

Know Your Place!



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MathsJam Gathering
11th November 2023



Some Rules

- A bell may only move up one place, down one place or maintain its place
- Every bell must ring in the row before any of them can ring again
- There must be no repetition of a row before returning to the starting position (rounds)
- An extent consists of $n!$ changes and $n! + 1$ rows

1 2 3 4 5 6 – Row
X X X – Change
2 1 4 3 6 5

How it Works

A B C

1 2 3

2 1 3

Permutations

(A B)

Place Notation

3

How it Works

A B C

1 2 3

2 1 3

2 3 1

Permutations

(A B)

(B C)

Place Notation

3

1

How it Works

A B C

1 2 3

2 1 3

2 3 1

3 2 1

Permutations

(A B)

(B C)

(A B)

Place Notation

3

1

3

How it Works

A B C

1 2 3

2 1 3

2 3 1

3 2 1

3 1 2

1 3 2

1 2 3

Permutations

(A B)

(B C)

(A B)

(B C)

(A B)

(B C)

Place Notation

3

1

3

1

3

1

How it Works

A B C

1 2 3

2 1 3

2 3 1

3 2 1

3 1 2

1 3 2

1 2 3

Permutations

(A B)

(B C)

(A B)

(B C)

(A B)

(B C)

Place Notation

3

1

3

1

3

1

Plain Hunt Singles

1 2 3

2 1 3

2 3 1

3 2 1

3 1 2

1 3 2

1 2 3

Extensions

Permutations	Plain Hunt Minimus	Place Notation
(AB)(CD)	1 2 3 4	X
(BC)	2 1 4 3	14
(AB)(CD)	2 4 1 3	X
(BC)	4 2 3 1	14
(AB)(CD)	4 3 2 1	X
(BC)	3 4 1 2	14
(AB)(CD)	3 1 4 2	X
(BC)	1 3 2 4	14
	1 2 3 4	

Extensions

Permutations	Plain	Bob	Minimus	Place	Notation
(AB)(CD)	1	2	3	4	X
(BC)	2	1	4	3	14
(AB)(CD)	2	4	1	3	X
(BC)	4	2	3	1	14
(AB)(CD)	4	3	2	1	X
(BC)	3	4	1	2	14
(AB)(CD)	3	1	4	2	X
(CD)	1	3	2	4	12
	1	3	2	4	

Extensions

Permutations	Plain	Bob	Minimus	Place	Notation
(AB)(CD)	1	2	3	4	X
(BC)	2	1	4	3	14
(AB)(CD)	2	4	1	3	X
(BC)	4	2	3	1	14
(AB)(CD)	4	3	2	1	X
(BC)	3	4	1	2	14
(AB)(CD)	3	1	4	2	X
(CD)	1	3	2	4	12
	1	3	2	4	

Extensions

Permutations	Plain	Bob	Minimus	Place Notation	
(AB)(CD)	1	2	3	4	– 14 – 14
(BC)	2	1	4	3	le 12
(AB)(CD)	2	4	1	3	
(BC)	4	2	3	1	
(AB)(CD)	4	3	2	1	
(BC)	3	4	1	2	
(AB)(CD)	3	1	4	2	
(CD)	1	3	2	4	
	1	3	2	4	

Extensions

Plain Bob Doubles – Lead Ends

1 3 5 2 4

1 5 4 3 2

1 4 2 5 3

1 2 3 4 5

40 Rows

Extensions

Plain Bob Doubles – Lead Ends

1 3 5 2 4

1 5 4 3 2

1 4 2 5 3

1 2 3 4 5

40 Rows

Bob

1 2 3 5 4

1 5 2 4 3

Extensions

Plain Bob Doubles – Lead Ends

1 3 5 2 4

1 5 4 3 2

1 4 2 5 3

1 2 3 4 5

40 Rows

Bob

1 2 3 5 4

1 5 2 4 3

Single

1 3 2 4 5

1 4 3 5 2

Time Scales

- An extent on 7 bells would take about 3 hours

Time Scales

- An extent on 7 bells would take about 3 hours
- An extent on 8 bells would take about 1 day

