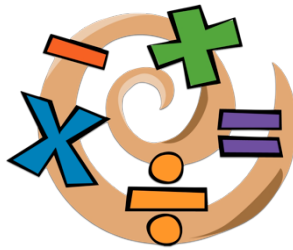


St Andrew's Academy

Mathematics Department

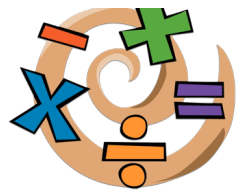


S1 COURSE BLOCK 4

***PRE-ASSESSMENT
LEARNING EVALUATION***



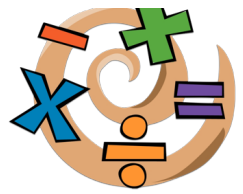
S1 BLOCK 4 LEARNING EVALUATION



	Red	Amber	Green	Revision Exercise
NUMBER				
<ul style="list-style-type: none">○ Can write a repeated calculation using power notation and evaluate the answer: e.g. a) $6^2 = 6 \times 6 = 36$ b) $5^3 = 5 \times 5 \times 5 = 125$ c) $2^4 = 2 \times 2 \times 2 \times 2 = 16$	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none">• Number Exercise 1 Q1 and 2
<ul style="list-style-type: none">○ Can state the square numbers from 1 to 100: e.g. 1, 4, 9, 16,	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none">• Number Exercise 1 Q3
<ul style="list-style-type: none">○ Can work out the square root of numbers from 1 to 100. e.g. $\sqrt{36} = 6$ (as $6^2 = 36$, so square root of 36 is 6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none">• Number Exercise 2 Q1
<ul style="list-style-type: none">○ Can work out the cube root of a number. e.g. $\sqrt[3]{64} = 4$ (as $4^3 = 64$, so cube root of 64 is 4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none">• Number Exercise 2 Q2
<ul style="list-style-type: none">○ I can use non-calculator strategies to perform calculations using the four operations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none">• Number Exercise 3



S1 BLOCK 4 LEARNING EVALUATION



	Red	Amber	Green	Revision Exercise																
ALGEBRA																				
<ul style="list-style-type: none"> I can recognise patterns and write down the next number in the sequence. e.g. a) 4, 8, 12, 16... Next 3 numbers – 20, 24, 30 Rule - add 4 each time. b) 78, 76, 74, 72... Next 3 numbers, 70, 68, 66 Rule – Subtract 2 each time 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> Algebra Exercise 1 Q1-3 																
<ul style="list-style-type: none"> Have an understanding of the Fibonacci sequence, e.g. 1, 1, 2, 3, 5, 8, 13, 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> Algebra Exercise 1 Q4 																
<ul style="list-style-type: none"> Be able to use a diagram to fill out the missing values in a table. <p>Matches are arranged as shown below.</p> <p>(a) Complete the table below.</p> <table border="1" style="margin-left: 20px;"> <tr> <td>Number of rectangles (R)</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>30</td> </tr> <tr> <td>Number of Matches (M)</td> <td>10</td> <td>16</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Number of rectangles (R)	1	2	3	4	5	6	30	Number of Matches (M)	10	16						<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> Algebra Exercise 2
Number of rectangles (R)	1	2	3	4	5	6	30													
Number of Matches (M)	10	16																		
<ul style="list-style-type: none"> Be able to use the table to create a linear formula to represent the pattern, e.g. using the example above the formula would be: $M = 6x R + 4$ 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> Algebra Exercise 2 																
<ul style="list-style-type: none"> I can use this formula to answer further questions involving the pattern. 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> Algebra Exercise 2 																
<ul style="list-style-type: none"> I can recognise non-linear patterns such as, Square number and triangular numbers 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> Algebra Exercise 3 																

2. Tom was in a weight lifting competition. On his first lift he lifted 10kg. On his second lift he lifted 15kg. On his third lift he lifted 20kg. On his fourth lift, he lifted 25kg.
 - a) Explain the rule for this sequence?
 - b) What will Tom lift on his tenth lift?

3. Dean read a book. On the first day he read up to page 6. On the second day he read up to page 12. On the third day he read up to page 18.
 - a) Explain the rule for this sequence?
 - b) What page will he be up to on the fourth day?
 - c) How many pages will he have read up to on the eleventh day?

4. Fill out the missing numbers in this sequence:
 1, 1, 2,, 5, 8,, 21, 34, 55,

Exercise 2

1. Matches are arranged as shown below.



- (a) Copy and complete the table below.

Number of rectangles (R)	1	2	3	4	5	6	30
Number of Matches (M)							

- (b) Write down the rule for finding the number of matches if you know the number of rectangles.

2. Matches are arranged as shown below

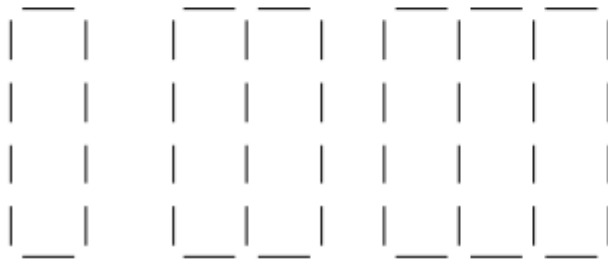


- (a) Copy and complete the table

No. of parallelograms	1	2	3	4	5	20
No. of matches	4	7				

- (b) Write down a rule for finding the number of matches, M , needed to make P parallelograms.

