PDST
Professional Development Service for Teachers | An tSeirbhís um Fhorbairt Ghairmiúil do Mhúinteoirí

Junior Certificate School Programme
Blackrock Education Centre, Kill Avenue, Dún Laoghaire, Co. Dublin
01 – 236 5000 jcsp@pdst.ie www.pdst.ie
Supporting teachers and students within the Junior Certificate School Programme

Draft Mathematics JCSP Statements

The following pages contain draft JCSP statements developed with input from a number of practicing mathematics teachers in JCSP schools. They are offered as one possible model that teachers may use to approach the teaching, learning and assessment of the learning outcomes in the Curriculum Specification for Junior Cycle Mathematics. They will be adjusted over time based on feedback from teachers in JCSP schools.

The mathematics specification may be accessed in full at www.curriculumonline.ie In addition, professional supports for teaching Junior Cycle mathematics may be accessed through the mathematics section of the Junior Cycle for Teachers (JCT) website, at www.jct.ie/maths/maths

It is important to note that the statements below offer a sample approach for the creation of Junior Cycle mathematics statements. They do not cover all of the learning outcomes which are expected to be taught in the new Junior Cycle course. It is envisaged that students would be given opportunities to experience rich learning through engaging with all of the learning outcomes in all of their classes.

Teachers are encouraged to engage with these statements as a possible approach to creating mathematics statements for their own students. Students' teachers are best placed to develop statements which will support their own students in their own particular class and school context.

February 2019

An Roinn Oideachais agus Scileanna
Department of Education and Skills

The PDST is funded by the Teacher Education Section of the Department of Education and Skills
& managed by the Dublin West Education Centre

Area of Experience: Mathematics

Maths

At Junior Certificate level I can:

MJC1 Representation - draft

MJC2 Communication - draft

MJC3 Problem-solving - draft

These 9 statements were drafted by JCSP Maths Teachers based on the Common Introductory Course (Project Maths) June 2014

Strand 1: Maths Statistics and Probability (MSP)

MSP1 Introduction to Probability

MSP2 Statistics

Strand 2: Maths Geometry and Trigonometry (MGT)

MGT1 Geometry

MGT2 Geometry

Strand 3: Maths Number (MN)

MN1 Number Systems

MN2 Decimals, Place Value, Fractions and Percentages

MN3 Fraction Operations 1

MN4 Fraction Operations 2

MN5 Sets

Current Statements

1 Use of Number

Apply the knowledge and skills necessary to preform mathematicalcalculations

2 Sets, Relations and Charts

Interpret and draw basic statistical charts and sets

Work begun | Work in progress | Work completed

Area of Experience: Mathematics

Maths

At Junior Certificate level I can:

3	**Perimeter, Area and Volume** Calculate perimeter, area and volume of given shape	☐☐☐
4	**Money** Apply the knowledge and skills needed to manage money in daily life	☐☐☐
5	**Use of Calculator** Apply the knowledge and skills necessary to perform basic operations using a calculator	☐☐☐
6	**Use of number with Calculator** Apply the knowledge and skills necessary to perform mathematical calculations	☐☐☐
7	**Graphs, Construction and Transformations** Apply the knowledge and skills required to sketch graphs and transformation and to perform basic construction in geometry	☐☐☐
8	**Time, Speed and Scale** Demonstrate and apply an understanding of time, speed and scale	☐☐☐
9	**Knowledge and Application of Geometry** Apply the knowledge and skills necessary to perform specified geometrical operations	☐☐☐
10	**Knowledge and Application of Algebra** Apply the knowledge and skills necessary to perform specified operations in algebra	☐☐☐
11	**Circle, Cylinder and Sphere** Calculate the perimeter, area and volume of curved shapes	☐☐☐
12	**Trigonometry** Use trigonometry to solve problems	☐☐☐
13	**Sets and Statistics** Draw and interpret sets and statistics	☐☐☐
14	**Knowledge and Application of Geometry 2** Perform additional operations in Geometry	☐☐☐
15	**Knowledge and Application of Geometry 3** Perform additional operations in Geometry	☐☐☐
16	**Quadratic and simultaneous Equations** Solve quadratic and simultaneous equations and simplify algebraic fractions	☐☐☐
17	**Factorisation, Inequalities and Equations** Factorise, graph and solve inequalities and solve more challenging equations in Algebra	☐☐☐
18	**Knowledge and Application of Coordinate Geometry** Apply my knowledge of Coordinate Geometry	☐☐☐
19	**Knowledge and understanding of Maths Theorems** Apply my knowledge and understanding of theorems	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Representation

Mathematics

Statement code no. MJC1

Student:

Class:

I can:

I have begun ☐☐☐ | I am working on this ☐☐☐ | I can ☐☐☐

This has been demonstrated by my ability to:

1. Use Number to represent a mathematical situation ☐☐☐
2. Use algebra to represent a mathematical situation ☐☐☐
3. Use words to represent a mathematical situation ☐☐☐
4. Draw and interpret different graphs ☐☐☐
5. Use digital technologies to represent a mathematical situation ☐☐☐
6. Apply the skill of estimation to a variety of real-life situations ☐☐☐
7. Give a reason for my choice of mathematical representation ☐☐☐
8. Identify patterns, trends and relationships ☐☐☐

Reflecting on my learning...

