

DAWOOD PUBLIC SCHOOL
COURSE OUTLINE 2019 – 20
MATHEMATICS
GRADE: VIII

Books:

Seng, T.et al, 2008, New Syllabus Mathematics 1 (6thEdition), Singapore; Oxford University Press
 Seng, T.et al, 2018, New Syllabus Mathematics 2 (7thEdition), Singapore; Oxford University Press
 Seng, T.et al, 2018, New Syllabus Mathematics 3 (7thEdition), Singapore; Oxford University Press

Monthly Syllabus for the Year 2019 – 20

MONTH	TOPIC	RESOURCE	DURATION
AUGUST	<ul style="list-style-type: none"> • Congruence and Similarity • Number Sequences (Ex – 6a) • Constructions of Quadrilaterals • Volume and Surface Area (Ex – 9b) • Math activity Calendar 	Book – 2 Book – 1 Worksheet Book – 1	2 Weeks 0.5 Week 0.5 Week 1 Week
SEPTEMBER	<ul style="list-style-type: none"> • Volume and Surface Area of Pyramids, Cone and Sphere • Probability of Single Events • Math activity Calendar 	Book – 2 Book – 2	3 Weeks 1 Week
OCTOBER	<ul style="list-style-type: none"> • Probability of Single Events(Cont) Algebraic Fractions and Formulae • Statistics • Math activity Calendar 	Book – 2 Book – 2 Book – 1	0.5 Week 3 Weeks 0.5 Week
NOVEMBER	<ul style="list-style-type: none"> • Statistics (Cont) • Revision For Mid Term 	Book – 1	1 Week
DECEMBER	Mid Term Examination		
JANUARY	<ul style="list-style-type: none"> • Direct and Inverse Proportions • Averages of Statistical Data • Math activity Calendar 	Book – 2 Book – 2	2 Week 2 Week
FEBRUARY	<ul style="list-style-type: none"> • Linear Inequalities in One Variable • Application of Mathematics in Practical Situations • Math activity Calendar 	Book – 3 B00k – 3	2 Weeks 2 Weeks
MARCH	<ul style="list-style-type: none"> • Application of Mathematics in Practical Situations (Cont) • Quadratic Functions and Graphs • Math activity Calendar 	Book – 3 Book – 2	1 Week 2 Weeks
APRIL	<ul style="list-style-type: none"> • Relations and Functions • Revision For Final Term 	Book – 2	1 Week
MAY	Final Term Examination		

SYLLABUS CONTENT

AUGUST

- **Congruence and Similarity**
Book – 2, Chapter No. 8
Pg No (191 – 228)
- **Number Sequences**
(Ex – 6a)
Book – 1, Chap No. 6
Pg No (115 – 120)
- **Geometrical Constructions**
Book – 1, Chapter No. 16
Pg No (381 – 386)
- **Volume and Surface Area**
Book – 1, Chapter No. 9 (EX – 9b)
Pg No (201 – 206)

CONTENTS	LEARNING OBJECTIVES
<p>TOPIC: CONGRUENCE AND SIMILARITY BOOK – 2, CHAPTER NO. 8 PG NO (191 – 228)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ CONGRUENT FIGURES AND OBJECTS ✓ SIMILAR FIGURES AND OBJECTS ✓ SIMILARITY AND SCALE DRAWINGS 	<p>Students should be able to:</p> <ul style="list-style-type: none"> • Identify congruent figures and objects; use the correct notations to express congruency. • Find unknown values in a pair of congruent figures. • Identify similar figures and objects; use the correct notations to express similarity. • Apply the properties of a pair of similar figures; use these properties to find the unknowns in a pair of similar figures. • Calculate the actual length and the actual area from a given scale model and vice versa. • Express the scale of a map as a representative fraction and vice versa and use it to calculate the distance between two places. • Calculate the actual dimensions of a place on a map and vice versa. • Calculate the actual area of places such as parks, villages, etc., on a map and vice versa. • Solve map problems involving distance and area of a place.
<p>TOPIC: NUMBER SEQUENCES (EX – 6A) BOOK – 1, CHAP NO. 6 PG NO (115 – 120)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ NUMBER SEQUENCES ✓ GENERAL TERM IN A NUMBER SEQUENCE. 	<p>Students should be able to:</p> <ul style="list-style-type: none"> • Recognize simple number patterns and continue a given number sequence. • State the rules of a number pattern (with same difference) in terms of the general term.
<p>TOPIC: GEOMETRICAL CONSTRUCTIONS BOOK – 1, CHAPTER NO. 16 PG NO (381 – 386)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ CONSTRUCTION OF QUADRILATERALS 	<p>Students should be able to:</p> <ul style="list-style-type: none"> □ Construct a different type of quadrilaterals from the given data using a pair of compasses, a ruler or a protractor.
<p>TOPIC: VOLUME AND SURFACE AREA BOOK – 1, CHAPTER NO. 9 (EX – 9B) PG NO (201 – 206)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ RIGHT PRISMS ✓ VOLUME OF A PRISM ✓ SURFACE AREA OF A PRISM 	<p>Students should be able to:</p> <ul style="list-style-type: none"> • State and use the formulae for finding the volume and total surface area of prisms and draw the nets of prisms. • Solve problems involving hollow cylinders, and solids consisting of prisms, cylinders and cuboids.