3. Matches are arranged as shown below.



(a) Complete the table below.

Number of rectangles (R)	1	2	3	4	5	6	30
Number of Matches (M)							

- (b) Write down the rule for finding the number of matches, M , if you know the number of rectangles, R
 (c) How many rectangles could be made using 58 matches?

4. A pattern is constructed using rectangles and stars.

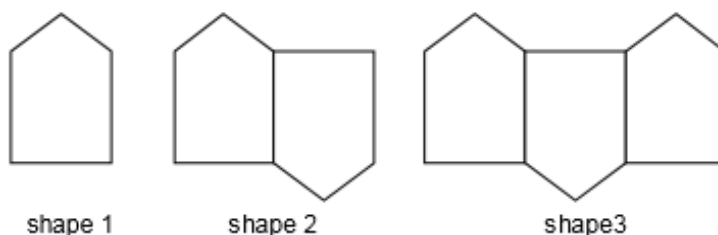


(a) Copy and complete the table below for this pattern.

Number of rectangles (R)	2	3	4	5	6	25
Number of stars (S)	2	4	6			

- (b) Write down a formula for finding the number of stars, S , if you know the number of rectangles, R .
 (c) How many rectangles would be needed for 78 stars?

5. Sidra is working on the design for a bracelet. She is using matches to make each shape.



shape 1

shape 2

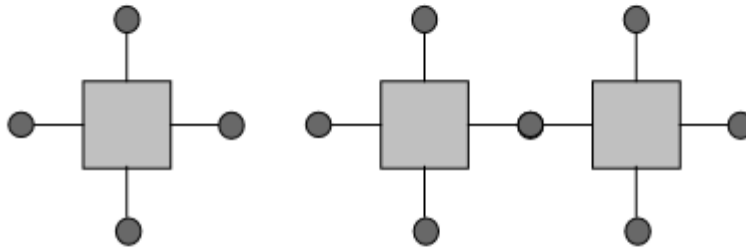
shape 3

(a) Copy and complete the following table.

Shape number (s)	1	2	3	4	5	13
No. of matches (m)	5	9				

- (b) Find a formula for calculating the number of matches, (m), when you know The shape number, (s).

6. The diagram below shows an arrangement of squares and circles.

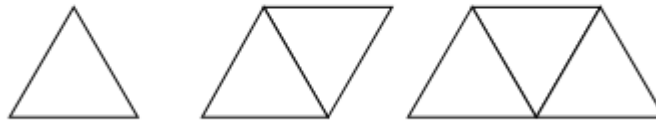


- (a) Copy and complete the table for this arrangement.

Number of squares (S)	1	2	3	4	5	20
Number of Circles (C)			10			

- (b) Write down a formula for finding the number of circles, C, if you know the number of squares, S.

7. Matchsticks are arranged as shown below.

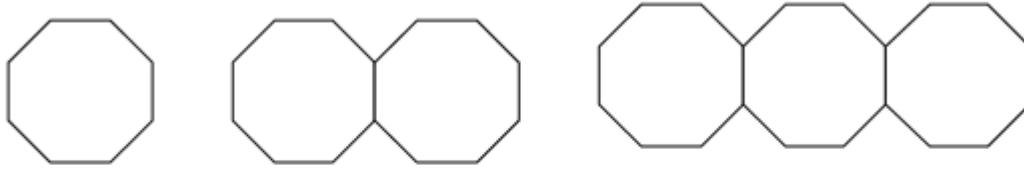


- (a) Copy and complete the table

No. of triangles (T)	1	2	3	4	5	25
No. of matches (M)	3	5				

- (b) Find a rule connecting T and M.
 (c) How many triangles can be made using 101 matches?

8. Matchsticks are arranged in the pattern shown below



(a) Copy and complete the table below

No. of octagons (P)	1	2	3	4	5	6	20
No. of matches (Q)	8	15	22				

(b) Write down a formula connecting P and Q.

(c) How many octagons can be made using 106 matches?

9. Matches are arranged as shown below.



(a) Copy and complete the table below.

Number of Triangles(T)	1	2	3	4	5		50
Number of Matches (M)	5	8					

(b) Write down a formula for finding the number of matches, M, if you know the number of triangles, T.

Exercise 3

- List the first 10 square numbers.
- List the first 10 triangular numbers.
- Which of these numbers are square numbers?