One thing I did well...

One thing I might improve...

I really enjoyed.....because...

Communication

Mathematics

Statement code no. MJC2

Student:

Class:

I can:

I have begun ☐☐☐ | I am working on this ☐☐☐ | I can ☐☐☐

This has been demonstrated by my ability to:

1. Communicate clearly using the language of mathematics; Number, words, units, tables, graphs, symbolically and pictorially ☐☐☐
2. Express my ideas clearly ☐☐☐
3. Explain my findings and/or workings ☐☐☐
4. Analyse my results ☐☐☐
5. Explain and justify my conclusions ☐☐☐
6. Use the notation of Mathematics ☐☐☐
7. Pose a question that leads to a mathematical discussion ☐☐☐
8. Use digital technologies to research and communicate Mathematics ☐☐☐
9. Rethink my ideas based on the feedback from others ☐☐☐
10. Suggest improvements for my own ideas and the ideas of others ☐☐☐

Reflecting on my learning...

One thing I did well...

One thing I might improve...

I really enjoyed.....because...

Problem-Solving

Mathematics

Statement code no. MJC3

Student: Class:

I can:

I have begun ☐☐☐ | I am working on this ☐☐☐ | I can ☐☐☐

This has been demonstrated by my ability to:

1. Rewrite a problem in my own words ☐☐☐
2. Identify the key pieces of information within a problem ☐☐☐
3. Apply the Mathematics I know to solve problems ☐☐☐
4. Explain my answer and relate it back to the original question ☐☐☐
5. Solve a problem and verify my answer ☐☐☐
6. Solve a problem in more than one way ☐☐☐
7. Make links between the different areas of Mathematics to solve problems ☐☐☐
8. Change my approach as I work through a problem, if necessary ☐☐☐

Reflecting on my learning...

One thing I did well...

One thing I might improve...

I really enjoyed.....because...

Introduction to Probability
Maths Statistics and Probability (MSP)

Maths

Statement code no. MSP1

Student: Class:

At Junior Certificate level I can:

Recall, explain and apply facts related to probability

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets I can...

1	Explain the keywords: experiment, trial, outcomes, fairness, bias, sample space, event, fundamental principle of counting	☐☐☐
2	Explain the meaning of the term probability and how it is applied in real life	☐☐☐
3	Order the probability of events happening from impossible to certain on a scale	☐☐☐
4	Measure the probability of an event happening on a probability scale, with 0 being impossible and 1 being certain to happen	☐☐☐
5	Represent the probability of an event as a percentage, fraction and decimal	☐☐☐
6	List all the possible outcomes of a practical experiment e.g. flipping a coin and rolling a dice	☐☐☐
7	Carry out a simple experiment and based on my results estimate the probability of an event happening in the future (relative frequency)	☐☐☐
8	List all the possible outcomes from a selection of options and apply the fundamental principle of counting	☐☐☐
9	Construct a tree diagram and list all the possible outcomes	☐☐☐
10	Construct a two-way table (sample space)	☐☐☐

Statistics
Maths Statistics and Probability (MSP)

Maths

Statement code no. MSP2

Student: Class:

At Junior Certificate level I can:

Collect, organise, represent and interpret data

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets I can...

1	Explain the keywords: survey, sample, population, bias, data, statistics	☐☐☐
2	Explore different ways of collecting data, e.g. questionnaires, observation, focus groups	☐☐☐
3	Design a simple questionnaire to collect required data	☐☐☐
4	Carry out a class survey	☐☐☐
5	Draw a bar chart	☐☐☐
6	Draw a line plot	☐☐☐
7	Draw a stem and leaf plot	☐☐☐
8	Select an appropriate method to present data	☐☐☐
9	Read and interpret the data from a bar chart, a line plot and a stem and leaf plot	☐☐☐
10	Find the mean, mode and median of a set of data	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Geometry 1
Maths Geometry and Trigonometry (MGT)

Maths

Statement code no. MGT1

Student: Class:

At Junior Certificate level I can:

Recall and explain basic facts related to geometry (planes, points and angles) and I can perform basic geometric constructions

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets I can...