CONGRUENCE AND SIMILARITY:

Words to Remember:

Congruent, Congruency, Similar, Similarity, Corresponding angles, Corresponding sides, Scale, Linear scale, Scale factor, Dimension, Actual measurement.

Surf IT:

Resource for congruence:

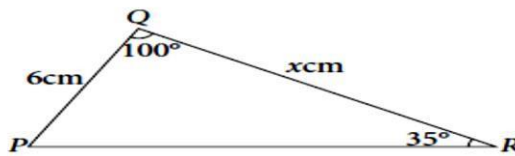
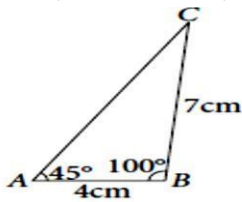
www.regentsprep.org/Regents/math/geometry/GP4/indexGP4.html Resource

for similarity:

www.regentsprep.org/Regents/math/geometry/GP11/indexGP11.html

Sample Questions:

1. ΔPQR is similar to ΔABC . Given that $PQ = 5$ cm, $QR = 4$ cm, and $AB = 8$ cm, calculate the length of BC .
2. State, with reasons, whether ΔABC is similar to ΔPQR . Find the value of x .



3. On a map, the distance between two places A and B is 15 cm, and the area of the Central Business District is 8 cm^2 . If the scale of the map is 1 : 80 000,
 - (a) Find the actual distance of AB in km.
 - (b) Find the actual area of the Central Business District in km^2 .
4. On a map drawn to a scale of 1 : 40 000, a country club occupies an area of 90 cm^2 . What would be the area of the same country club on a map drawn to a scale of 1 : 30 000?

Activity:

Look around your classroom, Science laboratory or school. Find at least three different sets of similar objects, and discuss with classmates.

NUMBER SEQUENCES:

Words to Remember:

Next term, Consecutive, Sequence, Series, Continue, Predict, Pattern, General term, n th term.

Surf IT:

A chapter about number patterns:

www.cimt.plymouth.ac.uk/projects/mepres/allgcse/bkb12.pdf A

fascinating site about the Fibonacci sequence and the Golden section:

www.mcs.surrey.ac.uk/Personal/R.Knott/Fibonacci/fib.html

Sample Questions:

1. Fill in the missing numbers:
 - (a) 877, 863, -----, 835,
 - (b) 225, 256, 289, -----, 361, -----, 441
 - (c) 729, 512, 343, -----, -----, 64
2. Complete each of the following sequences of numbers:
 - (a) 4, 11, 18, 25, -----, -----
 - (b) 7, 28, 35, 42, -----, -----
 - (c) 252, 239, 226, -----, -----

SEPTEMBER

- Volume and Surface Area of Pyramids, Cones and Sphere
Book – 2, Chapter No. 12
Pg No (315 – 349)
- Probability of Single Events
Book – 2, Chap No. 15
Pg No (419 – 439)

