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| ***SCHEME OF WORK FORM FOUR MATHEMATICS TERM ONE YEAR 2019*** | | | | | | | |
| WK **NO.** | **L/NO** | **TOPIC / SUBTOPIC** | **LESSON / SPECIFIC**  **OBJECTIVES** | **TEACHING / LEARNING**  **ACTIVITIES** | **MATERIALS**  **/**  **RESOURCES** | ***REFERE-***  ***NCES*** | **REMARKS** |
| 1 | 1 | MATRICES & TRANSFORMA-TIONS  Definition of a transformation.  Reflection in the  y-axis. | *By the end of the lesson, the learner should be able to:*  Define a transformation.  Obtain image of an object by reflection in the y-axis. | Questioning to review position vectors;  Drawing objects and their images on the Cartesian plane;  Inferring the matrix of transformation for  reflection in the y-axis.  Written exercise. | Geo – board,  Graph papers,  mirrors. | *KLB BK IV*  *Pgs 1-2* |  |
| 2 | Reflection in the  x-axis. | Obtain image of an object by reflection in the x-axis. | Drawing object and image on the Cartesian plane;  Inferring the matrix of transformation for  reflection in the x-axis.  Written exercise. | Geo – board,  Graph papers,  mirrors. | *KLB BK IV*  *Pgs 2 - 3* |  |
| 3 | Reflection in the  Lines y = x,  y = - x and other lines. | Obtain image of an object by reflection in a given line.  Obtain the object given its image and line of reflection. | Review equation of a line;  Draw the line y = x;  Reflect an object in the line  y = x;  Infer the matrix of transformation  Written exercise. | Geo – board,  Graph papers,  mirrors. | *KLB BK IV*  *Pgs 2-3* |  |
| 4 | Rotation matrix.  (positive angle) | Obtain image of an object by rotation through a positive angle.  Obtain the object given its image and positive rotation angle. | Guided discovery;  Worked example;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 3-4* |  |
|  | 5 | Rotation matrix.  (negative angle) | Obtain image of an object by rotation through a negative angle. | Guided discovery;  Worked example;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 3-4* |  |
|  | 6 | The unit circle. | Use the unit circle to identify a transformation represented by a given matrix. | Guided discovery;  Worked example;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 9-13* |  |
|  | 7 | Finding matrix of transformation. | Find matrix of transformation given an object and image.  Describe the transformation fully. | Review simultaneous equations and matrix multiplication;  Worked examples;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 6-8* |  |
| 2 | 1 | Enlargement matrix. | Identify an enlargement matrix.  Perform operations involving enlargement matrices. | Review scale factor and centre of enlargement;  Worked examples;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 11-12* |  |
|  | 2 | Two successive transformations. | Perform two successive transformations. | Guided discovery of order of operation;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 16-17* |  |
|  | 3 | Several successive transformations. | Perform several successive transformations. | Previous exercise review;  Guided discovery of order of operation;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 16-17* |  |
|  | 4 | Combined matrix of transformations. | Find combined matrix of several transformations. | Previous exercise review;  Guided discovery of order of operation;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 21-22* |  |
|  | 5 | Inverse of a transformation matrix. | Identify the identity matrix.  Determine the inverse of a transformation matrix. | Worked examples using several methods;  Supervised practice;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 24-26* |  |
|  | 6 | Inverse of several transformation matrices. | Determine the inverse of several combined transformation matrices. | Worked;  Supervised practice;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 24-26* |  |
|  | 7 | A.S.F. and determinant of a transformation matrix. | State the relation between A.S.F. and determinant of a transformation matrix. | Finding area of object, image, ASF;  Guided discovery;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 26-27* |  |