1	Explain the following keywords and symbols: angle, degree, plane, infinity , point, ray, line segment, collinear points, axiom, isosceles triangle, equilateral triangle, horizontal, vertical, parallel, perpendicular, vertex, AB , [AB, [AB], ∞	☐☐☐
2	Explain what an angle is and use the correct measurement to describe one e.g. 75^0	☐☐☐
3	Identify, explain and draw the line, line segment and ray/half-line and explain the meaning of collinear points	☐☐☐
4	Recognise and use a protractor, compass, set square and ruler	☐☐☐
5	Recognise an acute angle, a right angle, a straight line, an obtuse angle and a reflex angle	☐☐☐
6	Create angles and shapes using geostrips	☐☐☐
7	Identify the vertex and arms of an angle and label them correct	☐☐☐
8	Construct angles of different sizes	☐☐☐
9	Draw a triangle when provided with relevant information	☐☐☐
10	Identify isosceles and equilateral triangles	☐☐☐
11	Recognise horizontal, vertical, parallel and perpendicular lines	☐☐☐
12	Construct a line segment of given length on a given ray	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Geometry 2
Maths Geometry and Trigonometry (MGT)

Maths

Statement code no. MGT2

Student: Class:

At Junior Certificate level I can:

Apply basic facts related to geometry to solve problems and plot shapes and points on a co-ordinate plane

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets I can...

1	Explain the following key words: opposite angles, alternate angles, corresponding angles, transversal, Cartesian/coordinate plane, central symmetry, axial symmetry, rotation	☐☐☐
2	Apply the fact that the angles of any triangle add up to 180^0 to solve a problem	☐☐☐
3	Apply the fact that the angle in a straight line is 180^0 to solve a problem	☐☐☐
4	Use vertically opposite angles to solve problems	☐☐☐
5	Identify and calculate corresponding and alternate angles formed when a line intersects parallel lines (transversal)	☐☐☐
6	Draw the image of given shapes under central symmetry	☐☐☐
7	Draw the image of given shapes under axial symmetry	☐☐☐
8	Draw the image of given shapes under rotation	☐☐☐
9	Draw the X and Y axes to scale and locate the origin	☐☐☐
10	Plot and locate points on the coordinate plane	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Number Systems
Maths Number (MN)

Maths

Statement code no. MN1

Student: Class:

At Junior Certificate level I can:

Perform operations using natural numbers (N) and integers (Z)

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets I can...

1	Explain the following keywords and symbols: natural numbers(N), multiples, factors, prime number, square root, integers (Z)	☐☐☐
2	Add, subtract, divide and multiply natural numbers (N)	☐☐☐
3	List the multiples of a natural number (N)	☐☐☐
4	Find the LCM of two natural numbers (N)	☐☐☐
5	List the factors of a natural number (N)	☐☐☐
6	Find the HCF of two natural numbers (N)	☐☐☐
7	Distinguish between odd and even numbers	☐☐☐
8	Describe or give an example of a prime number	☐☐☐
9	List the prime numbers between 1 and 20	☐☐☐
10	Find the square of a natural number (n^2)	☐☐☐
11	Find the square root ($\sqrt{n}$) of a perfect square	☐☐☐
12	Draw a number line to represent natural numbers (N)	☐☐☐
13	Draw a number line to represent integers (Z)	☐☐☐
14	Add and subtract integers (Z)	☐☐☐
15	Multiply and divide integers (Z)	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Decimals, Place Value, Fractions & Percentages
Maths Number (MN)

Maths

Statement code no. MN2

Student: Class:

At Junior Certificate level I can:

Use the equivalence of common fractions, decimals and percentages to compare proportions

Date Commenced: ▢▢/▢▢/▢▢ Date Awarded: ▢▢/▢▢/▢▢

Learning Targets I can...

1	Explain the keywords: fraction, decimal, percentage, equivalent, decimal point, estimation	▢▢▢
2	Recognise simple fractions: e.g. ¼ ½ ¾ 1	▢▢▢
3	Recognise simple decimals: e.g. 0.25 0.5 0.75 1	▢▢▢
4	Recognise simple percentages: e.g. 25% 50% 75% 100%	▢▢▢
5	Show simple fractions, decimals and percentages in picture form	▢▢▢
6	Match fractions to their equivalent decimals and percentages	▢▢▢
7	Give examples of fractions in everyday life e.g. time-clock, surveys (8 out of 10), test scores, sports- halftime, basketball quarters, recipes, etc.	▢▢▢
8	Give examples of decimals in everyday life e.g. money, distance, measurement, population size	▢▢▢
9	Give examples of percentages in everyday life e.g. statistics, Tax/VAT, sales, discount, profit, test scores, surveys, sports	▢▢▢
10	Read and write decimals correctly (by correct placement of the decimal point)	▢▢▢
11	Use estimation to order a mixture of fractions, decimals and percentages from smallest to largest e.g. $\frac{5}{8}$, 0.38, 71%	▢▢▢

Work begun ▢▢▢ | Work in progress ▢▢▢ | Work completed ▢▢▢

Fraction Operations 1
Maths Number (MN)

Maths

Statement code no. MN3

Student: Class:

At Junior Certificate level I can:

Perform operations with fractions

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets I can...