CONTENTS	LEARNING OBJECTIVES
<p>TOPIC: VOLUME AND SURFACE AREA OF PYRAMIDS, CONES AND SPHERE BOOK – 2, CHAPTER NO. 12 PG NO (315 – 349)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ VOLUME AND SURFACE AREA OF PYRAMIDS. ✓ VOLUME AND SURFACE AREA OF CONES. ✓ VOLUME AND SURFACE AREA OF SPHERES. ✓ VOLUME AND SURFACE AREA OF COMPOSITE SOLIDS. 	<p>Students should be able to:</p> <ul style="list-style-type: none"> • State the formula for the volume of a pyramid and use it to solve related problems. • Sketch a pyramid and draw its net and use it to find the surface area of a pyramid. • State the formulae for the volume curved surface area and the total surface area of a cone and use these formulae to solve related problems. • State the formulae for the volume and surface area of a sphere and use them to solve related problems. • Solve problems involving cones, prisms, pyramids, cylinders and/or spheres.
<p>TOPIC: PROBABILITY OF SINGLE EVENTS BOOK – 2, CHAP NO. 15 PG NO (419 – 439)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ INTRODUCTION TO PROBABILITY ✓ SAMPLE SPACE ✓ PROBABILITY OF SINGLE EVENTS ✓ FURTHER EXAMPLES ON PROBABILITY OF SINGLE EVENTS. 	<p>Students should be able to:</p> <ul style="list-style-type: none"> • Interpret definition of experiments and sample space. • Use the definition of probability of an event E occurring as $P(E) = \frac{\text{No of Favourable Outcomes for Event E}}{\text{No of Possible Outcomes}}$ • Calculate the probability of occurrence of simple events \square <p>State that for any event E, $0 \leq P(E) \leq 1$. $P(E) = 0$ if and only if the event E cannot possibly occur. $P(E) = 1$ if and only if the event E will certainly occur.</p>

VOLUME AND SURFACE AREA:

Words to Remember:

Prism, Cross section, Pyramids, Polygonal base, Cones, Simple closed curve, Right circular cone, perpendicular height, Slant height, Sphere, Hemisphere.

Surf IT:

Volume and Surface Area of Prisms

www.homeschoolmath.net www.khanacademy.org Spheres, pyramids and cones

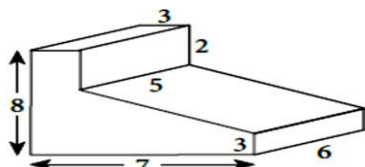
www.bbc.co.uk/schools/gcsebitesize/maths/geometry/

Challenging task that involves finding volumes of a set of containers

<http://donsteward.blogspot.co.uk/2012/04/tubs.html>

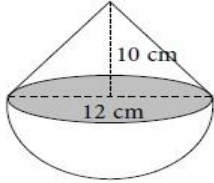
Sample Questions:

1. In the figure, all dimensions are given in cm. Calculate (a) The total surface area, (b) The volume of the solid.

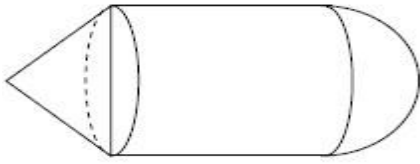


2. Find vertical height of a pyramid with volume 84 cm³ and a base 9 cm by 6 cm.

3. The diagram shows a composite solid consisting of a cone and a hemisphere. The cone has a height of 10 cm and a base diameter of 12 cm. Find the volume of the whole solid.



4. A solid consists of a cylinder of diameter 8 cm, sandwiched between a cone and a hemisphere of the same diameter. If the cone is of height 10 cm, and the cylinder is of height 12 cm, find the volume of the solid.



5. If the volume of a pyramid is 46 cm^3 , and the base area is equal to 12 cm^2 , find the height of the pyramid.

Activities:

Net Matching Game:

Before starting working on surface area, will do this [nets matching game](#). It gives students a great chance to talk about the shapes and reinforce vocabulary. Each work mat has a figure represented in three ways: name, net, and picture.

Task Cards:

Task cards will become a staple activity in class. The activity that we use the most is a self-checking partner activity. Students work with a partner at their own pace. When they've answered a question, they check their work against the answers and explanations on the back of each card. These [surface area task cards](#) start with identifying characteristics of a variety of shapes. Then, students have to find the area of two-dimensional shapes. Finally, they will calculate the surface of shapes from pictures and from story problems.

PROBABILITY:

Words to Remember;

Chance, Event, Sample space, Equal chance, Favorable Outcomes, Possible outcomes

Surf IT:

An introductory lesson on probability with a quiz to check understanding:

www.mathgoodies.com

A game involving simple probabilities:

www.bbc.co.uk/schools/mathsfile Interactive

dice and spinners:

<http://nrich.maths.org/6717>

Sample Questions:

- In a class of 40 pupils, 18 are boys. 12 of the girls and 8 of the boys passed a Mathematics test. If a boy is selected at random, find the probability that he passed the test.
- A bag contains 40 blue and yellow balls. When a ball is selected at random, the probability that it will be a blue ball is $\frac{3}{8}$. An additional 9 blue balls, and 31 yellows, are added to the bag. Find the probability that a ball selected at random from the bag will be a blue.
- A box contains 8 red balls, 6 blue balls, and 5 green balls. A ball is picked at random from the box. Find the probability of picking
 - A green ball,
 - A red or a blue ball.
- All the letters of the word PROBABILITY are put inside a bag. A letter is drawn at random from the bag. What is the probability that the letter selected is:
 - The letter B,
 - A vowel,
 - Not the letter K,
 - The letter M?

