F	G	H	I	J	K	L
1st	🧀	🧅	🧀	🍕	🍕	🍍	🧀	🍕	🍍	🍍	🧅	🍍
2nd	🧅	🧀	🍕	🧅	🧀	🍕	🧅	🧀	🍕	🧀	🧀	🍕
3rd	🍕	🍍	🍍	🧀	🍍	🧅	🍍	🍍	🧅	🍕	🍕	🧅
4th	🍍	🍕	🧅	🍍	🧅	🧀	🍕	🧅	🧀	🧅	🍍	🧀

Majority:				
Votes	🧀	🍍	🧅	🍕
1st round				
2nd round				
3rd round				
Winner:				

Extension questions

Consider the table below, which shows voters' preferences in a recent election. Not everyone chose all four preferences. Use Alternative Vote to determine the winner.

L = Labour, C = Conservative, LD = Lib Dems, G = Green, R = Reform

	A	B	C	D	E	F	G	H	I	J	K	L
1st	L	L	L	L	C	C	C	LD	LD	R	R	G
2nd	G	LD	LD	LD	R	R	LD		G	C	C	LD
3rd	LD	R	G	G	LD	LD	G		L		LD	
4th		G	R		L	L	L					

Votes	Labour	Conservative	Lib Dem	Green	Reform	Majority needed
1st round						
2nd round						
3rd round						
4th round						
Winner:						