1	Explain the keywords: fraction, numerator, denominator, improper fraction, mixed fraction, equivalent	☐☐☐
2	Shade in a fraction on a diagram	☐☐☐
3	Simplify fractions	☐☐☐
4	Give examples of equivalent fractions and use a fraction wall	☐☐☐
5	Recognise simple fractions including mixed and improper fractions	☐☐☐
6	Convert mixed fractions to improper and vice versa	☐☐☐
7	Estimate the addition and subtraction of two fractions	☐☐☐
8	Add and subtract fractions which have a common denominator	☐☐☐
9	Add and subtract fractions which have a different denominator	☐☐☐
10	Place fractions in order of size on a number line	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Fraction Operations 2
Maths Number (MN)

Maths

Statement code no. MN4

Student: Class:

At Junior Certificate level I can:

Perform some operations involving fractions, decimals and percentages

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets I can...

1	Convert fractions to decimals and vice versa	☐☐☐
2	Convert fractions to percentages and vice versa	☐☐☐
3	Match equivalent fractions, decimals and percentages using a fraction wall	☐☐☐
4	Multiply fractions	☐☐☐
5	Divide fractions	☐☐☐
6	Calculate a fraction "of" a number	☐☐☐
7	Use the estimate, calculate, check strategy when working with fractions	☐☐☐
8	Check addition, subtraction, multiplication and division of fractions on a calculator	☐☐☐
9	Increase and decrease a quantity by a given fraction	☐☐☐
10	Increase and decrease a quantity by a percentage	☐☐☐
11	Estimate the percentage of a given quantity	☐☐☐
12	Represent and interpret probability using fractions, decimals and percentages	☐☐☐
13	Represent the probability of an event occurring using fractions, decimals and percentages	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Sets
Maths Number (MN)

Maths

Statement code no. MN5

Student: Class:

At Junior Certificate level I can:

Interpret and represent information using sets

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets I can...

1	Identify and use the following keywords and symbols: Venn diagram, element ($\in$), union($\cup$), intersection ($\cap$), subset ($\subset$), cardinal number (#), universal set (U), null set ($\varnothing$)	☐☐☐
2	Describe or give an example of a set in maths	☐☐☐
3	List the elements of a set, e.g. A = {1,2,3}	☐☐☐
4	Recognise if a set is a subset of another set ($A \subset B$)	☐☐☐
5	Represent 2 sets on a Venn diagram	☐☐☐
6	List the elements of the union of two sets ($A \cup B$) and shade this on a diagram	☐☐☐
7	List the elements of the intersection of two sets ($A \cap B$) and shade this on a diagram	☐☐☐
8	List the elements of a universal set (U)	☐☐☐
9	Write down the cardinal number of a set (#A)	☐☐☐
10	Describe the null set $\varnothing$ or { }	☐☐☐
11	Describe or give an example of 2 equal sets	☐☐☐
12	Solve problems using 2 Venn diagrams	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Use of Number

Maths

Statement Code no: 1

Student: Class:

At Junior Certificate level the student can:

Apply the knowledge and skills necessary to perform mathematical calculations

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets - This has been demonstrated by your ability to:

1	Recognise simple fractions, for example $^1/_4$, $^1/_2$, $^3/_4$ shown in picture or numerical form	☐☐☐
2	Simplify fractions: e.g. $^2/_4 = {}^1/_2$	☐☐☐
3	Work out a fraction of a given number	☐☐☐
4	Add and subtract fractions	☐☐☐
5	Add and subtract decimals	☐☐☐
6	Multiply and divide decimals	☐☐☐
7	Recognise equivalencies among simple fractions and decimals, for example $^1/_4 = 0.25$, $^1/_2 = 0.50$, $^3/_4 = 0.75$	☐☐☐
8	Work out a percentage of a given number	☐☐☐
9	Calculate percentage profit and loss	☐☐☐
10	Round off decimals to one or more decimal places or the nearest whole number	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Sets, Relations and Charts

Maths

Statement Code no: 2

Student:

Class:

At Junior Certificate level the student can:

Interpret and draw basic statistical charts and sets

Date Commenced: ☐☐/☐☐/☐☐

Date Awarded: ☐☐/☐☐/☐☐

Learning Targets - This has been demonstrated by your ability to:

1	Read information from a Venn diagram	☐☐☐
2	Draw a Venn diagram illustrating two sets	☐☐☐
3	List the elements of a set, the union and intersection of two sets using set notation	☐☐☐
4	Draw an arrow diagram	☐☐☐
5	List the couples in a relation	☐☐☐
6	Read information from a bar chart, pie chart and trend graph	☐☐☐
7	Draw a bar chart and trend graph	☐☐☐
8	Complete a frequency table	☐☐☐
9	Work out mode	☐☐☐
10	Work out mean	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Perimeter, Area and Volume

Maths

Statement Code no: 3

Student:

Class:

At Junior Certificate level the student can:

Calculate perimeter, area and volume of given shapes

Date Commenced: ☐☐/☐☐/☐☐

Date Awarded: ☐☐/☐☐/☐☐

Learning Targets - This has been demonstrated by your ability to:

1	Work out the perimeter of a variety of regular shapes	☐☐☐
2	Work out the area of squares and rectangles	☐☐☐
3	Work out the area of triangles	☐☐☐
4	Work out the area of other shapes such as T and L shapes	☐☐☐
5	Use small cubes to create bigger shapes	☐☐☐
6	Estimate how many small cubes will fill a larger box	☐☐☐
7	Measure the dimensions of a rectangular solid	☐☐☐
8	Work out the volume of a rectangular solid	☐☐☐
9	Work out the area of a circle	☐☐☐
10	Work out the volume of a cylinder	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Money

Maths

Statement Code no: 4

Student: Class:

At Junior Certificate level the student can:

Apply the knowledge and skills needed to manage money in daily life

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets - This has been demonstrated by your ability to:

1	Recognise Euro notes and coins and state their value	☐☐☐
2	Count a collection of Euro notes and coins and record the total	☐☐☐
3	Add up the cost of a small basket of goods	☐☐☐
4	Calculate the cost of a meal from a menu	☐☐☐
5	Work out change due by subtracting total cost from amount given	☐☐☐
6	Divide a sum of money between a number of people	☐☐☐
7	Use the least number of Euro notes and coins to make a certain sum of money	☐☐☐
8	Read information from an electricity bill and a telephone bill	☐☐☐
9	Work out how much it would cost to borrow a sum (e.g. €1000, €2000) over a period of one year from banks, building societies etc.	☐☐☐
10	Work out how much you would earn on money saved over two years in banks, credit unions, post offices etc.	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Use of Calculator

Maths

Statement Code no: 5

Student: Class:

At Junior Certificate level the student can:

Apply the knowledge and skills necessary to perform basic operations using a calculator

Date Commenced: ▢▢/▢▢/▢▢ Date Awarded: ▢▢/▢▢/▢▢

Learning Targets - This has been demonstrated by your ability to:

1	Find digits 0 – 9, the decimal point and necessary operations (+, –, x, ÷)	▢ ▢ ▢
2	Decide which operations are needed to solve simple problems and work out the answers using a calculator	▢ ▢ ▢
3	Use a calculator to convert a fraction to a decimal	▢ ▢ ▢
4	Use a calculator to convert simple decimals to percentages	▢ ▢ ▢
5	Show understanding of multiplication of whole numbers by 10, 100 and by 1000	▢ ▢ ▢
6	When multiplying numbers with decimals, show understanding of place value of decimal point	▢ ▢ ▢
7	When dividing, show understanding of the use of a decimal number instead of a remainder e.g. $36 \div 8 = 4.5$	▢ ▢ ▢
8	Show understanding that multiplying a number by itself gives the same result as using x^2	▢ ▢ ▢
9	Use the $\sqrt{}$ button (square root) on square numbers to find the reverse of x^2	▢ ▢ ▢
10	Use a calculator to correct work which has been completed without the use of a calculator e.g. homework	▢ ▢ ▢

Work begun ▢ ▢ ▢ | Work in progress ▢ ▢ ▢ | Work completed ▢ ▢ ▢

Use of number with Calculator

Maths

Statement Code no: 6

Student: Class:

At Junior Certificate level the student can:

Apply the knowledge and skills necessary to perform mathematical calculations

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets - This has been demonstrated by your ability to:

1	Recognise simple fractions, for example 1/4, 1/2, 3/4 shown in picture or numerical form	☐☐☐
2	Simplify fractions: e.g. 2/4 = 1/2	☐☐☐
3	Work out a fraction of a given number	☐☐☐
4	Add and subtract fractions	☐☐☐
5	Add and subtract decimals	☐☐☐
6	Multiply and divide decimals	☐☐☐
7	Recognise equivalencies among simple fractions and decimals, for example 1/4 = 0.25, 1/2 = 0.50, 3/4 = 0.75	☐☐☐
8	Work out a percentage of a given number	☐☐☐
9	Calculate percentage profit and loss	☐☐☐
10	Round off decimals to one or more decimal places or the nearest whole number	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Graphs, Constructions and Transformations

Maths

Statement Code no: 7

Student: Class:

At Junior Certificate level the student can:

Apply the knowledge and skills required to sketch graphs and transformations and to perform basic constructions in geometry

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets - This has been demonstrated by your ability to:

1	Draw the X and Y axes	☐☐☐
2	Calibrate / graduate the X and Y axes	☐☐☐
3	Locate the origin on the axes	☐☐☐
4	Plot and join given points to form a graph	☐☐☐
5	Use the graph to discover new information	☐☐☐
6	Draw the image of given shapes under central symmetry	☐☐☐
7	Draw the image of given shapes under axial symmetry	☐☐☐
8	Draw a triangle when provided with relevant information	☐☐☐
9	Use mathematical instruments to draw a rectangle of given measurements	☐☐☐
10	Bisect an angle without using a protractor	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Time, Speed and Scale

Maths

Statement Code no: 8

Student: Class:

At Junior Certificate level the student can:

Demonstrate and apply an understanding of time, speed and scale

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets - This has been demonstrated by your ability to:

1	Make conversions from the 12-hour clock to the 24-hour clock and vice versa	☐☐☐
2	Convert hours to minutes and vice versa	☐☐☐
3	Add time values	☐☐☐
4	Subtract time values	☐☐☐
5	Identify the start time and finish time of television programmes from television guides and calculate the duration of specified programmes	☐☐☐
6	Discover the departure time, arrival time and duration of a journey from bus, train and plane timetables	☐☐☐
7	Find the time a film ends, given the start time and the duration of the film	☐☐☐
8	Use the speed formula to calculate time, distance or speed	☐☐☐
9	Use scale on a map to identify distances between places	☐☐☐
10	Make use of scale to interpret representative sketches of large objects	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Knowledge and Application of Geometry

Maths

Statement Code no: 9

Student: Class:

At Junior Certificate level the student can:

Apply the knowledge and skills necessary to perform specified geometrical operations

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets - This has been demonstrated by your ability to:

1	Measure angles using a protractor	☐☐☐
2	Recognise and identify all the common geometrical instruments	☐☐☐
3	Identify and recognise the various types of angles	☐☐☐
4	Construct angles of different sizes	☐☐☐
5	Understand knowledge that the angle in a straight line is 180 degrees	☐☐☐
6	Understand and apply the knowledge that opposite angles are equal	☐☐☐
7	Use set squares to construct rectangles	☐☐☐
8	Use geometrical instruments to construct triangles	☐☐☐
9	Understand and apply the knowledge that three angles of a triangle add up to 180 degrees	☐☐☐
10	Understand and apply the knowledge that the area of a triangle is equal to half the base x perpendicular height	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Knowledge and Application of Algebra

Maths

Statement Code no: 10

Student: Class:

At Junior Certificate level the student can:

Apply the knowledge and skills necessary to perform specified operations in algebra

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets - This has been demonstrated by your ability to:

1	Understand and write simple equations	☐☐☐
2	Understand and apply the concepts of x^2 and x^3	☐☐☐
3	Find the value of expressions requiring one substitution eg. $3x + 2$ when $x = 4$ eg. $5x - 4$ when $x = 3$	☐☐☐
4	Find the value of expressions requiring two substitutions eg. $5x - 3y$ when $x = 3$ and $y = 2$ eg. $3x + 2y$ when $x = 2$ and $y = 4$	☐☐☐
5	Simplify expressions eg. $4x + 6 + 4y + 7 + 2x - 3y$	☐☐☐
6	Simplify expressions containing a bracket eg. $3(x + 4) + 7$	☐☐☐
7	Simplify expressions containing two brackets eg. $3(x + 5) + 3(x - 4)$	☐☐☐
8	Solve basic equations eg. $x - 4 = 6$ eg $x + 3 = 7$ eg $3x = 15$	☐☐☐
9	Solve more challenging equations eg. $6x + 2 = 32$	☐☐☐
10	Solve equations containing a bracket eg. $6(x + 5) = 42$	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Circle, Cylinder and Sphere

Maths

Statement Code no: 11

Student:

Class:

At Junior Certificate level the student can:

Calculate the perimeter, area and volume of curved shapes

Date Commenced: ▢▢/▢▢/▢▢

Date Awarded: ▢▢/▢▢/▢▢

Learning Targets - This has been demonstrated by your ability to:

1	Identify the following parts of a circle: centre, radius, diameter, arc, sector, chord, circumference and segment	▢▢▢
2	Calculate the length of the circumference of a circle	▢▢▢
3	Work out the length of the perimeter of a sector	▢▢▢
4	Calculate the area of a disc	▢▢▢
5	Calculate the volume of a cylinder	▢▢▢
6	Calculate the curved surface area of a cylinder	▢▢▢
7	Calculate the total surface area of a cylinder	▢▢▢
8	Calculate the volume of a sphere	▢▢▢
9	Calculate the surface area of a sphere	▢▢▢
10	Work out the curved surface area of a hemisphere	▢▢▢

Work begun ▢▢▢ | Work in progress ▢▢▢ | Work completed ▢▢▢

Trigonometry

Maths

Statement Code no: 12

Student: Class:

At Junior Certificate level the student can:

Use trigonometry to solve problems

Date Commenced: ▢▢/▢▢/▢▢ Date Awarded: ▢▢/▢▢/▢▢

Learning Targets - This has been demonstrated by your ability to:

1	Identify the hypotenuse, adjacent side and opposite side for a given angle in a right angled triangle	▢ ▢ ▢
2	Use the Theorem of Pythagoras to work out the third side in a right angled triangle when the other two sides are known	▢ ▢ ▢
3	Find the value of the sine of an angle in a right angled triangle	▢ ▢ ▢
4	Find the value of the cosine of an angle in a right angled triangle	▢ ▢ ▢
5	Find the value of the tangent of an angle in a right angled triangle	▢ ▢ ▢
6	Use a scientific calculator to find the sine, cosine and tangent of any integer value of an angle up to 90°	▢ ▢ ▢
7	Use a scientific calculator to find the value of an angle, and round it to the nearest degree, when given its sine, cosine or tangent value	▢ ▢ ▢
8	Calculate sides and angles in a right angled triangle	▢ ▢ ▢
9	Solve problems involving angles of elevation	▢ ▢ ▢
10	Solve problems involving angles of depression	▢ ▢ ▢