Activity:

M&M game:

In this game students bring one pack of m&m chocolate. First they have to count total number of chocolate in the pack, and then find probability of different colors of chocolate in the pack.

OCTOBER

- Algebraic Fractions and Formulae
Book – 2, Chapter No. 6
Pg No (161 – 178)
- Statistics
Chapter no 13, Book – 1
Pg No (291 – 320)

CONTENTS	LEARNING OBJECTIVES
<p>TOPIC: ALGEBRAIC FRACTIONS AND FORMULAE BOOK – 2, CHAPTER NO. 6 PG NO (161 – 178)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ ALGEBRAIC FRACTIONS ✓ MULTIPLICATION AND DIVISION OF ALGEBRAIC FRACTIONS ✓ ADDITION AND SUBTRACTION OF ALGEBRAIC FRACTIONS ✓ MANIPULATION OF ALGEBRAIC FORMULAE 	<p>Students should be able to:</p> <ul style="list-style-type: none"> • Simplify simple algebraic fractions involving single terms. • Simplify algebraic fractions with polynomials by using factorization. • Perform multiplication and division of simple algebraic fractions. • Find the HCF and LCM of algebraic expressions. • Perform addition and subtraction of simple algebraic expressions. • Solve simple equations involving algebraic fractions. • Express problems that involve algebraic fractions in the form of equations and solve them. • Change the subject of a simple formula. • Changing the subject of a formula involving squares, square roots, cubes and cube roots etc. • Finding the unknown in a formula.
<p>TOPIC: STATISTICS CHAPTER NO 13, BOOK – 1 PG NO (291 – 320)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ INTRODUCTION TO NUMERICAL DATA ✓ COLLECTION, ORGANIZATION AND INTERPRETATION OF DATA ✓ PICTOGRAMS ✓ BAR GRAPHS ✓ PIE CHARTS ✓ LINE GRAPHS ✓ FREQUENCY TABLES AND HISTOGRAMS ✓ GROUPED FREQUENCY TABLE 	<p>Students should be able to:</p> <ul style="list-style-type: none"> • Collect, classify, and organize data logically and present it in the form of a table. • Illustrate a given set of information by drawing: <ul style="list-style-type: none"> i. A pictogram, ii. A bar graph • Illustrate a given set of information by drawing a pie chart. • Illustrate a given set of information by drawing a line graph. • Construct a frequency table to represent a set of data. • Construct a histogram for a distribution. • Construct a group-frequency table and draw a histogram.

- ALGEBRAIC FRACTIONS AND FORMULAE:

Words to Remember;

Algebraic fractions, Key words of mathematical operations, Subject of formula.

Surf IT:

Work on formulae:

www.cimt.plymouth.ac.uk/projects/mepres/allgcse/bka2.pdf Work

on directed numbers, simplifying and simple equations:

www.cimt.plymouth.ac.uk/projects/mepres/allgcse/bkb10.pdf

Online worksheets, and practice sums for better understanding

www.algebrahelp.com/worksheets/index.html

Sample Questions:

1. Express $\frac{5}{x-2} - \frac{4}{x-3}$ as a single fraction in its simplest form

2. Simplify the following expression

$$x - \frac{4(x-5)}{3} + \frac{x}{6}$$

3. Make b the subject of the formula

$$2a = \frac{b + 4c}{3b}$$

4. If $\frac{x-2y}{5x} = 2y - 8a$

- Make y the subject of the formula.
- Find the value of y , when $x = 2$ and $a = 1$.

STATISTICS:

Words to Remember:

Pictogram, Bar graph, Pie chart, Angle sector, Tally marks, Class intervals, Line graph, Histogram, Grouped data, Frequency table.

