ÉCOLE GLOBALE
INTERNATIONAL GIRLS SCHOOL
Dehradun

HOLIDAY HOMEWORK **SUMMER BREAK 2018-19**

CLASS IX CIE **SUBJECT : MATHEMATICS**

INVESTIGATORY PROJECT

Graphs

- Eating habits of people in the community, specifically for lunch. Category:

  Regular home cooked food, planned healthy combo meals, Junk Food.
- Collect data using 40 individuals.
- Design forms for survey
- Survey forms to be presented.

Data collected to be shown on bar graph and pie diagram

Fibonacci Series

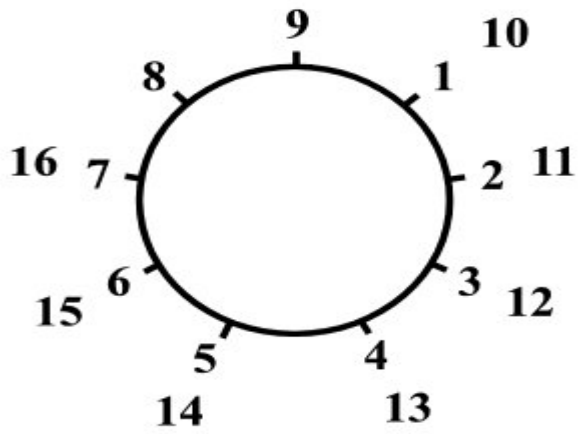
Your project should include power point presentation of the following (students to bring the project in pen drive/CD)

- Introduction of Fibonacci series
- How does Fibonacci series work?
- History of Fibonacci series.
- Fibonacci Pattern in Nature and mathematics hidden in it.

Digit sum

Steps to follow:

- Take the number 134.
  Add the digits 1+3+4=8. So the digit sum of 134 is 8.
- Consider the multiples of 3 and find their digit sums. Make a table for the sum. You will see that the digit sum is always 3, 6 or 9.
- These numbers can be shown in a circle like:



- Investigate the pattern of the digit sums for multiples of:

a) 2
b) 5
c) 6
d) 7
e) 8
f) 9
g) 11
h) 12
i) 13

- Is there any connection between numbers where the patterns of the digit sums is the same?
- Draw the circle first and plot all the connection patterns in the same circle.

Marking Criteria:

1. Cover page, neatness and overall presentation.
2. The pattern drawing and table of data should be accurate.
3. Clear explanation of the connection, if any.

ALGEBRA 1

1.

(a) y is 5 less than the square of the sum of p and q.

Write down a formula for y in terms of p and q.

Answer(a) $y =$ ..... [2]

(b) The cost of a magazine is $\$x$ and the cost of a newspaper is $\$(x - 3)$.

The total cost of 6 magazines and 9 newspapers is \$51.

Write down and solve an equation in x to find the cost of a magazine.

Answer(b) \$ ..... [4]

(c) Bus tickets cost \$3 for an adult and \$2 for a child.

There are a adults and c children on a bus.

The total number of people on the bus is 52.

The total cost of the 52 tickets is \$139.

Find the number of adults and the number of children on the bus.

Answer(c) Number of adults = ...

Number of children = ... [5]

2.

Factorise completely.

$9x^2 - 6x$

Answer ..... [2]

3.

Factorise $2x^2 - 5x - 3$.

Answer ..... [2]

4.

Solve the equation.

$$3(x + 4) = 2(4x - 1)$$

Answer $x =$ ..... [3]

5.

Solve the simultaneous equations.
You must show all your working.

$$\frac{1}{2}x + y = 8$$
$$x - 2y = 2$$

6.

Factorise.

(a) $m^3 + m$

(b) $25 - y^2$

(c) $x^2 + 3x - 28$

7.

Solve the equation.

$$\frac{x+5}{x} = \frac{7}{3}$$

8.

Solve the simultaneous equations.

$$0.4x - 5y = 27$$
$$2x + 0.2y = 9$$

9.

(i) Factorise completely. $2x^2 - 18$

(ii) Simplify. $\dfrac{2x^2 - 18}{x^2 + 7x - 30}$

10.

Apples cost x cents each and oranges cost $(x + 2)$ cents each.
Dylan spends \$3.23 on apples and \$3.23 on oranges.
The **total** of the number of apples and the number of oranges Dylan buys is 36.

(a) Write an equation in x and show that it simplifies to $18x^2 - 287x - 323 = 0$.

(b) **(i)** Find the two prime factors of 323.

(ii) Complete the statement.

$$18x^2 - 287x - 323 = (18x \quad \ldots\ldots\ldots\ldots\ldots\ldots)(x \quad \ldots\ldots\ldots\ldots\ldots\ldots)$$

(iii) Solve the equation $18x^2 - 287x - 323 = 0$.

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