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ECE 202 E7

41262

this excel doc calculates the probability of getting a certain number from a 2 dice roll with either 4 or 6 sides

States of 1 die	Probability P(n)
1	=IF(A7="","",1/$B$15,"")
=IF(A7="","",IF($B$15>=A7+1,A7+1,""))	=IF(A8="","",1/$B$15,"")
=IF(A8="","",IF($B$15>=A8+1,A8+1,""))	=IF(A9="","",1/$B$15,"")
=IF(A9="","",IF($B$15>=A9+1,A9+1,""))	=IF(A10="","",1/$B$15,"")
=IF(A10="","",IF($B$15>=A10+1,A10+1,""))	=IF(A11="","",1/$B$15,"")
=IF(A11="","",IF($B$15>=A11+1,A11+1,""))	=IF(A12="","",1/$B$15,"")

Number of dice (N)	2	USER INPUT = BLUE
Number of sides (S)	6	
[predict] Number of microstates (n)	=B15^B14	OUTPUT = ORANGE
[predict] Number of macrostates	=B14*(B15-1)+1	

macrostate n (total # on both dice)	# of microstates	Probability P(n)
=B14	=IF(COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A20)=0,"",COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A20))	=IF(B20=>"",B20/$B$16,"")
=IF(A20="","",IF($B$14*$B$15>=A20+1,A20+1,""))	=IF(COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A21)=0,"",COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A21))	=IF(B21=>"",B21/$B$16,"")
=IF(A21="","",IF($B$14*$B$15>=A21+1,A21+1,""))	=IF(COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A22)=0,"",COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A22))	=IF(B22=>"",B22/$B$16,"")
=IF(A22="","",IF($B$14*$B$15>=A22+1,A22+1,""))	=IF(COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A23)=0,"",COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A23))	=IF(B23=>"",B23/$B$16,"")
=IF(A23="","",IF($B$14*$B$15>=A23+1,A23+1,""))	=IF(COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A24)=0,"",COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A24))	=IF(B24=>"",B24/$B$16,"")
=IF(A24="","",IF($B$14*$B$15>=A24+1,A24+1,""))	=IF(COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A25)=0,"",COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A25))	=IF(B25=>"",B25/$B$16,"")
=IF(A25="","",IF($B$14*$B$15>=A25+1,A25+1,""))	=IF(COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A26)=0,"",COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A26))	=IF(B26=>"",B26/$B$16,"")
=IF(A26="","",IF($B$14*$B$15>=A26+1,A26+1,""))	=IF(COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A27)=0,"",COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A27))	=IF(B27=>"",B27/$B$16,"")
=IF(A27="","",IF($B$14*$B$15>=A27+1,A27+1,""))	=IF(COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A28)=0,"",COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A28))	=IF(B28=>"",B28/$B$16,"")
=IF(A28="","",IF($B$14*$B$15>=A28+1,A28+1,""))	=IF(COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A29)=0,"",COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A29))	=IF(B29=>"",B29/$B$16,"")
=IF(A29="","",IF($B$14*$B$15>=A29+1,A29+1,""))	=IF(COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A30)=0,"",COUNTIF(INDIRECT("'&I11-$B$15)):INDIRECT(CHAR(CODE("')+$B$15-1)&"10"),A30))	=IF(B30=>"",B30/$B$16,"")

CHECK total # of macrostates	CHECK total # of microstates	CHECK total probability
=B14-B14-COUNT(A20:A30)-$I7-COUNT(A20:A30)-$I7)	=IF($I5=$I6,SUM($I20:$I30)-$I6,$I5-SUM($I20:$I26)-$I6)	=SUM('20:'30)
should be zero	should be zero	should be 100%

Most likely macrostate	=IF($I5=$I6,MOD($I5,$I10),MOD($I5+1,$I0))

									Sum of both dice							
					Die 1	=IF(H6<>"",IF($B$15>=H6+1,H6+1,""))	=IF($H5<>"",IF($I11<>"",$H5+$I11,""),"")	=IF($H5<>"",IF($J11<>"",$H5+$J11,""),"")	=IF($H5<>"",IF($K11<>"",$H5+$K11,""),"")	=IF($H5<>"",IF($L11<>"",$H5+$L11,""),"")	=IF($H5<>"",IF($M11<>"",$H5+$M11,""),"")	=IF($H5<>"",IF($N11<>"",$H5+$N11,""),"")				
						=IF(H7<>"",IF($B$15>=H7+1,H7+1,""))	=IF($H6<>"",IF($I11<>"",$H6+$I11,""),"")	=IF($H6<>"",IF($J11<>"",$H6+$J11,""),"")	=IF($H6<>"",IF($K11<>"",$H6+$K11,""),"")	=IF($H6<>"",IF($L11<>"",$H6+$L11,""),"")	=IF($H6<>"",IF($M11<>"",$H6+$M11,""),"")	=IF($H6<>"",IF($N11<>"",$H6+$N11,""),"")				
						=IF(H8<>"",IF($B$15>=H8+1,H8+1,""))	=IF($H7<>"",IF($I11<>"",$H7+$I11,""),"")	=IF($H7<>"",IF($J11<>"",$H7+$J11,""),"")	=IF($H7<>"",IF($K11<>"",$H7+$K11,""),"")	=IF($H7<>"",IF($L11<>"",$H7+$L11,""),"")	=IF($H7<>"",IF($M11<>"",$H7+$M11,""),"")	=IF($H7<>"",IF($N11<>"",$H7+$N11,""),"")				
						=IF(H9<>"",IF($B$15>=H9+1,H9+1,""))	=IF($H8<>"",IF($I11<>"",$H8+$I11,""),"")	=IF($H8<>"",IF($J11<>"",$H8+$J11,""),"")	=IF($H8<>"",IF($K11<>"",$H8+$K11,""),"")	=IF($H8<>"",IF($L11<>"",$H8+$L11,""),"")	=IF($H8<>"",IF($M11<>"",$H8+$M11,""),"")	=IF($H8<>"",IF($N11<>"",$H8+$N11,""),"")				
						=IF(H10<>"",IF($B$15>=H10+1,H10+1,""))	=IF($H9<>"",IF($I11<>"",$H9+$I11,""),"")	=IF($H9<>"",IF($J11<>"",$H9+$J11,""),"")	=IF($H9<>"",IF($K11<>"",$H9+$K11,""),"")	=IF($H9<>"",IF($L11<>"",$H9+$L11,""),"")	=IF($H9<>"",IF($M11<>"",$H9+$M11,""),"")	=IF($H9<>"",IF($N11<>"",$H9+$N11,""),"")				
						1	=IF($H10<>"",IF($I11<>"",$H10+$I11,""),"")	=IF($H10<>"",IF($J11<>"",$H10+$J11,""),"")	=IF($H10<>"",IF($K11<>"",$H10+$K11,""),"")	=IF($H10<>"",IF($L11<>"",$H10+$L11,""),"")	=IF($H10<>"",IF($M11<>"",$H10+$M11,""),"")	=IF($H10<>"",IF($N11<>"",$H10+$N11,""),"")				
							1	=IF(I11<>"",IF($B$15>=I11+1,I11+1,""))	=IF(J11<>"",IF($B$15>=J11+1,J11+1,""))	=IF(K11<>"",IF($B$15>=K11+1,K11+1,""))	=IF(L11<>"",IF($B$15>=L11+1,L11+1,""))	=IF(M11<>"",IF($B$15>=M11+1,M11+1,""))				
							Die 2									