



Investigation 2

Number and Algebra

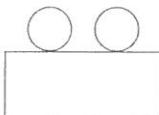
Name: Solutions

Total Marks: marks

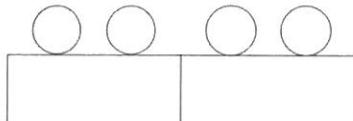
Section One- In-class

Baldivis Secondary College is looking at the option for arranging the tables and chairs in the different classrooms.

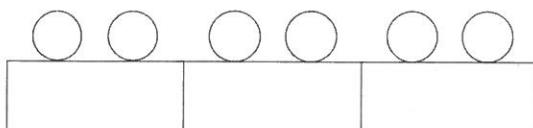
One option is to have rectangular tables. With each table having 2 chairs.



With 2 tables you need 4 chairs as in the diagram below

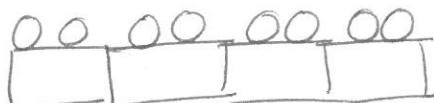


With 3 tables you need 6 chairs as in the diagram below

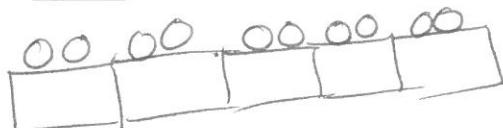


a) Draw the diagram for:

4 tables



5 tables



- b) Fill in the table showing the number of chairs and tables.

Number of tables (T)	Number of chairs (C)
1	2
2	4
3	6
4	8
5	10
6	12

- c) Describe any pattern that you can see in the table.

Number of chairs increase by two. etc
E

- d) How many chairs are required for 6 tables?

12

- e) How many chairs are required for 7 tables?

14.

- f) Another way to find the number of chairs is to find a rule between the number of tables and the number of chairs.

Complete the following sentence describing the rule for finding the number of chairs.

To find the number of chairs youdouble the number of tables.

- g) Instead of using words to write the rule, we can use letters and symbols. Let **C** be the number of chairs and **T** be the number of tables. Write a rule using symbols and letters

$$C = 2T.$$

- h) Using your rule, how many chairs would you need for 12 tables? Justify your answer.

$$2 \times 12 = 24$$

- i) If I needed 32 chairs, how many tables would I need?

$$32 \div 2 = 16.$$

Investigation 2

Number and Algebra

Total Marks: 24 marks
Weighting 30%

Name: Solutions

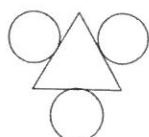
Section Two – Take Home Section

Question 1

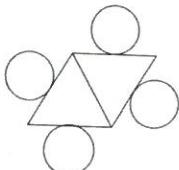
(12 marks)

Baldivis Secondary College is looking at the option for arranging the tables and chairs in the different classrooms.

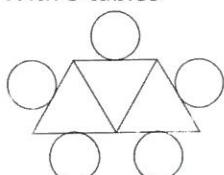
One option is to have triangular tables. With each table having 3 chairs.



With 2 tables



With 3 tables



a) Draw the diagram for:

4 tables



5 tables



- b) Fill in the table showing the number of chairs and tables.

Number of tables (T)	Number of chairs (C)
1	3
2	4
3	5
4	6
5	7

✓ (1 mark each)

- c) Describe any pattern that you can see in the table.

Increase by one. or any other pattern.

- d) How many chairs are required for 6 tables?

8 ✓

- e) How many chairs are required for 7 tables?

9. ✓

- f) Write a sentence describing the relationship between the number of chairs and the number of chairs.

The number of chairs is two more than the number of tables.

tables
chairs

- g) Let C be the number of chairs and T be the number of tables. Write a rule using symbols and letters between the number of chairs and the number of chairs.

$$C = T + 2$$

✓ ✓

- h) Using your rule, how many chairs would you need for 10 tables? Justify your answer.

$$10 + 2 = 12$$

✓

- i) If I needed 30 chairs, how many tables would I need?

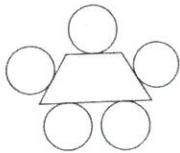
$$28. ✓$$

Question 2

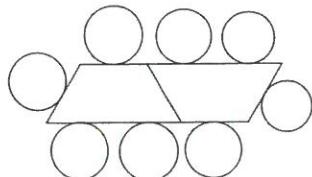
(12 marks)

Another option is to arrange the tables and chairs differently. As shown in the diagrams below

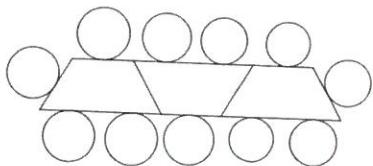
With 1 table



With 2 tables

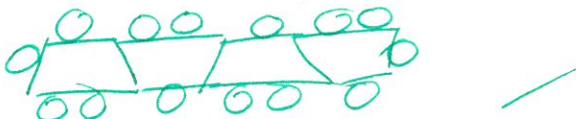


With 3 tables

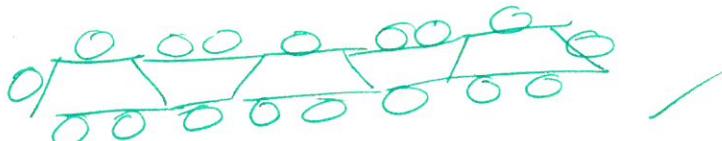


- a) Draw the diagram for:

4 tables



5 tables



- b) Fill in the table showing the number of chairs and tables.

Number of tables (T)	Number of chairs (C)
1	5
2	8
3	11
4	14
5	17

✓ (-½ each error)

- c) Describe any pattern that you can see in the table.

Increase by 3 correct pattern

- d) How many chairs are required for 6 tables?