| 3 | 1 | Shear transformation.  (x-axis invariant) | Identify a shear transformation. (x-axis invariant)  Describe a shear fully. | Drawing object and image under a shear transformation;  Oral exercise;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 28-32* |  |
|  | 2 | Shear transformation.  (y-axis invariant) | Identify a shear transformation. (y-axis invariant)  Describe a shear fully. | Drawing object and image under a shear transformation;  Oral exercise;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 28-31* |  |
|  | 3 | Finding shear matrix. | Find shear matrix given the object and image. | Worked examples;  Written exercise. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 31-2* |  |
|  | 4 | One-way stretch.  (x-axis invariant) | Describe a one-way stretch.  (x-axis invariant)  Find the scale factor of a stretch. | Guided discovery;  Worked examples and discussion. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 32-34* |  |
|  | 5 | One-way stretch.  (y-axis invariant) | Describe a one-way stretch.  (y-axis invariant).  Find the scale factor of a stretch. | Guided discovery;  Worked examples and discussion. | Geo – board,  Graph papers. | *KLB BK IV*  *Pgs 32-34* |  |
|  | 6 | Isometric and non-isometric transformation. | Classify transformations as either isometric or non-isometric. | Review types of transformations;  Probing questions on size and shape of objects and images. |  | *KLB BK IV*  *Pg 35* |  |
|  | 7 | Test / mixed exercise. |  |  | Past exam papers. |  |  |
| 4 | 1 | STATISTICS II  Mean and assumed mean.  (frequency 1) | Find mean of ungrouped data using an assumed mean.  (frequency 1) | Simple worked examples;  Exposition of method involving an assumed mean;  Written exercise. | Calculator. | *KLB BK IV*  *Pgs 38-39* |  |
|  | 2 | Mean and assumed mean.  (frequency > 1) | Find mean of ungrouped data using an assumed mean.  (frequency > 1) | Simple worked examples;  Written exercise. | Calculator. | *KLB BK IV*  *Pg 40* |  |
|  | 3 | Mean of grouped data. | Find mean of grouped data. | Review previous exercise;  Completing table;  Worked examples. | Calculator. | *KLB BK IV*  *Pgs 40-41* |  |
|  | 4 | Mean of grouped data.  (alternative methods) | Find mean of grouped data.  (alternative methods) | Completing table;  Worked examples.  Written exercise. | Calculator. | *KLB BK IV*  *Pgs 40-46* |  |
|  | 5 | Median. | Find median of grouped data. | Worked examples;  Written exercise. | Calculator. | *KLB BK IV*  *Pgs 46-7* |  |
|  | 6 | Quartiles. | Find upper and lower quartiles. | Exposition;  Worked examples;  Written exercise. | Calculator. | *KLB BK IV*  *Pgs 47-8* |  |
|  | 7 | Deciles and Percentiles. | Define a decile and percentile.  Find nth decile / percentile. | Exposition;  Worked examples;  Written exercise. | Calculator. | *KLB BK IV*  *Pgs 47-8* |  |
| 5 | 1 | Cumulative frequency curve. | Draw a cumulative frequency curve. | Q/A to review upper and lower limits of class boundaries;  Complete a table by finding cumulative totals;  Draw an ogive. | Calculator, graph papers. | *KLB BK IV*  *Pgs 38-40* |  |
|  | 2 | Median and quartiles from an ogive. | Estimate median and quartiles from an ogive. | Probing questions to make inferences from an ogive. | Calculator, graph papers. | *KLB BK IV*  *Pgs 48-50* |  |
|  | 3 | Deciles and percentiles from an ogive. | Estimate deciles and percentiles from an ogive. | Probing questions to make inferences from an ogive. | Calculator, graph papers. | *KLB BK IV*  *Pgs 53-55* |  |
|  | 4 | Range, inter-quartile range and quartile deviation. | Find range and inter-quartile range of a set of data. | Exposition and oral exercise. | Calculator. | *KLB BK IV*  *Pgs 55-56* |  |
|  | 5 | Mean absolute deviation. | Determine mean absolute deviation. | Exposition;  Worked examples. | Calculator. | *KLB BK IV*  *Pgs 56-7* |  |
|  | 6 | Variance. | Define variance.  Determine variance of a set of data. | Exposition;  Worked examples. | Calculator. | *KLB BK IV*  *Pgs 57-59* |  |
|  | 7 | Standard deviation. | Determine standard deviation of a set of data. | Exposition;  Worked examples;  Written exercise. | Calculator. | *KLB BK IV*  *Pgs 59-60* |  |