100, 110, 125, 144, 160, 225

- Which of these are triangular numbers?
60, 64, 66, 70, 73, 78, 86, 91

FRACTIONS 2 REVISION

Exercise 1

1. Fill in the blanks below to create equivalent fractions:

a) $\frac{3}{5} = \frac{9}{\quad}$ b) $\frac{2}{7} = \frac{8}{\quad}$ c) $\frac{5}{6} = \frac{\quad}{48}$ d) $\frac{8}{9} = \frac{\quad}{63}$

e) $\frac{\quad}{3} = \frac{6}{9}$ f) $\frac{\quad}{7} = \frac{12}{28}$ g) $\frac{1}{\quad} = \frac{36}{72}$

2. Simplify the following fractions, leaving your answer in its simplest form:

a) $\frac{6}{12}$

b) $\frac{25}{30}$

c) $\frac{18}{24}$

Exercise 2

1. Change the following improper fractions to mixed fractions:

a) $\frac{16}{3}$

b) $\frac{42}{5}$

c) $\frac{63}{8}$

d) $\frac{30}{4}$

e) $\frac{100}{15}$

f) $\frac{305}{25}$

2. Change the following mixed fractions to improper fractions:

a) $3\frac{1}{2}$

b) $7\frac{3}{5}$

c) $10\frac{5}{6}$

d) $7\frac{8}{9}$

e) $5\frac{11}{12}$

f) $15\frac{8}{15}$

3. a) 24kg of potatoes are packed evenly into 5 bags. What is the weight of potatoes in one bag?

b) A container holds 19 litres of water. An equal quantity of water is poured into 6 cups such that it holds the same amount. How much water will be in each cup?

c) How many $\frac{1}{4}$ kg bags of salt can be filled from $1\frac{3}{4}$ kg?

Exercise 3

1. Find:

a) $\frac{1}{3}$ of 27

b) $\frac{1}{8}$ of 32

c) $\frac{1}{5}$ of 165

d) $\frac{1}{9}$ of 648

e) $\frac{1}{2}$ of 25

f) $\frac{3}{4}$ of 48

g) $\frac{2}{3}$ of 138

h) $\frac{4}{7}$ of 364

i) $\frac{5}{6}$ of 300

j) $\frac{9}{12}$ of 72

Exercise 4

1. Find: a) $\frac{2}{5} + \frac{1}{5}$ b) $\frac{3}{7} + \frac{2}{7}$ c) $\frac{1}{8} + \frac{5}{8}$ d) $\frac{4}{10} + \frac{3}{10}$ e) $\frac{7}{20} + \frac{9}{20}$

f) $\frac{7}{9} - \frac{2}{9}$ g) $\frac{5}{6} - \frac{1}{6}$ h) $\frac{12}{13} - \frac{3}{13}$ i) $\frac{8}{11} - \frac{4}{11}$ j) $\frac{14}{15} - \frac{6}{15}$

Exercise 5

1. Find:
- | | | | |
|--------------------------------|---------------------------------|---------------------------------|---------------------------------|
| a) $\frac{2}{5} + \frac{3}{4}$ | b) $\frac{7}{8} - \frac{1}{2}$ | c) $\frac{4}{7} + \frac{2}{3}$ | d) $\frac{7}{12} - \frac{3}{5}$ |
| e) $\frac{3}{7} + \frac{2}{5}$ | f) $\frac{7}{9} - \frac{1}{2}$ | g) $\frac{4}{5} + \frac{2}{3}$ | h) $\frac{9}{10} - \frac{3}{4}$ |
| i) $\frac{2}{3} + \frac{3}{4}$ | j) $\frac{7}{8} - \frac{2}{5}$ | k) $\frac{5}{9} + \frac{2}{3}$ | l) $\frac{5}{6} - \frac{3}{4}$ |
| m) $\frac{6}{7} + \frac{4}{5}$ | n) $\frac{7}{12} - \frac{2}{5}$ | o) $\frac{4}{9} + \frac{2}{7}$ | p) $\frac{9}{13} - \frac{2}{3}$ |
| q) $\frac{2}{5} + \frac{3}{4}$ | r) $\frac{7}{10} - \frac{2}{7}$ | s) $\frac{5}{12} + \frac{2}{3}$ | t) $\frac{8}{9} - \frac{1}{4}$ |

Exercise 6

1. Find:
- | | | | |
|----------------------------------|----------------------------------|-----------------------------------|----------------------------------|
| a) $3\frac{1}{2} + 1\frac{2}{3}$ | b) $4\frac{3}{5} + 2\frac{5}{6}$ | c) $2\frac{5}{6} - 1\frac{1}{2}$ | d) $6 - 4\frac{2}{3}$ |
| e) $1\frac{3}{4} + 2\frac{1}{2}$ | f) $5\frac{1}{2} - 3\frac{2}{5}$ | g) $7 - \frac{3}{8}$ | h) $3\frac{5}{7} + 2\frac{1}{2}$ |
| i) $2\frac{1}{3} + 1\frac{8}{9}$ | j) $4\frac{4}{5} - 3\frac{2}{3}$ | k) $1\frac{7}{12} + 2\frac{5}{6}$ | l) $7\frac{2}{3} - 4\frac{1}{2}$ |
2. Mark ran $2\frac{1}{3}$ km and Shaun ran $3\frac{1}{5}$ km. Find the difference in the distance that they ran.
3. Brandon and his son went fishing. Brandon caught $3\frac{3}{4}$ kg of fish while his son caught $2\frac{1}{5}$ kg of fish. What is the total weight of the fishes that they caught?