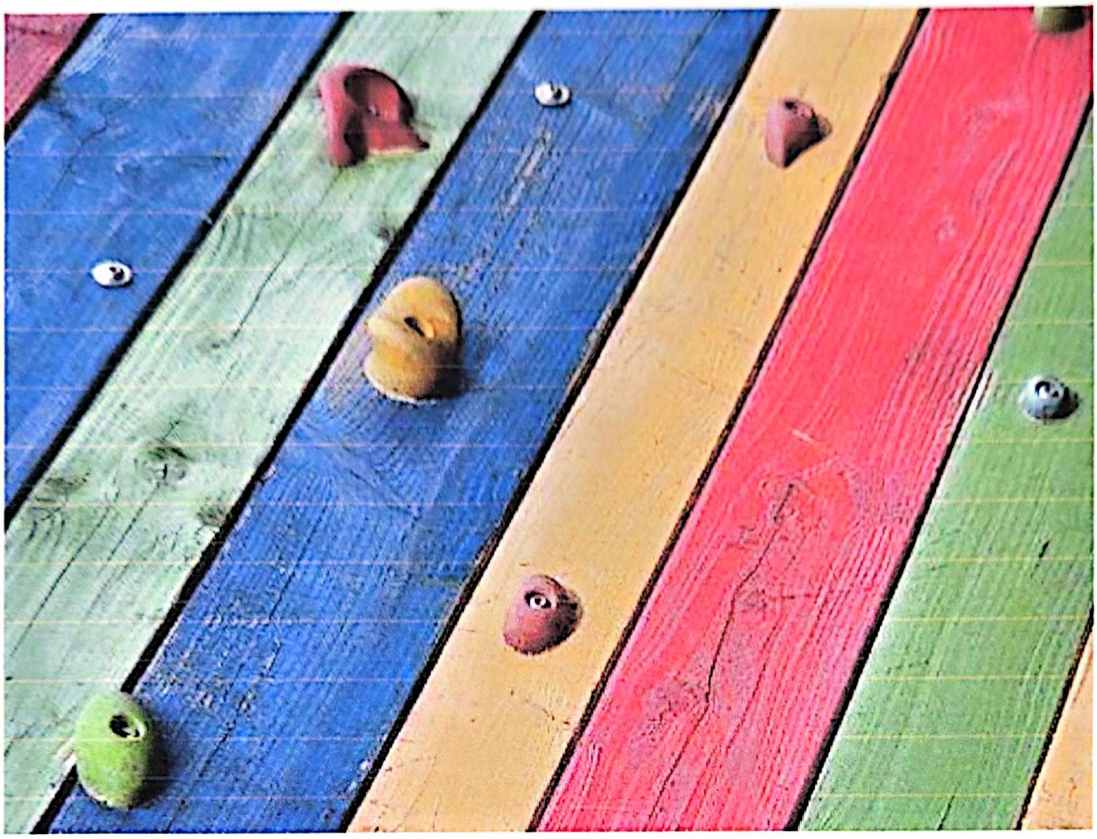
Name : SITHURI Class: 5D

School: PRISTINE PRIVATE SCHOOL, DUBAI

Climbing conundrum

There are three climbing walls in the playground at Winterbrook School. Five children are having a competition to see how far they can climb up each one.

Image



They have decided that whoever climbs the furthest on each wall should get a score of 1, then the person who comes second should get a score of 2, and so on. The three scores for each child will then be multiplied together, and the person with the lowest score will win.

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Here are their scores for the first two climbing walls:

	Wall 1	Wall 2	Multiplied scores	Added Score
Anu	3	4	12	7
Bryn	1	5	5	6
Clare	2	3	6	5 — 1st Position
Duncan	4	1	4 — 1st Position	5 — 1st Position
Elise	5	2	10	7

At the moment, who is in the lead? Duncan.

If the scores were added together, rather than multiplied, would this change the order? How?

Clare & Duncan would tie for 1st Position

On the third wall, after the first four children have climbed, the scores look like this:

	Wall 1	Wall 2	Wall 3	Multiplied scores
Anu	3	4	1	12
Bryn	1	5	3	15
Clare	2	3	2	12
Duncan	4	1	4	16
Elise	5	2	5	50

Have a go at calculating the multiplied scores at this point in the competition. (Remember, these scores will only be accurate if Elise comes fifth on Wall 3, because if she overtakes anybody else then their score for Wall 3 will change.)

Elise starts her climb. Anu says to the others, "I'm joint first out of the four of us, so if Elise overtakes me then I'll still finish in the top three."

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if Elise overtakes Anu

	Wall 1	Wall 2	Wall 3	Multiplied scores
Anu	3	4	~~1~~ 2	24 — 4th
Bryn	1	5	~~3~~ 4	20 → 3rd
Clare	2	3	~~2~~ 3	18 — 2nd
Duncan	4	1	~~4~~ 5	20 — 3rd
Elise	5	2	1	10 — 1st

Do you think that Anu is probably right? Can you explain your thinking?

No, Anu Did not finish in top three
She is at the Last Position

Have a go at working out what everybody's scores will be if Elise climbs the highest on Wall 3. Compare this to what would happen if Elise came fifth on Wall 3. (You might also like to work out what would happen if Elise came second, third or fourth, to compare all the possible outcomes.)

How would the outcome have been different if the scoring is reversed (5 for the best, 1 for the worst)?

	Wall 1	Wall 2	Wall 3	Multiplied scores
Anu	~~3~~ 3	~~4~~ 2	~~1~~ 5	30
Bryn	~~1~~ 5	~~5~~ 1	~~3~~ 3	15 — Same Score
Clare	~~2~~ 4	~~3~~ 3	~~2~~ 4	48 — 1st
Duncan	~~4~~ 2	~~1~~ 5	~~4~~ 2	20
Elise	~~5~~ 1	~~2~~ 4	~~5~~ 1	4 — Last.

If Scoring is reversed Clare would be at 1st Position [Assuming Elise comes 5th in Wall 3]

How would the outcome have been different if the scores were added rather than multiplied?

	Wall 1	Wall 2	Wall 3	Added scores
Anu	3	4	1	8 — 1st Position
Bryn	1	5	3	9
Clare	2	3	2	7
Duncan	4	1	4	9
Elise	5	2	5	12

Anu would get the best score that is 8.
Now numbers are smaller and easier to handle.

Which scoring system do you think is fairest? Why?

The Adding System.

- While calculating scores, multiplication has much greater impact than addition as it amplifies differences significantly.
- Even small variation in Multipliers can drastically shift the Rankings.