

## Taurangi/Whakaaro Arohau — Algebra / Logic Items B

*Approach:* Independent

*Focus:* Varied algebra items.

*Resources:* None.

### Questions/instructions

1. Write a rule for each number pattern using ■ and ●, then complete them. The first two are done for you.

Tuhia he ture mō ia tauira mā te whakamahi i ngā tohu ■ me te ●, kātahi ka whakaoti. Kua oti te mea tuatahi, me te mea tuarua.

$$\blacksquare = \bullet \times 9$$

●	1	2	3	4	5	6	7
■	9	18	27	36	45	54	63

$$\blacksquare = (\bullet \times 3) + 1$$

●	1	2	3	4	5	6	7
■	4	7	10	13			

1. ■ = ● × 7

●	1	2	3	4	5	6	7
■	7	14	21	28	35	42	49

2. ■ = (● × 4) - 3 (or equivalent)

●	1	2	3	4	5	6	7
■	1	5	9	13	17	21	25

3. ■ = (● × 10) - 6 (or equivalent)

●	1	2	3	4	5	6	7
■	4	14	24	34	44	54	64

4. ■ = (● × .5) + 7 (or equivalent)

●	1	2	3	4	5	6	7
■	7.5	8	8.5	9	9.5	10	10.5

% responses  
GEd MI

40 40

44 49

5 7

3 13

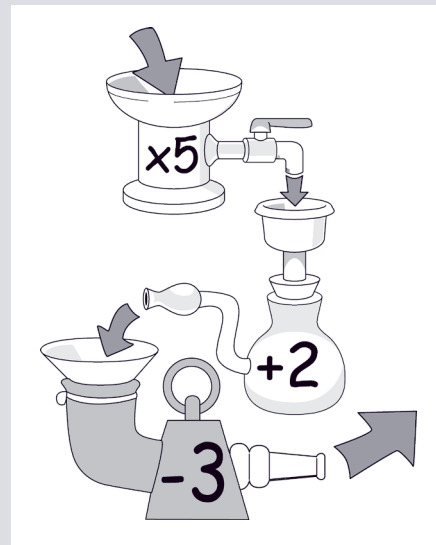
39 47

3 9

33 22

- Use the machine to finish putting numbers in the spaces on the card.

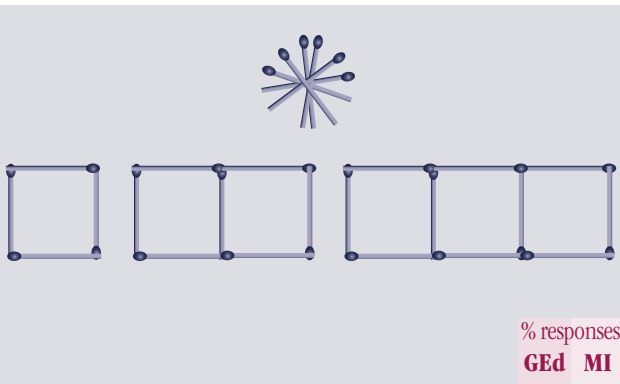
Whakamahia te mihini, hei whakaotinga tau mō roto i ngā wāhi wātea i te kāri.



Number in Tau kōkuhu	Number out Tau puta mai
2	9
7	34
12	59
3	14
10	49

5. 47 33  
6. 44 27  
7. 47 24  
8. 36 31  
9. 35 29

% responses  
GEd MI

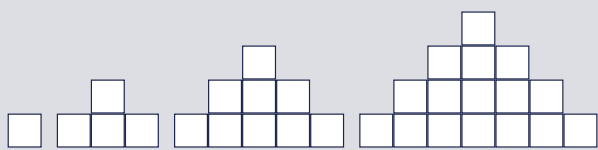


10. Squares  
Ngā tapawhā

	1	2	3	4	5	6		
Matches Ngā māti	4	7	10	13	16	19	47	29

11. Predict the number of matches needed to make 20 squares.  
Me matapae [predict] e hia ngā māti hei hanga kia 20 ngā tapawhā.

**61**    13    9



12. How many squares are in the 5th building?  
E hia ngā tapawhā ki roto i te hanganga tuarima?

**25**    30    18

13. How many squares are in the 10th building in this pattern?  
E hia ngā tapawhā ki roto i te hanganga tuatekau?

**100**    8    5

14. Lee delivers newspapers. Let  $x$  represent the number of newspapers that Lee delivers each day.  
Which statement represents the total number of newspapers that Lee delivers in 5 days?

Ka tohaina ngā nupepa e Lee. Ko te tohu  $x$  e pa ana ki te rahinga o ngā pepa ka tohaina e Lee ia rā.

Ko tēhea, e hāngai ana ki te rahinga o ngā pepa ka tohaina e Lee mō ngā rā e 5?

- A  $5 \times x$
- B  $5 + x$
- C  $x \div 5$
- D  $(x + x) \times 5$

% responses  
GEd MI

A    56    25

15. The cost to rent a motorbike is given by the following formula:

$$\text{Cost} = (\$3 \times \text{number of hours}) + \$2$$

Fill in this table:

Ko te tauira e whai ake nei, ko te utu wā poto [rent] mō tētahi motopaika:

$$\text{Te utu} = (\$3 \times \text{e hia haora}) + \$2$$

Whakakiia tēnei ripanga [table]:

Time in Hours Te wā haoro	Cost in \$ Te utu \$		% responses GEd MI
1	5		
4	<b>4</b>	both correct	34 18
<b>5</b>	17	one correct	18 9

16. Write  $>$  or  $=$  or  $<$  to make this statement true:

Tuhia  $>$ ,  $=$ ,  $<$  rānei, kia kitea te pono o tēnei rerenga.

$$456 \div 8 \quad \boxed{=} \quad 456 \times \frac{1}{8} \quad = \quad 18 \quad 25$$

*Commentary*

The results achieved by Māori students in general education (GEd) settings and students in Māori immersion (MI) settings were not statistically significantly different.