Surf IT:

BBC Bitesize has work on charts, diagrams and statistical calculations:

www.bbc.co.uk/schools/gcsebitesize/maths/statistics/ Work on statistics at:

www.cimt.plymouth.ac.uk/projects/mepres/allgcse/bkb8.pdf

Maths Is Fun has work on simple histograms: www.mathsisfun.com/data/histograms.html

Sample Questions:

1. The table below shows the frequency distribution of the number of grammatical mistakes made by each student in a class of 40.

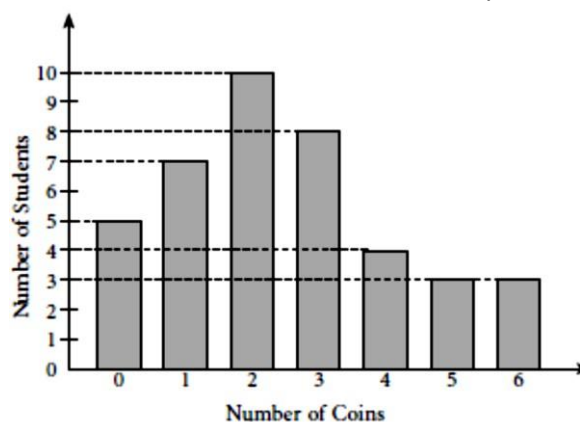
Number of mistakes	0	1	2	3	4	5	6
Number of students	4	8	12	4	6	4	2

- Draw a histogram to represent the frequency distribution.
 - What is the most common number of mistakes made by the students?
 - Find the percentage of students who make more than 3 mistakes.
2. A group of American students were asked to state their political party affiliations such as Democratic, Republican, or Others. The overall response is given in the table below:

Party	Democratic	Republican	Others
frequency	13	18	9

Draw a pie chart to represent the distribution.

3. Each student from a Secondary-2 class was asked individually how many coins they had in their pockets. The bar chart below illustrates the results of this survey.



- Find
 - The number of students in the class,
 - The percentage of students having 4 or more coins.
- Display the results of the survey using a pie chart with 5 sectors, one of which represents students having 4 or more coins.

Activity:

In activity each girl has to measure her height in cm and weight in kilograms. When all data is collected then on a big chart paper on x-axis take weight of each girl and on y-axis take height of each girl will be marked. After scaling they have to make a bar graph of their findings.

NOVEMBER**REVISION FOR MID TERM EXAMS****DECEMBER****MID TERM EXAMS**

JANUARY

- **Direct and Inverse Proportions**
Book – 2, Chapter No. 1
Pg No (1 – 34)
- **Statistics**
Book – 1, Chap No. 13
Pg No (291 – 320)
- **Averages of Statistical Data**
Book – 2, Chap No. 17
Pg No (491 – 517)

CONTENTS	LEARNING OBJECTIVES
<p>TOPIC: DIRECT AND INVERSE PROPORTIONS BOOK – 2, CHAPTER NO. 1 PG NO (1 – 34)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ DIRECT PROPORTION ✓ ALGEBRAIC AND GRAPHICAL REPRESENTATION OF DIRECT PROPORTION. ✓ OTHER FORMS OF DIRECT PROPORTION ✓ INVERSE PROPORTION ✓ ALGEBRAIC AND GRAPHICAL REPRESENTATION OF INVERSE PROPORTION. ✓ OTHER FORMS OF INVERSE PROPORTION 	<p>Students should be able to:</p> <ul style="list-style-type: none"> • Understand the concept of Direct Proportion. • Write an equation connecting two quantities which are directly proportional to each other. • Solve problems involving direct proportion. • Understand the concept of Inverse Proportion. • Write down an equation connecting two quantities which are inversely proportional to each other. • Solve problems involving inverse proportion.
<p>TOPIC: STATISTICS CHAPTER NO 13, BOOK – 1 PG NO (291 – 320)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ INTRODUCTION TO NUMERICAL DATA ✓ COLLECTION, ORGANIZATION AND INTERPRETATION OF DATA ✓ PICTOGRAMS ✓ BAR GRAPHS ✓ PIE CHARTS ✓ LINE GRAPHS ✓ FREQUENCY TABLES AND HISTOGRAMS ✓ GROUPED FREQUENCY TABLE 	<p>Students should be able to:</p> <ul style="list-style-type: none"> • Collect, classify, and organize data logically and present it in the form of a table. • Illustrate a given set of information by drawing: j. A pictogram, ii. A bar graph • Illustrate a given set of information by drawing a pie chart. • Illustrate a given set of information by drawing a line graph. • Construct a frequency table to represent a set of data. • Construct a histogram for a distribution. • Construct a group-frequency table and draw a histogram.
<p>TOPIC: AVERAGES OF STATISTICAL DATA BOOK – 2, CHAP NO. 17 PG NO (491 – 517)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ MEAN ✓ MEDIAN ✓ MODE 	<p>Students should be able to:</p> <ul style="list-style-type: none"> • Collect and organize data logically, and present it in the form of a table. • Find mean for a set of data. • Find median for a set of data. • Find mode for a set of data. • Find the mean of a set of grouped data. • Solve more difficult problems involving mean, median, and mode.

