Year 7

Investigation 2

Number and Algebra

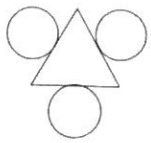
Baldivis Secondary College

Name: Answers

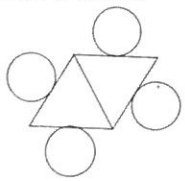
Section One – Take Home Section

Question 1

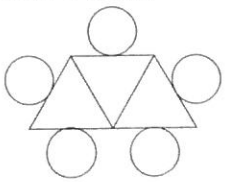
Baldivis Secondary College is looking at the option for arranging the tables and chairs in the different classrooms. One option is to have triangular tables. With each table having 3 chairs.



With 2 tables

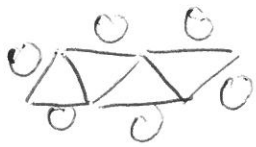


With 3 tables

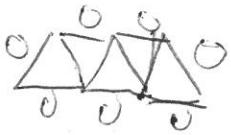


a) Draw the diagram for:

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 ✓

→ mark each.

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

Increases by 1 (or any reasonable 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 tables and the number of chairs.

the number of chairs is 2 more than the number of 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 tables and the number of chairs.

C = T + 2 ✓✓

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

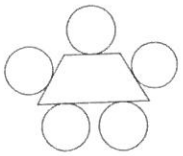
10 + 2 = 12 ✓

i) If I needed30 chairs, how many tables would I need?

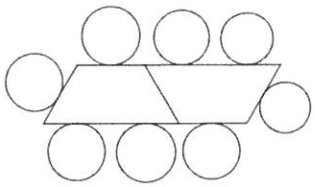
28 ✓

Question 2

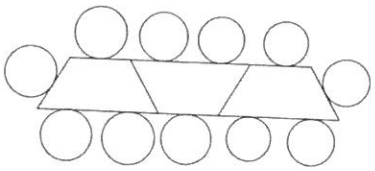
Another option is to arrange the tables and chairs differently. As shown in the diagrams below
With 1 table



With 2 tables

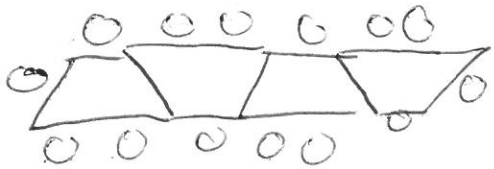


With 3 tables

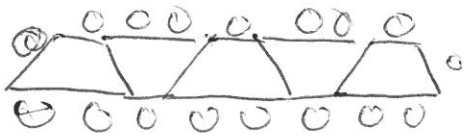


a) Draw the diagram for:

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

(2) each

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

Increases by 3 each time ✓

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 tables and the number of chairs.

The number of chairs is equal to 3 (½) times the number of tables plus 2 (½). (½ 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 tables 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 × 12 + 2 = 38 ✓✓

i) If I needed32 chairs, how many tables would I need?

T = 10 ✓✓

j) Someone suggests that one way of working out the number of chairs is to add 1 to the number of tables and then multiply the answer by 3.

i. Write this using symbols and letters

C = (1 + T) × 3 ✓✓

ii. Using the rule above, find the number of chairs that would be required for 12 tables.

C = (13) × 3 = 39 ✓✓

iii. Does this new rule give the same answer that you found in part (g).

C = 3 × 12 + 2

= 36 + 2

= 38 ✓

No. ✓

Year 7

Investigation 2

Number and Algebra

Baldivis Secondary College

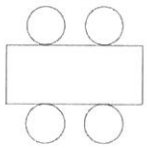
Total Marks: 30 marks

Section Two - In- Class validation

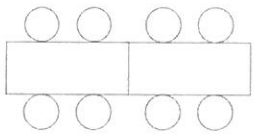
Question 1

(12 marks)

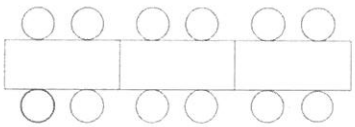
Baldivis Secondary College is looking at the option for arranging the tables and chairs in the different classrooms. One option is to have rectangular tables. With each table having 4 chairs.



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

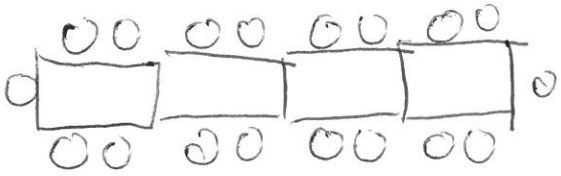


With 3 tables you need 12 chairs as in the diagram below

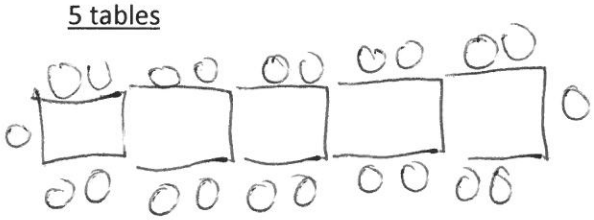


a) Draw the diagram for:

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 tables and the number of chairs.

The chairs is 4 times the number of 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 tables and the number of chairs.

$C = 4T$

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

$C = 4 \times 12 = 48$

i) If I needed32 chairs, how many tables would I need?

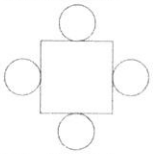
$T = 8$

Question 2

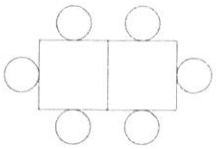
(18 marks)

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

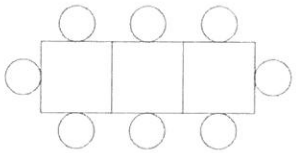
With 1 table



With 2 tables

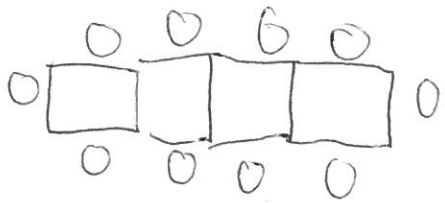


With 3 tables

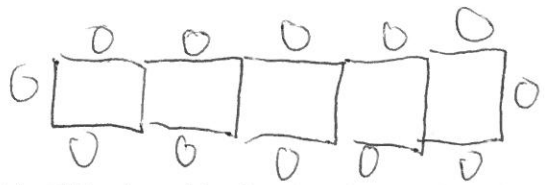


a) Draw the diagram for:

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

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

Increas by 2 each time (or ~~aint~~ equivalent)

d) How many chairs are required for 6 tables?

14 ✓

e) How many chairs are required for 7 tables?

16 ✓

f) ~~Complete the following~~ sentence describing the relationship between the number of tables and the number of chairs. (½)

the number of chairs is equal to 2 times the number of tables, plus 2. (½)

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 tables and the number of chairs.

$C = 2T + 2$ ✓

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

$C = 2 \times 12 + 2 = 26$ ✓✓

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

$\frac{32-2}{2} = 15$ ✓

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.

iv. Write this using symbols and letters

$C = 2(T+1)$ ✓✓

v. Find the number of chairs required for 12 tables.

$13 \times 2 = 26$ ✓

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

Yes – correct. ✓✓