20 ✓

- e) How many chairs are required for 7 tables?

23 ✓

- f) Complete the following sentence describing the relationship between the number of chairs and the number of chairs.

The number of chairs is equal to 3 times the number of tables plus 2. ($\frac{1}{2}$ each)

- g) Let **C** be the number of chairs and **T** be the number of tables. Write a rule using symbols and letters between the number of chairs and the number of chairs.

$$C = 3T + 2$$

- h) Using your rule, how many chairs would you need for 12 tables? Justify your answer.

$$C = 3 \times 12 + 2 = 38$$

✓ Answer only 1 mark

- i) If I needed 32 chairs, how many tables would I need?

$$T = 10$$

✓

Year 7

Investigation 2
Number and Algebra



Baldivis
Secondary College

Total Marks: 30 marks
Weighting 70%

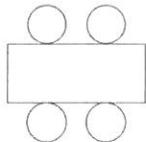
Section Three- In- Class validation

Question 1

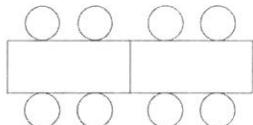
(12 marks)

Baldivis Secondary College is looking at the option for arranging the tables and chairs in the different classrooms.

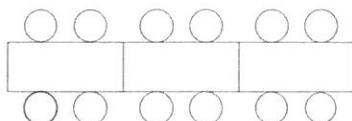
One option is to have rectangular tables. With each table having 4 chairs.



With 2 tables you need 8 chairs as in the diagram below



With 3 tables you need 12 chairs as in the diagram below

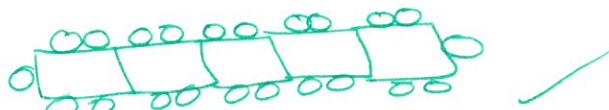


a) Draw the diagram for:

4 tables



5 tables



- b) Fill in the table showing the number of chairs and tables.

Number of tables (T)	Number of chairs (C)
1	4
2	8
3	12
4	16
5	20

/ /

- c) Describe any pattern that you can see in the table.

Increase by 4 ✓

- d) How many chairs are required for 6 tables?

24 ✓

- e) How many chairs are required for 7 tables?

28 ✓

- f) Write a sentence describing the relationship between the number of chairs and the number of chairs.

The number of chairs is four times the number of tables.

tables

- g) Let C be the number of chairs and T be the number of tables. Write a rule using symbols and letters between the number of chairs and the number of chairs.

$$C = 4T. \quad \checkmark$$

- h) Using your rule, how many chairs would you need for 12 tables? Justify your answer.

$$C = 4 \times 12 = 48 \quad \checkmark$$

- i) If I needed 32 chairs, how many tables would I need?

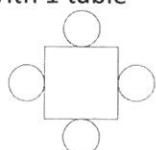
$$T = \frac{32}{4} = 8 \quad \checkmark$$

Question 2

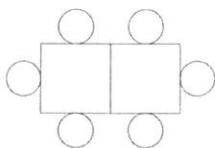
(18 marks)

Another option is to arrange the chairs differently. As shown in the diagrams below

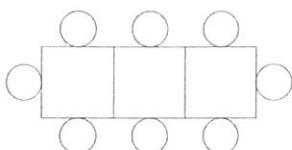
With 1 table



With 2 tables

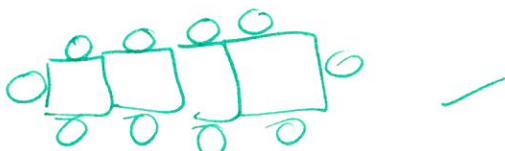


With 3 tables

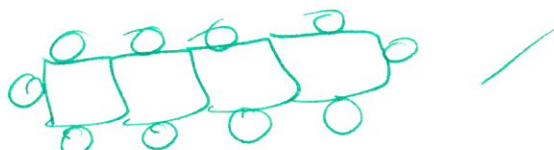


- a) Draw the diagram for:

4 tables



5 tables



- b) Fill in the table showing the number of chairs and tables.

Number of tables (T)	Number of chairs (C)
1	4
2	6
3	8
4	10
5	12

✓ ($\frac{1}{2}$ made each)

- c) Describe any pattern that you can see in the table.

Increase by 2 are other
Pattern described ✓

- d) How many chairs are required for 6 tables?

$$\begin{array}{r} 14 \\ - \\ \hline \end{array}$$

- e) How many chairs are required for 7 tables?

$$\begin{array}{r} 16 \\ - \\ \hline \end{array}$$

- f) Complete the following sentence describing the relationship between the number of chairs and the number of chairs.

The number of chairs is equal to 2 times the number of tables plus 2. ✓ $\frac{1}{2}$ each

- g) Let C be the number of chairs and T be the number of tables. Write a rule using symbols and letters between the number of chairs and the number of chairs.

$$C = 2T + 2 \quad \checkmark$$

- h) Using your rule, how many chairs would you need for 12 tables? Justify your answer.

$$C = 2 \times (2 + 2) = 26 \quad \checkmark$$

- i) If I needed 32 chairs, how many tables would I need?

$$\begin{array}{r} 32 - 2 = 15 \\ - \\ \hline \end{array} \quad \checkmark$$

- j) Someone suggests that one way of working out the number of chairs is to add one to the number of tables and then double the answer.

- i. Write this using symbols and letters

$$C = 2(T + 1) \quad \checkmark$$

- ii. Find the number of chairs required for 12 tables.

$$13 \times 2 = 26 \quad \checkmark$$

- iii. Is this rule for finding the number of chairs equivalent to the rule you found in part (g). (Reason)

Yes. Correct reason \checkmark