| 6 | 1-4 | Formulae for standard deviation. | Use various methods of finding std deviation. | Exposition;  Worked examples;  Written exercise. | Calculator. | *KLB BK IV*  *Pgs 60-3* |  |
|  | 5 | LOCI  Definition of a locus. | Define locus of a point. | Illustrative examples;  Exposition of meaning of locus of a point. | Door, clock, see saw, etc. | *KLB BK IV*  *Pgs 66-7* |  |
|  | 6 | Sketching locus of a point. | Sketch locus of a point. | Oral exercise;  Supervised practice;  Written exercise. |  | *KLB BK IV*  *Pgs 67-8* |  |
|  | 7 | Perpendicular bisector locus.  (two dimensions) | Describe perpendicular bisector locus.  (two dimensions) | Geometrical construction;  Guided discovery;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pgs 68-9* |  |
| 7 | 1 | Perpendicular bisector locus.  (three dimensions) | Describe perpendicular bisector locus.  (three dimensions) | Geometrical construction;  Guided discovery;  Supervised practice;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pg 69* |  |
|  | 2 | Locus of points at a given distance from a fixed point.  (two dim) | Describe locus of points at a given distance from a fixed point. | Geometrical construction;  Guided discovery;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pg 70* |  |
|  | 3 | Locus of points at a given distance from a fixed point.  (three dim) | Describe locus of points at a given distance from a fixed point. | Geometrical construction;  Guided discovery;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pg 71* |  |
|  | 4 | Locus of points at a given distance from a line.  (two dim) | Describe locus of points at a given distance from a fixed point. | Geometrical construction;  Guided discovery;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pg 69* |  |
|  | 5 | Locus of points at a given distance from a line.  (three dim) | Describe locus of points at a given distance from a fixed point. | Geometrical construction;  Guided discovery;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pg 70* |  |
|  | 6 | Angle bisector locus. | Construct the angle bisector locus. | Geometrical construction;  Guided discovery;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pg 70* |  |
|  | 7 | Constant angle locus. | Construct constant angle locus. | Probing questions to review angle properties of a circle;  Geometrical construction;  Guided discovery;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pgs 72-4* |  |
| 8 | 1 | Constant angle locus.  (contd) | Construct constant angle locus. | Probing questions to review previous exercise;  Geometrical construction;  Guided discovery;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pgs 72-4* |  |
|  | 2 | Intersecting loci involving lines and angles. | Construct intersecting loci involving lines and angles. | Geometrical construction;  Supervised practice;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pgs 72-4* |  |
|  | 3 | Circumcircle locus. | Construct a circumcircle. | Geometrical construction;  Supervised practice;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pg 78* |  |
|  | 4 | In-circle locus. | Construct an in-circle locus. | Geometrical construction;  Supervised practice;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pg 78* |  |
|  | 5 | Ex-circle locus. | Construct an ex-circle locus. | Geometrical construction;  Supervised practice;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pg 78* |  |
|  | 6 | Intersecting loci in plane figures. | Construct intersecting loci in plane figures. | Problem solving. | Geometrical sets. | *KLB BK IV*  *Pgs 79-81* |  |
|  | 7 | Loci of inequalities. | Draw locus of points that satisfy various inequalities. | Q/A to review simple and compound inequalities;  Worked examples;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pgs 81-2* |  |
| 9 | 1 | Loci of inequalities.  (contd) | Draw locus of points that satisfy various inequalities. | Review previous exercise;  Further worked examples;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pg 83* |  |
|  | 2 | Locus involving chords. | Construct locus involving chords. | Worked examples;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pgs 96-97* |  |