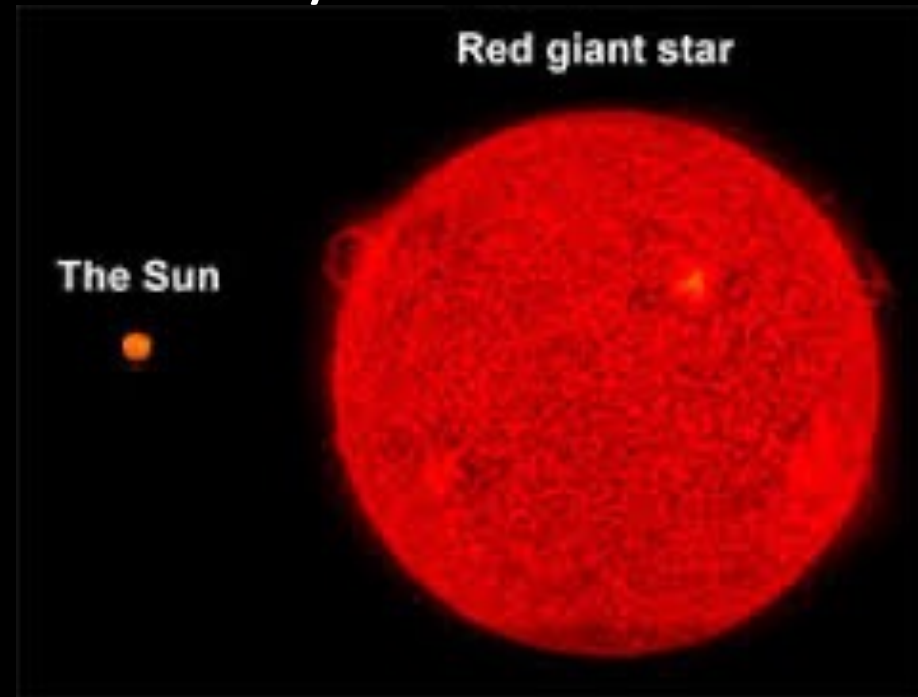
Time Scales

- An extent on 7 bells would take about 3 hours
- An extent on 8 bells would take about 1 day
- An extent on 19 bells would take about 7.7 billion years

Time Scales

- An extent on 7 bells would take about 3 hours
- An extent on 8 bells would take about 1 day
- An extent on 19 bells would take

In about 7.5 billion years

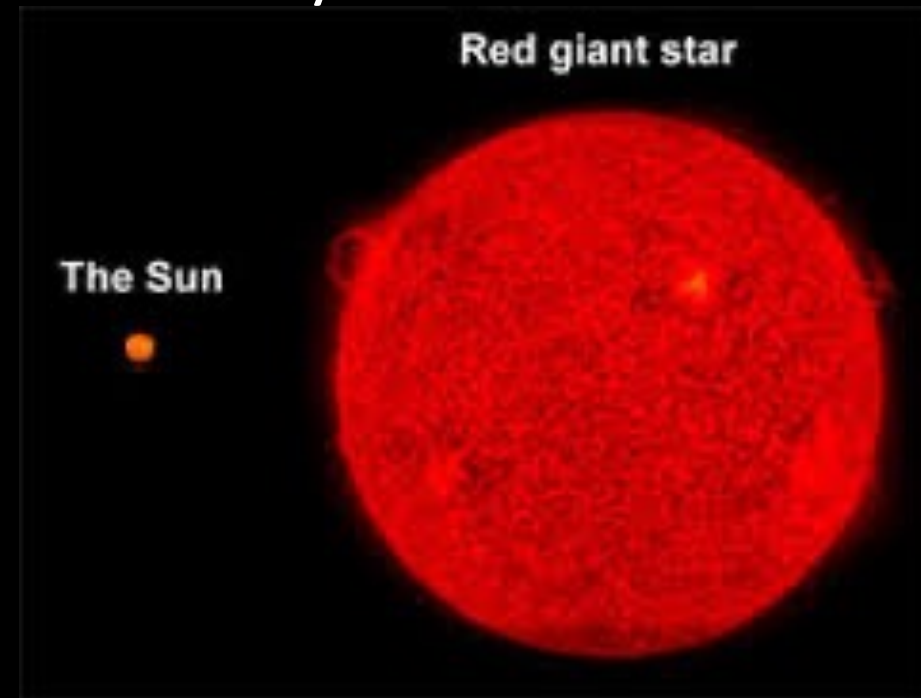


Time Scales

- An extent on 7 bells would take about 3 hours
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- An extent on 19 bells would take

In about 7.5 billion years

Bye bye Earth!



That's All!



<https://bit.ly/PlaceNotation>