DIRECT AND INVERSE PROPORTION:

Words to Remember:

Ratio, Proportional, Direct proportional, Inverse proportional, Proportional parts

Surf IT:

Interactive learning

<http://www.mathsisfun.com/algebra/directly-inversely-proportional.html>

Examples and material on proportion

<http://donsteward.blogspot.co.uk/search/label/proportion>

Sample Questions:

1. If q is inversely proportional to p , and $q = 120$ when $p = 2$, form an equation connecting p and q and calculate q when $p = 5$.
2. If y is inversely proportional to $(2x + 1)$ and $y = 5$ when $x = 3$, find (a) y when $x = 17$, (b) x when $y = 7$.
3. When a particle falls from rest in a vacuum, its distance from the starting point is directly proportional to the square of the time it has been falling. If a particle falls through 120 metres in 5 seconds, find
 - (a) How far it falls in 8 seconds,
 - (b) How long it takes to fall 750 metres.

STATISTICS:

Words to Remember:

Pictogram, Bar graph, Pie chart, Angle sector, Tally marks, Class intervals, Line graph, Histogram, Grouped data, Frequency table.

Surf IT:

BBC Bitesize has work on charts, diagrams and statistical calculations:

www.bbc.co.uk/schools/gcsebitesize/maths/statistics/ Work on statistics at:

www.cimt.plymouth.ac.uk/projects/mepres/allgcse/bkb8.pdf

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Sample Questions:

4. The table below shows the frequency distribution of the number of grammatical mistakes made by each student in a class of 40.

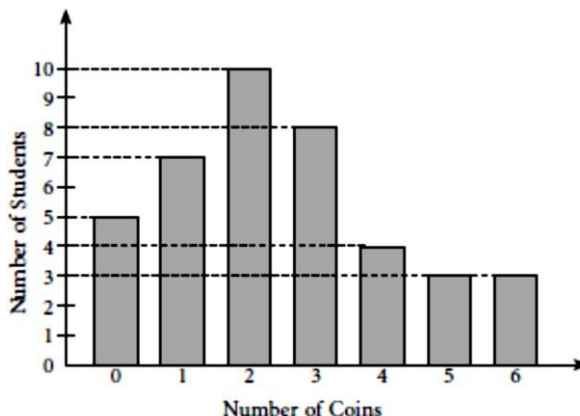
Number of mistakes	0	1	2	3	4	5	6
Number of students	4	8	12	4	6	4	2

- (a) Draw a histogram to represent the frequency distribution.
 - (b) What is the most common number of mistakes made by the students?
 - (c) Find the percentage of students who make more than 3 mistakes.
5. A group of American students were asked to state their political party affiliations such as Democratic, Republican, or Others. The overall response is given in the table below:

Party	Democratic	Republican	Others
frequency	13	18	9

Draw a pie chart to represent the distribution.

6. Each student from a Secondary-2 class was asked individually how many coins they had in their pockets. The bar chart below illustrates the results of this survey.



- (a) Find
 - (i) The number of students in the class,

(ii) The percentage of students having 4 or more coins.

(b) Display the results of the survey using a pie chart with 5 sectors, one of which represents students having 4 or more coins.

Activity:

In activity each girl has to measure her height in cm and weight in kilograms. When all data is collected then on a big chart paper on x-axis take weight of each girl and on y-axis take height of each girl will be marked. After scaling they have to make a bar graph of their findings.

AVERAGES OF STATISTICAL DATA:

Words to Remember:

Pictogram, Pie chart, Histogram, Dot diagram, Interprets, Grouped data, Grouped frequency table, Mode, Mean, Median, Average, Class intervals.