|  | 3 | TRIGONOMETRY  III  Some trigonometric ratios. | Rearrange  trigonometric expressions. | Exposition and worked examples;  Written exercise. | Geometrical sets. | *KLB BK IV*  *Pgs 90-91* |  |
|  | 4 | Trigonometric identities. | Prove some trigonometric identities. | Problem solving. | Geometrical sets. | *KLB BK IV*  *Pgs 100-1* |  |
|  | 5 | Period and amplitude of waves. | Determine period and amplitude of waves. | Exposition and worked examples. | Geometrical sets. | *KLB BK IV*  *94-5* |  |
|  | 6 | Tables for trigonometric functions. | Complete tables for trigonometric functions. | Exposition and worked examples. | Calculator. | *KLB BK IV*  *Pgs 96-7* |  |
|  | 7 | Graphs for trig. functions. | Plot graphs for trigonometric functions. | Drawing graphs; supervised practice; make inferences from the graphs. | Geometrical sets, graph papers. | *KLB BK IV*  *Pgs 96-7* |  |
| 10 | 1 | Further graphs for trig. functions. | Plot graphs for trigonometric functions. | Drawing graphs; supervised practice; make inferences from the graphs. | Geometrical sets, graph papers. | *KLB BK IV*  *Pgs 96-7* |  |
|  | 2 | Transformations of waves. | Describe some transformations of waves. | Supervised practice;  Exposition and worked examples;  Written exercise. | Geometrical sets, graph papers. | *KLB BK IV*  *Pgs 96-97* |  |
|  | 3 | Waves with a phase angle.  (positive) | Determine the phase angle (positive) for two waves. | Guided discovery;  Written exercise. | Geometrical sets, graph papers. | *KLB BK IV*  *Pgs 97-8* |  |
|  | 4 | Waves with a phase angle.  (negative) | Determine the phase angle (negative) for two waves. | Guided discovery;  Written exercise. | Geometrical sets, graph papers. | *KLB BK IV*  *Pgs 97-8* |  |
|  | 5 | Trigonometric equations. | Solve trigonometric equations. | Q/A to review trig. ratios for complementary angles;  Worked examples;  Supervised practice;  Written exercise. | Geometrical sets, graph papers. | *KLB BK IV*  *Pgs 100-3* |  |
|  | 6 | Further trig. equations. | Solve trigonometric equations. | Exercise review;  Problem solving. | Geometrical sets, graph papers. | *KLB BK IV*  *Pgs 100-3* |  |
|  | 7 | Graph of a trig. function and a line. | Draw the graph of a trig. function and a line to solve an equation. | Worked examples;  Supervised practice;  Written exercise. | Geometrical sets, graph papers. | *KLB BK IV*  *Pgs 100-3* |  |
| 11 | 1 | Graphs of two trig. functions. | Draw graphs of two trig. functions to solve some equations. | Worked examples;  Supervised practice;  Written exercise. | Geometrical sets, graph papers. | *KLB BK IV*  *Pgs 100-3* |  |
|  | 2 | THREE DIMENSIONAL GEOMETRY  Dimensions of figures. | State the dimensions of figures.  Identify faces, edges, and vertices of common figures. | Probing questions;  Oral exercise. | Common planes and solids. | *KLB BK IV*  *Pgs 104-6* |  |
|  | 3 | Angle between a line and a plane. | Identify the angle between a line and a plane. | Exposition;  Oral exercise. | Cuboid wire mesh. | *KLB BK IV*  *Pgs 106-7* |  |
|  | 4 | Finding the angle between a line and a plane. | Find the angle between a line and a plane. | Guided discovery;  Worked examples;  Written exercise. | Models of solids. | *KLB BK IV*  *Pgs 107-113* |  |
|  | 5 | Finding the angle between a line and a plane.  (contd) | Find the angle between a line and a plane. | Problem solving. | Models of solids. | *KLB BK IV*  *Pgs 107-113* |  |
|  | 6 | Angle between two planes. | Identify the angle between two planes. | Q/A counting planes;  Exposition. | Models of solids. | *KLB BK IV*  *Pgs 113-118* |  |
|  | 7 | Angle between two planes.  (contd) | Find the angle between two planes. | Exposition;  Guided discovery;  Worked examples;  Written exercise. | Models of solids. | *KLB BK IV*  *Pgs 113-118* |  |
| 12  13 |  | *END OF TERM EXAMS* | | | | |  |

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| ***SCHEME OF WORK FORM FOUR MATHEMATICS TERM TWO YEAR 2019*** | | | | | | | | | | | | | | |
| 1 | 1 | Angle between two planes.  (contd) | Find the angle between two planes. | Problem solving. | Models of solids. | *KLB BK IV*  *Pgs 113-118* |  | | | |
