7-9: REMOTE MATHS

EDITION 16

PROBABILITY AND STATISTICS - INVESTIGATIONS

Mathematical language: mean, median, mode, range, variance, consistency, fastest, slowest, outlier, percentage, critical thinking, measure.

INVESTIGATION 1

CUP STACKING CHAMPION

Adapted from Think Square

Four people took part in a cup-stacking championship. At the end of the tournament a massive argument broke out among the competitors as to who should be awarded as best cup-stacker.

- Amanda shouted, 'I was the most consistent.'
- Sumitra screamed, 'I got the fastest time overall.'
- Dale yelled, 'My time improved by the most.'
- Andrew argued, 'I was fastest in Trials 2 and 4'

	Time (seconds)				
	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
Amanda	33.1	33.1	31.7	31.7	29.6
Sumitra	20.9	27.1	22.2	30.5	19.4
Dale	45.2	35.6	20.3	32.6	29.1
Andrew	35.2	26.3	32.5	23.5	29.5

Your task:

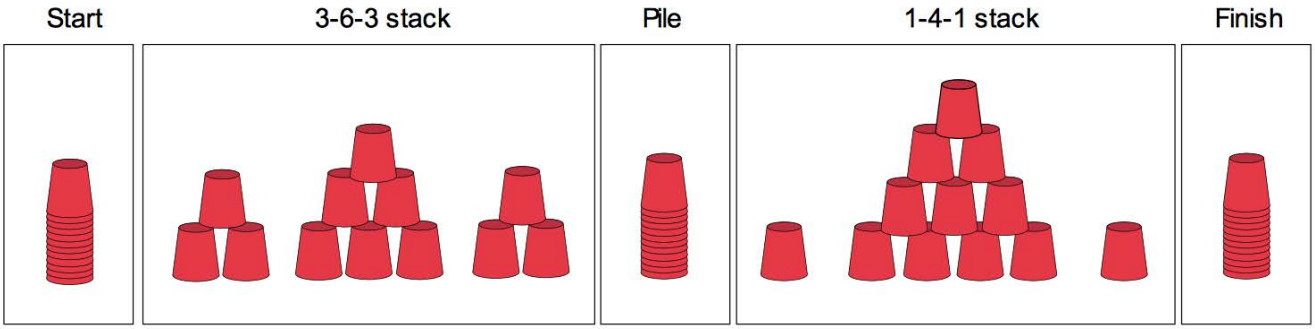
- Provide one reason why each competitor is actually the worst cup stacker!
- Use a range of statistical measures to determine who is the best cup-stacker.

- **Enabling prompt:** What other things might you consider to determine who is best and how could you measure them?
- **Extending prompt:** What measure(s) do you give most weight to and why? Would this change if the championships were 5 separate events instead of five trials on the one day?

INVESTIGATION 2

I AM THE GREATEST! *Adapted from Think Square*

- The world cup stacking championships are on and you've decided to enter. To do so you will need 12 plastic cups (or toilet rolls if you don't have cups!)
- Beginning and ending with all 12 cups in a pile you must create the towers as shown in the diagram below. Make sure you re-stack cups in a pile between making each of your towers. You can watch a video of this task being completed at https://thinksquare.com.au/cupstacking.



Hands-on task

- Without any practise or preparation, time how long it takes you to complete this task. Record your time for five separate attempts and then challenge at least 2 friends, family members or your entire class to compete against you.
- Record all your times together on a shared spreadsheet or table.

Critical thinking task

- Using the data from your spreadsheet/table find at least one statistical measure to prove that you are the 'best' cup stacker. Your goal is to convince your classmates/family/teacher that you are the best so the more measures you find the better.
- To strengthen your argument, find one statistical measure which points out how bad your competitors are. For example, in the first investigation a competitor might point out that Sumitra barely improved at all since her final time (19.4) was only 1.5 seconds faster than her time at the beginning (20.9)
- If you were an impartial judge who would you give the award for best cup stacker to and why? Give at least three reasons.

Look out for more tasks next week!