



In the 2020 Olympics, sport climbing was introduced for the first time. There were three different climbing disciplines combined under one medal: speed climbing, bouldering and lead climbing.

For each of these three disciplines, the eight athletes in the final were given a score from 1 to 8, with the athlete who performed the best getting a score of 1. The three scores were then multiplied together at the end. For example, if a climber came 2nd in lead climbing, 3rd in bouldering and 8th in speed climbing, their score would be $2 \times 3 \times 8 = 48$. The person with the lowest score overall was awarded the gold medal.

In the men's final, just before Jakob Schubert climbed the final lead climb of the competition, this is what the scoreboard looked like:

	Speed climbing	Bouldering	Lead climbing
Alberto Lopez	1	7	3
Adam Ondra	4	6	1
Nathaniel Coleman	6	1	4
Tomoa Narasaki	2	3	5
Jakob Schubert	7	5	
Mickaël Mawem	3	2	6
Colin Duffy	5	4	2
Bassa Mawem	8	8	7

(Bassa Mawem was injured and did not compete.)

Just before Schubert's climb, the commentators wanted to work out who might get medals, depending on how well Schubert climbed.

Imagine you are a commentator for this competition. Create a table of all the possible final scores, depending on the score Schubert gets for his final climb.

Does anything surprise you about your table?

Extension:

How else could the scoring have been done? Think of a scoring method of your own, and then investigate how this method would change the possible final scores.

What are the advantages and disadvantages of your method? What are the advantages and disadvantages of the method that was actually used in the 2020 Olympics?

Speed climbing is very different to the other two types of climbing, so athletes who are the best in the world at speed climbing might not necessarily do very well at bouldering or lead climbing. But the organisers wanted to make sure that the best speed climbers in the world would still have a good chance of getting a medal. How might this have affected their choice of scoring method?