|  | 2 | Length between two points in three dimensions. | Determine length between two points in three dimensions. | Supervised practice,  Problem solving. | Models of solids. | *KLB BK IV*  *Pgs 119-124* |  | | | |
|  | 3 | Length between two points on nets of solids. | Determine length between two points on nets of solids. | Making nets of solids;  Supervised practice,  Problem solving. | Manilla off-cuts, scissors/ Models of solids. | *KLB BK IV*  *Pg 118* |  | | | |
|  | 4 | Angle between skew lines. | Find the angle between skew lines. | Exposition;  Guided discovery;  Worked examples;  Written exercise | Models of solids. | *KLB BK IV*  *Pgs 142-8* |  | | | |
|  | 5 | LONGITUDES AND LATITUDES  Great and small circles | Identify great and small circles from on a globe. | Probing questions;  Oral exercise. | Globe, atlas. | *KLB BK IV*  *Pgs 125-7* |  | | | |
|  | 6 | Difference in longitudes and latitudes. | Find the difference in longitudes and latitudes. | Probing questions;  Oral exercise. | Wire globe. | *KLB BK IV*  *Pgs 128-9, 131-141* |  | | | |
|  | 7 | Distance along a great circle.  (in nm) | Calculate the distance along a great circle.  (in nm) | Exposition;  Guided discovery;  Worked examples;  Written exercise | Wire globe, calculator. | *KLB BK IV*  *Pgs 130-3,*  *131-141* |  | | | |
| 2 | 1 | Distance along a great circle.  (in km) | Calculate the distance along a great circle.  (in nm) | Exposition;  Guided discovery;  Worked examples;  Written exercise | Wire globe, calculator. | *KLB BK IV*  *Pgs 130-3,*  *131-141* |  | | | |
|  | 2 | Distance along a small circle.  (in nm) | Calculate the distance along a great circle.  (in nm) | Exposition;  Guided discovery;  Worked examples;  Written exercise | Wire globe, calculator. | *KLB BK IV*  *Pgs 130-3,*  *131-141* |  | | | |
|  | 3 | Distance along a small circle.  (in km) | Calculate the distance along a great circle.  (in nm) | Review previous exercise;  Worked examples;  Written exercise | Wire globe, calculator. | *KLB BK IV*  *Pgs 133-7* |  | | | |
|  | 4 | Shortest distance between two points on the earth’s surface. | Determine the shortest distance between two points on the earth’s surface. | Review previous exercise;  Worked examples;  Written exercise | Wire globe, calculator. | *KLB BK IV*  *Pgs 137-9* |  | | | |
|  | 5 | Longitudes and time. | Relate longitudes with local time. | Probing questions;  Worked examples;  Written exercise. | Wire globe, calculator. | *KLB BK IV*  *Pgs 141-2* |  | | | |
|  | 6 | Speed (in km/h) | Calculate speed given distance and time. | Probing questions;  Worked examples;  Written exercise. | Wire globe, calculator. | *KLB BK IV*  *Pgs 142* |  | | | |
|  | 7 | Speed (in knots) | Calculate speed given distance in nm and time. | Review previous exercise;  Probing questions;  Worked examples;  Written exercise. | Wire globe, calculator. | *KLB BK IV*  *Pgs 142* |  | | | |
| 3 | 1 | LINEAR PROGRAMMING  Forming inequalities. | Form inequalities from given situations. | Q/A to review inequalities;  Worked examples;  Written exercise. | Graph papers. | *KLB BK 1V*  *Pgs 150-1* |  | | | |
|  | 2 | Forming inequalities. | Form inequalities from given situations. | Review previous exercise.  Problem solving. | Graph papers. | *KLB BK IV*  *Pgs 150-1* | |  | | | |
|  | 3 | Solutions of linear inequalities. | Solve linear inequalities. | Probing questions;  Worked examples;  Written exercise. | Graph papers. | *KLB BK IV*  *Pgs 151-2* | |  | | | |
|  | 4 | Graphs of linear inequalities. | Represent situations graphically with inequalities. | Worked examples;  Supervised practice;  Written exercise. | Graph papers. | *KLB BK IV*  *Pgs 188-90* | |  | | | |
|  | 5 | Graphs of linear inequalities.  (contd) | Represent situations graphically with inequalities. | Exercise review;  Supervised practice;  Written exercise. | Graph papers. | *KLB BK IV*  *Pgs 188-90* | |  | | | |
|  | 6 | Objective function. | Formulate the objective function. | Probing questions;  Oral exercise. | Graph papers. | *KLB BK IV*  *Pgs 191-4* | | |  | | | |
|  | 7 | Optimization. | Obtain the optimum solution to inequalities. | Exposition;  Guided discovery.  Written exercise. | Graph papers. | *KLB BK IV*  *Pgs 194-7* | | |  | | | |