Surf IT:

Work on tables and charts at:

www.cimt.plymouth.ac.uk/projects/mepres/allgcse/bkb8.pdf

Mean, median and mode are dealt with at:

www.cimt.plymouth.ac.uk/projects/mepres/allgcse/bkb9.pdf

Work on statistics at:

www.cimt.plymouth.ac.uk/projects/mepres/allgcse/bkb8.pdf Math

Is Fun has work on simple histograms:

www.mathsisfun.com/data/histograms.html

Sample Questions:

1. The table below shows the frequency distribution of the number of school-going children, per family, in a small town.

Number of school-going children	0	1	2	3	4
Frequency	12	6	7	3	2

Find the

- (a) Mean,
- (b) Median,
- (c) Mode of the distribution.

2. The table below shows the distribution of ages for the members of a club.

Age (years)	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	1	2	16	18	9	4

- (a) Construct a histogram to represent the distribution.
- (b) Calculate the mean age of the members of the club.
- (c) State the modal class.

3. The ages of 13 members of a club are as follows: 28, 31, 33, 31, 41, 41, 31, 42, 35, 34, 31, 25, 39, 17 (a) State the mode.

- (b) Find the (i) Mean,
- (ii) Median of the thirteen numbers.

(c) When a new member joins the club, the new mean age of the members is 35 years. Calculate the age of the new member.

FEBRUARY

- **Linear Inequalities in One Variable**
Book – 3, Chap No. 3
Pg No (52 – 70)
- **Application of Mathematics in Practical Situations**
Book – 3, Chap No. 5
Pg No (111 – 138)

CONTENTS	LEARNING OBJECTIVES
<p>TOPIC: LINEAR INEQUALITIES IN ONE VARIABLE BOOK – 3, CHAP NO. 3 PG NO (52 – 70)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ INEQUALITIES ✓ PROBLEM SOLVING INVOLVING INEQUALITIES ✓ LIMITS OF ACCURACY 	<p>Students should be able to:</p> <ul style="list-style-type: none"> • Solve simple linear inequalities in one unknown. • Represent inequalities on a number line. • Use the addition property of inequality to isolate variables and solve algebraic inequalities. • Use the multiplication property of inequality to isolate variables and solve algebraic inequalities • Form and solve linear inequalities from given word problems. • Use interval notation correctly. • Solve applications involving linear equations and inequalities. • Calculate the lower and upper bound values. • Calculate the range of the value in the form of inequality.
<p>TOPIC: APPLICATION OF MATHEMATICS IN PRACTICAL SITUATIONS BOOK – 3, CHAP NO. 5 PG NO (111 – 138)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none"> ✓ PROFIT AND LOSS ✓ DISCOUNT, TAXATION AND COMMISSION. ✓ SIMPLE INTEREST AND COMPOUND INTEREST. ✓ MONEY EXCHANGE 	<p>Students should be able to:</p> <ul style="list-style-type: none"> • Solve problems involving profit and loss. • Solve problems involving further examples of percentages. • Solve problems involving discount, taxation, commission. • Solve problems involving simple interest. • Solve problems involving compound interest. • Convert one currency to another. • Use different problem solving strategies to solve everyday life problems. • Use conversions between currencies, using conversion rates.

LINEAR INEQUALITIES IN ONE VARIABLE:

Words to Remember

Equality, Inequality, Greater than, Smaller than, Greater than and equal to, Smaller than and equal to, Equal to, Not equal to, Circle dot, Circle, Upper bound, Lower bound.

Surf IT:

Work on formulae:

www.cimt.plymouth.ac.uk/projects/mepres/allgcse/bka2.pdf Work on directed numbers, simplifying and simple equations:

www.cimt.plymouth.ac.uk/projects/mepres/allgcse/bkb10.pdf.

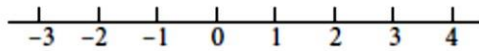
Work on inequalities:

www.cimt.plymouth.ac.uk/projects/mepres/allgcse/bkc16.pdf

Sample Questions:

- Simplify the inequality $2y - 5 > 2x + 4y + 3$
- Find the largest integral value of x , which satisfying the inequality $3x + 7 \geq 7x - 54$.
- Given that $-4\frac{2}{3} \leq 2k \leq 17\frac{1}{3}$, write down
 - The smallest integer value of k .
 - The largest prime value of k .
 - The largest rational value of k .
- Solve the inequality $x \frac{\quad}{4} < \frac{\quad}{5} \leq \frac{\quad}{5} - 2$ $3x+1$ $15-2x$ and illustrate your solution with a number line.