Work begun ▢ ▢ ▢ | Work in progress ▢ ▢ ▢ | Work completed ▢ ▢ ▢

Sets and Statistics

Maths

Statement Code no: 13

Student: Class:

At Junior Certificate level the student can:

Draw and interpret sets and statistics

Date Commenced: ▢▢/▢▢/▢▢ Date Awarded: ▢▢/▢▢/▢▢

Learning Targets - This has been demonstrated by your ability to:

1	Draw Venn diagrams illustrating three sets	▢ ▢ ▢
2	Interpret information from three-set Venn diagrams	▢ ▢ ▢
3	Solve problems by using two-set and three-set Venn diagrams	▢ ▢ ▢
4	Write the Cardinal Number of a set	▢ ▢ ▢
5	List the subsets of a set	▢ ▢ ▢
6	Identify the Complement of a set	▢ ▢ ▢
7	Work out Set Difference	▢ ▢ ▢
8	Construct frequency tables from raw data	▢ ▢ ▢
9	Draw pie charts	▢ ▢ ▢
10	Draw bar charts	▢ ▢ ▢
11	Draw trend graphs	▢ ▢ ▢
12	Interpret information from pie charts, bar charts, and trend graphs	▢ ▢ ▢
13	Calculate the mode	▢ ▢ ▢
14	Calculate the mean	▢ ▢ ▢

Work begun ▢ ▢ ▢ | Work in progress ▢ ▢ ▢ | Work completed ▢ ▢ ▢

Knowledge and Application of Geometry 2

Maths

Statement Code no: 14

Student:

Class:

At Junior Certificate level the student can:

Perform additional operations in Geometry

Date Commenced: ☐☐/☐☐/☐☐

Date Awarded: ☐☐/☐☐/☐☐

Learning Targets - This has been demonstrated by your ability to:

1	Measure and label line segments	☐ ☐ ☐
2	Identify the angles in a triangle from their labels (e.g.<abc)	☐ ☐ ☐
3	Draw a line parallel to a given line	☐ ☐ ☐
4	Construct a line perpendicular to a given line	☐ ☐ ☐
5	Identify and calculate corresponding and alternate angles formed when a line intersects parallel lines	☐ ☐ ☐
6	Construct the perpendicular bisector of a line segment	☐ ☐ ☐
7	Identify and name different types of triangles	☐ ☐ ☐
8	Calculate the exterior angle in a triangle when the interior opposite angles are known	☐ ☐ ☐
9	Calculate all the angles in a triangle when the exterior angle and one interior opposite angle are known	☐ ☐ ☐
10	Identify congruent triangles	☐ ☐ ☐

Work begun ☐ ☐ ☐ | Work in progress ☐ ☐ ☐ | Work completed ☐ ☐ ☐

Knowledge and Application of Geometry 3

Maths

Statement Code no: 15

Student:

Class:

At Junior Certificate level the student can:

Perform further operations in Geometry

Date Commenced: ▢▢/▢▢/▢▢

Date Awarded: ▢▢/▢▢/▢▢

Learning Targets - This has been demonstrated by your ability to:

1	Understand and apply the fact that the base angles in an isoceles triangle are equal in measure	▢▢▢
2	Recognise that the largest angle in a triangle is always opposite the longest side	▢▢▢
3	Recognise that the smallest angle in a triangle is always opposite the shortest side	▢▢▢
4	Understand and apply the fact that the opposite sides and opposite angles in a parallelogram are equal in measure	▢▢▢
5	Recognise and apply the fact that the diagonal of a parallelogram bisects the area	▢▢▢
6	Understand and apply the fact that the diagonals in a parallelogram bisect each other	▢▢▢
7	Recognise and apply the fact that the area of a parallelogram is equal to base x perpendicular height	▢▢▢
8	Understand and apply the fact that the angle standing in a semicircle is 90°	▢▢▢
9	Recognise and apply the fact that there are 360° in a circle	▢▢▢
10	Calculate an angle in a cyclic quadrilateral when the opposite angle is given	▢▢▢

Work begun ▢▢▢ | Work in progress ▢▢▢ | Work completed ▢▢▢

Quadratic and Simultaneous Equations

Maths

Statement Code no: 16

Student: Class:

At Junior Certificate level the student can:

Solve quadratic and simultaneous equations and simplify algebraic fractions

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets - This has been demonstrated by your ability to:

1 Add and subtract algebraic fractions ☐☐☐

eg $\frac{x}{4} + \frac{x}{3}$ $\frac{2x+1}{3} - \frac{2x-3}{4}$

2 Solve equations containing algebraic fractions ☐☐☐

eg $\frac{x-3}{2} = 4$ $\frac{x-1}{2} = \frac{2x+1}{5}$

3 Simplify algebraic fractions ☐☐☐

eg $\frac{5x^2}{10x}$ $\frac{12xy^2}{3xy}$

4 Multiply algebraic fractions and simplify ☐☐☐

eg $\frac{3x}{y^2} \times \frac{y}{3}$

5 Divide algebraic fractions and simplify

eg $\frac{2x^2}{3} \div \frac{4x}{9}$

6 Solve quadratic equations ☐☐☐

eg $x^2 + 5x + 6 = 0$ $x^2 - 16x + 48 = 0$ $x^2 - 81 = 0$

7 Use quadratic equations to solve problems ☐☐☐

8 Solve simultaneous equations ☐☐☐

eg $x + y = 9$ $2x - 5y = 1$

$x - y = 3$ $5x + 3y = 18$

9 Use simultaneous equations to solve problems ☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Factorisation, Inequalities and Equations

Maths

Statement Code no: 17

Student: Class:

At Junior Certificate level the student can:

Factorise, graph and solve inequalities and solve more challenging equations in Algebra

Date Commenced: ▢▢/▢▢/▢▢ Date Awarded: ▢▢/▢▢/▢▢

Learning Targets – This has been demonstrated by your ability to:

1	Multiply two algebraic expressions eg $(x)(x^2)$ $(x + 2)(x + 3)$ $(2x + 3)(3x^2 - 2x + 3)$	▢▢▢
2	Solve more challenging equations eg $8x + 5 = 7x + 10$ $5(3x - 2) = 7(2x - 1)$	▢▢▢
3	Use equations to solve problems	▢▢▢
4	Use grouping to find the factors of algebraic expressions	▢▢▢
5	Find the factors of quadratic expressions (which have a positve third term) eg $x^2 + 8x + 12$ $x^2 - 12x + 20$	▢▢▢
6	Find the factors of quadratic expressions (which have a negative third term) eg $x^2 + 7x - 30$ $x^2 - 13x - 30$	▢▢▢
7	Find the factors of the difference of two squares eg $x^2 - 9$ $x^2 - 100$ $36x^2 - 49y^2$	▢▢▢
8	Simplify algebraic fractions eg $\frac{6x}{3x}$ $\frac{12(a + b)}{3(a + b)}$ $\frac{x^2 + 4x - 5}{x - 1}$	▢▢▢
9	Solve the inequalities ($<$, $>$, $\leq$, $\geq$) eg $4 - 3x \geq 13$	▢▢▢
10	Graph the solutions of these inequalities on the number line	▢▢▢

Work begun ▢▢▢ | Work in progress ▢▢▢ | Work completed ▢▢▢

Knowledge and Application of Coordinate Geometry

Maths

Statement code no. 18

Student: Class:

At Junior Certificate level I can:

Apply my knowledge of Coordinate Geometry

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets I can...

1	Coordinate the plane in the first quadrant	☐☐☐
2	Plot points on the coordinated plane	☐☐☐
3	Give the coordinates of a point on the plane	☐☐☐
4	Draw a straight line between two points using a ruler	☐☐☐
5	Find the midpoint of this line and give its coordinates	☐☐☐
6	Find the length of lines (horizontal and vertical)	☐☐☐
7	Find the length of a sloping line by constructing a right-angled triangle on it and using Pythagoras's theorem	☐☐☐
8	Identify the hypotenuse of a right-angled triangle	☐☐☐
9	Find the slope of a line by using a right-angled triangle and using y/x (Counting boxes method)	☐☐☐
10	Identify whether a line has a positive or negative slope	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐

Knowledge and Understanding of Maths Theorems

Maths

Statement code no. 19

Student: Class:

At Junior Certificate level I can:

Apply my knowledge and understanding of Theorems

Date Commenced: ☐☐/☐☐/☐☐ Date Awarded: ☐☐/☐☐/☐☐

Learning Targets I can...

1	There is exactly one line through any two given points	☐☐☐
2	All the angles in a triangle add up to 180	☐☐☐
3	For two intersecting lines vertically opposite angles are equal	☐☐☐
4	When a transversal is drawn over two parallel lines the corresponding angles are equal	☐☐☐
5	When a transversal is drawn over two parallel lines the alternate angles are equal	☐☐☐
6	In an isosceles triangle two sides are of equal length and two angles are equal in measure	☐☐☐
7	The exterior angle of a triangle is equal in measure to the opposite Interior angles added together	☐☐☐
8	In a parallelogram opposite sides are equal	☐☐☐
9	In a parallelogram opposite angles are equal in measure	☐☐☐
10	The diagonals of a parallelogram bisect each other	☐☐☐

Work begun ☐☐☐ | Work in progress ☐☐☐ | Work completed ☐☐☐