| 4 | 1 | Further Optimization. | Obtain the optimum solution to inequalities. | Guided discovery.  Written exercise. | Graph papers. | *KLB BK IV*  *Pgs 197-201* | | |  | | | |
|  | 2 | **DIFFERENTI--**  **ATION**  Average rate of change. | Define average rate of change.  Determine average rate of change. | Filling in a table of values for a curve;  Plotting the curve;  Finding average rate of change.  Written exercise. | Graph papers, calculaors. | *KLB BK IV*  *Pgs 162-3* | | |  | | | |
|  | 3 | Instantaneous rate of change. | Define instantaneous rate of change.  Determine instantaneous rate of change. | Drawing a tangent to a curve;  Supervised working;  Written exercise. |  | *KLB BK IV*  *Pg 163* | | |  | | | |
|  | 4 | Gradient of a curve at a point. | Find gradient of a curve at a point. | Q/A to review gradient of a line;  Exposition of gradient of a curve;  Worked examples. |  | *KLB BK IV*  *Pgs 163-4* | | | |  |
|  | 5 | Gradient of a curve.  (first principles) | Determine gradient of a curve.  (first principles) | Exposition;  Probing questions. |  | *KLB BK IV*  *Pgs 164-6* | | | |  |
|  | 6 | Derivative of a function. (first principles) | Obtain derivative of a function. (first principles) | Exposition;  Probing questions. |  | *KLB BK IV*  *Pgs 167-9* | | | |  |
|  | 7 | Meaning of differentiation. | Recall the process of differentiation. | Exposition;  Worked examples;  Supervised practice;  Written exercise. |  | *KLB BK IV*  *Pgs 166-7* | | | |  |
| 5 | 1 | Derivative of a polynomial. | Differentiate a polynomial. | Exposition;  Worked examples;  Supervised practice;  Written exercise. |  | *KLB BK IV*  *Pgs 170-2* | | | |  |
|  | 2 | Derivative of a polynomial with a denominator. | Differentiate a polynomial having a denominator. | Exposition;  Worked examples;  Supervised practice;  Written exercise. |  | *KLB BK IV*  *Pgs 170-2* | | | |  |
|  | 3 | Derivative of a quadratic function. | Differentiate a quadratic function. | Exposition;  Worked examples;  Supervised practice;  Written exercise. |  | *KLB BK IV*  *Pgs 170-2* | | | |  | |
|  | 4 | Obtaining gradient from gradient function. | Obtain gradient from gradient function. | Worked examples;  Supervised practice;  Written exercise. |  | *KLB BK IV*  *Pgs 170-2* | | | |  | |
|  | 5 | Equation of a tangent to a curve at a point. | Find equation of a tangent to a curve at a point. | Q/A review gradient function;  Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 173-4* | | | |  | |
|  | 6 | Equation of a normal to a curve at a point. | Find equation of a normal to a curve at a point. | Q/A review gradient function and gradients of perpendicular lines;  Worked examples;  Supervised practice;  Written exercise. |  | *KLB BK IV*  *Pgs 173-4* | | | |  | |
|  | 7 | Stationary point ((minimum) | Determine minimum point of a curve. | Filling in a table of gradients at various points;  Probing questions;  Discussion. | Graph books. | *KLB BK IV*  *Pgs 174-5* | | | |  | |
| 6 | 1 | Stationary point ((maximum) | Determine maximum point of a curve. | Filling in a table of gradients at various points;  Probing questions;  Discussion. | Graph books. | *KLB BK IV*  *Pgs 175-6* | | | |  | |
|  | 2 | Stationary point (point of inflexion +ve to +ve) | Determine a point of inflexion on a curve. | Filling in a table of gradients at various points;  Probing questions;  Discussion. | Graph books. | *KLB BK IV*  *Pgs 176-7* | | | |  | |
|  | 3 | Stationary point (point of inflexion -ve to -ve) | Determine a point of inflexion on a curve. | Filling in a table of gradients at various points;  Probing questions;  Discussion. | Graph books. | *KLB BK IV*  *Pgs 176-7* | | | |  | |
|  | 4 | Features of a curve. | Identify points on a curve.  Identify stationary points of a curve. | Probing questions;  Oral exercise. | Graph books. | *KLB BK IV*  *Pgs 180-1* | | | |  | |
|  | 5 | Curve sketching | Sketch curves. | Supervised practice;  Written exercise. | Graph books. | *KLB BK IV*  *Pgs 180-2* | | | |  | |
|  | 6 | Displacement time graphs. | Sketch and interpret displacement time graphs. | Q/A to review relation between displacement and velocity;  Supervised practice;  Discussion. |  | *KLB BK IV*  *Pgs 182-3* | | | |  | |