5. (a) Solve the inequality $\frac{5x-2}{-3} > 2 - 3x$ and indicate your answer on the number line given below.



- (b) If x is a prime number, state the smallest possible value of x .

APPLICATION OF MATHEMATICS IN PRACTICAL SITUATION:

Words to Remember:

Cost price, Sale price, Profit, Loss, Price, Percentage profit, Percentage loss, Discount, Marked price, Interest, Rate, Per Annum, Principal, Amount, Time.

Surf IT:

A variety of activities based on money and finance:

www.bbc.co.uk/bitesize/standard/maths_i/numbers/ Activity:

Price of coffee

<http://reflectivemaths.wordpress.com/2014/06/02/price-of-coffee/> Activity:

Percentages

www.bbc.co.uk/schools/gcsebitesize/maths/number/

Sample Questions:

1. Abel bought a mini hi-fi set for \$600. He sold it to Bob at a loss of 20%. Bob sold it to Charles and made a profit of 5%. How much did Charles pay for it?
2. The simple interest on \$680 for 5 years is \$119. What is the rate of interest per annum?
3. If 15 kg of rambutans cost \$25.00, calculate
 - (a) The cost of 24 kg of rambutans,
 - (b) The quantity of rambutans (in kg) that can be bought for \$30.00.
4. A shopkeeper bought a watch for US\$60 and sold it for \$102.60, Find his percentage of profit. (Take US\$ 1 = S\$ 1.425).

MARCH

- Quadratic Equations and Graphs Book – 2, Chap No. 5
Pg No (137 – 158)

CONTENTS	LEARNING OBJECTIVES
<p>TOPIC: QUADRATIC EQUATIONS AND GRAPHS BOOK – 2, CHAP NO. 5 PG NO (137 – 158)</p> <p>SUBTOPICS:</p> <ul style="list-style-type: none">✓ SOLVING QUADRATIC EQUATIONS BY FACTORIZATION.✓ APPLICATION OF QUADRATIC EQUATIONS IN REAL – WORLD CONTEXTS.✓ GRAPHS OF QUADRATIC FUNCTIONS.	<p>Students should be able to:</p> <ul style="list-style-type: none">• Solve quadratic equations by factorization.• Identify important features of quadratic graphs $y = ax^2 + bx - c$ when a takes on positive and negative values.• Construct a table of values for x and y for a quadratic function.• Plot a quadratic graph from a table of values.• Identify the equation of a line of symmetry of a quadratic graph.• Find the values of x and y from the quadratic graph by locating the point/s of intersection of a graph and a straight line.• Find minimum or maximum point of the graph.• Express a word problem into a quadratic equation, and solve the problem using a graphical method.

QUADRATIC EQUATIONS AND GRAPHS:

Words to Remember:

Scale, Coordinates, Minimum point (Lowest point), Maximum point (Highest point), Line of Symmetry,

Surf IT:

Introduction of Quadratic Graphs:

www.purplemath.com/modules/grphquad.html Quadratic Graphs

<https://www.mathsisfun.com/algebra/quadratic-equation-graphing.html>

Video lesson of graph to solve quadratic equation.

<https://www.mathplanet.com/education/algebra-1/quadratic-equations/use-graphing-to-solvequadratic-equations>

Sample Question:

1. The variables u and v are connected by the equation $v = 4 - 2u - u^2$.

(a) Copy and complete the table below for some corresponding values of u and v .

u	-4	-3	-2	-1	0	1	2
v	-4	1				1	

(b) Taking 2 cm to represent 1 unit on both axes, draw the graph of $v = 4 - 2u - u^2$, for values of u in the range $-4 \leq u \leq 2$. (c) Use your graph to find

(i) The values of u when $v = 2.5$ (ii) The maximum value of $4 - 2u - u^2$ (iii) The equation of the line of symmetry.

APRIL

- **Relations and Functions**
Book – 2, Chap No. 7
Pg No (181 – 189)

REVISION FOR FINAL EXAMS

CONTENTS	LEARNING OBJECTIVES
<p>TOPIC: RELATIONS AND FUNCTIONS BOOK – 2, CHAP NO. 7 PG NO (181 – 189)</p> <p>SUBTOPICS: ✓ RELATIONS ✓ FUNCTIONS</p>	<p>Students should be able to:</p> <ul style="list-style-type: none">• Define a function.• Verify if a given relation is a function.• Solve problems on functions involving linear expressions.

MAY

FINAL EXAMS