Task: # He Whakamāramatanga Pāngarau

Approach:	One to one
Focus:	Demonstrating understanding of number operations
Resources:	Ngā kāri e 7, kia 25 ngā mataono rite
Kupu:	

Questions / instructions:

E whā aku pātai pāngarau hei whakamārama māu.

Whakatenatena i te ākonga ki te whakamahi i ngā mataono rite, ki te whakamārama hoki i ana whakautu.

Whakaaturia ngā kāri 1a me 1b. 4 + 2 2 + 4

1. He ōrite te otinga o te 2 tāpiri i te 4, me te 4 tāpiri i te 2? Whakamāramatia mai. Whakamahia ngā mataono hei āwhina i tō whakamārama.

		% response
PĀTAI ĀWHINA: *Whakamāramatia mai, he aha i pēnā ai tō whakautu? Whakamāramatia mai ō whakaaro.*	same	100
	any other response	0
Strategy:	only 6 cubes, conceptual *didn't see the need to rearrange; argues that the number of blocks doesn't change however they are arranged*	13
	only 6 cubes *rearranges order and argues that order doesn't affect number of blocks*	18
	only 6 cubes *(rearranges order and focusses on answer (counts 6 each time))*	47
	12 cubes *(argues that they are mirror images (switched around), so are the same.)*	16
	12 cubes and counts 6 each time	7
	doesn't use cubes at all *argues clearly that if you had piles of 2 and 4 cubes the total would stay the same however the piles are organised.*	0
	doesn't use cubes, physically or conceptually *says 2 + 4 = 6 and 4 + 2 = 6*	0

Whakaaturia ngā kāri 2a me 2b.

2. He ōrite te otinga o te 4 tangohia te 2, me te 2 tangohia te 4? Whakamāramatia mai. Whakamahia ngā mataono hei āwhina i tō whakamārama. 4 – 2 2 – 4

		% response
PĀTAI ĀWHINA: *Whakamāramatia mai, he aha i pēnā ai tō whakautu? Whakamāramatia mai ō whakaaro.*	different	80
	any other response	20
Strategy:	uses 4 cubes *(explains, without physically removing cubes; that you can take 2 from 4 but you can't take 4 from 2)*	9
	uses 4 cubes *(shows that you have 2 left when you take 2 from 4, but that you cannot take 4 from 2 (or -2))*	58
	uses 6 cubes *(sets out piles of 4 and 2; takes 2 away from pile of 4, leaving two; tries to take 4 away from pile of 2, can't do it (or -2))*	7
	doesn't use cubes at all *says that 4 - 2 is 2, while 2 - 4 is 2 (same)*	4
	doesn't use cubes at all *says that 4 - 2 is 2, but 2 - 4 you can't do (or -2)*	2

Whakaaturia ngā kāri 3a me 3b.

3. He ōrite te otinga o te 4 whakareatia ki te 3, me te 3 whakareatia ki te 4? Whakamāramatia mai. Whakamahia ngā mataono hei āwhina i tō whakamārama. 3 × 4 4 × 3

		% response
PĀTAI ĀWHINA: *Whakamāramatia mai, he aha i pēnā ai tō whakautu? Whakamāramatia mai ō whakaaro.*	same	95
Strategy:	uses 12 cubes *Sets out 3 groups of 4 cubes; says that the same thing can be seen two ways: as 3 groups of 4 or as 4 groups of 3; therefore the same.*	31
	uses 12 cubes *sets out 3 groups of 4, rearranged into 4 groups of 3; says must be the same*	36
	uses 12 cubes *sets out 3 groups of 4 cubes; counts12; rearranges into 4 groups of 3 cubes, counts 12*	7
	uses 24 cubes *sets out 3 groups of 4 cubes; sets out another 12, in 4 groups of 3 cubes; shows number of blocks are the same*	4
	uses 24 cubes *sets out 3 groups of 4 cubes, counts 12; sets out another 12, in 4 groups of 3 cubes, counts 12*	9
	doesn't use cubes *says 3 x 4 is 12; 4 x 3 is 12, therefore same.*	0

Whakaaturia te kāri 4. Kāore e whakamahia ngā mataono mō tēnei o ngā pātai. 8

4. He aha tētahi tau, mēnā ka tāpirihia atu ki te 8, ka tangohia rānei i te 8, ko te 8 tonu te otinga?

	% response
gives 0 *(number used in addition or subtraction)*	58

5. He aha tētahi tau, mēnā ka whakareatia te 8 ki taua tau, ka wehea rānei te 8 ki taua tau, ko te 8 tonu te otinga?

	% response
gives 1 *(number used in multiplication or division)*	53

Commentary:

Overall, students performed very well in questions 1-3 of this task which required an understanding of how the commutative property applies to addition, subtraction and multiplication. Just over half of the students were successful in questions 4 and 5.