|  | 7 | Velocity from displacement function. | Determine velocity from a displacement function. | Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 182-3* | | | |  | |
|  | 7 | 1 | Velocity time graphs. | Sketch and interpret velocity time graphs. | Q/A to review relation between velocity and acceleration;  Supervised practice;  Discussion. |  | *KLB BK IV*  *Pgs 184-6* | | | |  | | | |
|  | 2 | Acceleration from velocity function. | Determine velocity from a displacement function. | Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 184-6* | | | |  | | | |
|  | 3 | Acceleration from displacement function. | Determine acceleration from a displacement function. | Probing questions;  Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 184-6* | | | |  | | | |
|  | 4 | Maxima and minima. | Apply differentiation to find maxima and minima. | Exposition;  Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 186-9* | | | |  | | | |
|  | 5 | Maxima and minima (contd) | Apply differentiation to find maxima and minima. | Exercise review;  Problem solving. |  | *KLB BK IV*  *Pgs 186-9* | | | |  | | | |
|  | 6 | INTEGRATION  Reverse the process of differentiation. | Reverse the process of differentiation. | Probing questions;  Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 207-9* | | | |  | | | |
|  | 7 | Finding y given gradient function. | Find y given gradient function. | Probing questions;  Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 209-12* | | | |  | | | |
|  | 1 | Indefinite integral. | Obtain an indefinite integral. | Exposition;  Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 212-6* | | | |  | | | |
| 8 | 1 | Definite integral. | Obtain a definite integral. | Exposition;  Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 212-6* | | | |  | | | |
|  | 2 | Area bounded by a curve above x-axis. | Determine area bounded by a curve and x-axis. | Exposition;  Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 217-8* | | | |  | | | |
|  | 3 | Area bounded by a curve below x-axis. | Determine area bounded by a curve and x-axis. | Exposition;  Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 218-9* | | | |  | | | |
|  | 4 | Area bounded by a curve and a line. | Determine area bounded by a curve and a straight line. | Exposition;  Worked examples;  Written exercise. |  | *KLB BK IV*  *Pg 220* | | | |  | | | |
|  | 5 | Displacement from velocity function. | Obtain displacement from a velocity function. | Probing questions;  Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 223-4* | | | |  | | | |
|  | 6 | Velocity from acceleration function. | Obtain velocity from a acceleration function. | Probing questions;  Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 223-4* | | | |  | | | |
|  | 7 | Exercise on kinematics. | Apply integration and differentiation in kinematics. | Exercises review;  Problem solving. |  | *KLB BK IV*  *Pgs 225-231* | | | |  | | | |
| 9 | 1 | AREA APPROXIMATION  Trapezium rule. | Derive the trapezium rule. | Divide area under a graph into several trapezia;  Guided derivation of the trapezium rule. | Copies of area under a curve. | *KLB BK IV*  *Pgs 196-7* | | | |  | | | |
|  | 2 | Application of trapezium rule. | Apply trapezium rule in problem solving. | Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 197-201* | | | |  | | | |
|  | 3 | Application of trapezium rule. | Apply trapezium rule in problem solving. | Written exercise review.  Problem solving. |  | *KLB BK IV*  *Pgs 197-201* | | | |  | | | |
|  | 4 | The mid-ordinate rule. | Derive the mid-ordinate rule. | Divide area under a graph into several strips;  Guided derivation of the trapezium rule. |  | *KLB BK IV*  *Pgs 202-3* | | | |  | | | |
|  | 5 | Application of mid-ordinate rule. | Apply mid-ordinate rule.in problem solving. | Worked examples;  Written exercise. |  | *KLB BK IV*  *Pgs 203-6* | | | |  | | | |
|  | 6-7 | Application of mid-ordinate rule. | Apply mid-ordinate rule in problem solving. | Review exercises;  Problem solving. |  | *KLB BK IV*  *Pgs 203-6* | | | |  | | | |
| 10-13 |  | *MOCK K.C.S.E EXAM* | | | | | | | |  | | | |