



**Correlation of the UMath X© Program
With the Pennsylvania Math Assessment Anchors and Eligible Content
Grade 11**

The UMath X program is designed for use in a variety of teaching and learning environments ranging from a teacher-centered approach with one computer to a student-centered lab approach. The lessons may also be used in remediation, tutorials, intervention, resource, and fast-tracking.

Organization of the UMath X© Program

Within the UMath X© program, there are nine strands:

Fractions
Equations
Algebra

Whole Numbers & Integers
Percent
Probability

Exponents
Graphing
Measurement and Geometry

Each strand is comprised of sections containing several lessons and sub lessons. Every lesson and sub lesson has the following:

- 1) an interactive concept introduction, usually with a variety of graphic approaches;
- 2) a number of particular examples;
- 3) practice questions with random questions, but specific feedback;
- 4) a topic test with random questions and tracking;
- 5) on-line worksheets selected from our website (www.neufeldmath.com).

Teachers may also search for specific topics using our search engine at <http://www.corr.neufeldmath.com>.



The Eligible Content for each of the Assessment Anchors have been correlated to the UMath X© program. The location of each Assessment Anchors is listed below:

M11.A	Numbers and Operations	M11.A.1	(pages 3 - 6)
		M11.A.2	(pages 6 - 8)
		M11.A.3	(pages 9 - 11)
M11.B	Measurement	M11.B.1	(pages 11 - 11)
		M11.B.2	(pages 11 - 14)
M11.C	Geometry	M11.C.1	(pages 15 - 17)
		M11.C.2	(pages 17 - 17)
		M11.C.3	(pages 17 - 18)
M11.D	Algebraic Concepts	M11.D.1	(pages 18 - 19)
		M11.D.2	(pages 20 - 25)
		M11.D.3	(pages 26 - 28)
		M11.D.4	(pages 28 - 28)
M11.E	Data Analysis and Probability	M11.E.1	(pages 29 - 30)
		M11.E.2	(pages 30 - 31)
		M11.E.3	(pages 31 - 34)
		M11.E.4	(pages 34 - 35)

Ideas that are ***not included*** in the current UMath X© program are noted as *not yet correlated*.

For lesson planning purposes, there is space in the chart for notes, material lists, links, resources etc.



**Pennsylvania Math Assessment Anchors and Eligible Content
Correlated to UMath X©
Grade 11**

M11.A Numbers and Operations

M11.A.1 Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems.

M11.A.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, exponents and scientific notation).

M11.A.1.1.1 Find the square root of an integer to the nearest tenth using either a calculator or estimation.

Exponents	Notes
Square Root	
Squaring Numbers	Examples 1 Examples 2
Square Roots	
Radical Signs	
Square Roots of Negative Numbers	
Example Questions	1. Radicals First 2. The Four Equations 3. Lawn Questions 4. Make a Square
Estimating Square Roots	Example 1 Example 2
Estimating Square Roots on the Number Line	
Practice Questions	10 questions (randomly generated)

M11.A.1.1.2 Express numbers and/or simplify expressions using scientific notation (including numbers less than 1).

Exponents	Notes
Scientific Notation	
Why Use Scientific Notation?	
Scientific Notation for Large Numbers	Introduction Chart The Rule The Steps
Scientific Notation for Small Numbers	Introduction



Examples	Chart Steps Number Question Park Question Sun Question Kitchen Question
Practice Questions	5 questions (randomly generated)

M11.A.1.1.3 Simplify square roots. (e.g., square root of 24 = 2(square root of 6))

[Not yet correlated](#)

M11.A.1.2 Apply number theory concepts to show relationships between real numbers in problem solving settings.

M11.A.1.2.1 Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.

Fractions		Notes
Products, Multiples, Factors		
Multiples	The Concept Example 1 Example 2 Example 3	
Least Common Multiple	The Concept Example 1 Example 2 Example 3 Example 4	
Factors	Introduction- Factors of 8 Introduction- Factors of 12 Introduction- Factors of 16 Introduction- Factors of 20 Introduction- Factors of 5 Introduction- Factors of 15 Introduction- Factors of 18	
Greatest Common Factor	Introduction 12 and 18 30 and 40 70 and 42 Problem 1: Goody Bag Problem 2: Fall Fair	



M11.A.1.3 Estimate the value of an irrational number.

M11.A.1.3.1 Locate/identify irrational numbers at the approximate location on a number line.

Not yet correlated

M11.A.1.3.2 Compare and/or order any real numbers (rational and irrational may be mixed)

Whole Numbers and Integers

Notes

The Meaning of Whole Numbers

Comparing Large Numbers

Example 2

Example 3

Example 4

Ordering Large Numbers

Example 1

Example 2

Example 3

Example 4

Whole Numbers and Integers

Notes

The Meaning of Integers

Comparing Integers

Example 1

Example 2

Explanation

Example 3

Example 4

Fractions

Notes

Equivalent Fractions

Comparison of Fractions

Fractions

Notes

Introduction to Decimals

Comparing Decimals

Example 1

Example 2

Example 3

Example 4

Ordering Decimals

Introduction

Example 1

Example 2

Example 3

Example 4



Fractions		Notes
Multiplication and Division of Decimals		
Compare Fractions	Compare Fractions... Method 1 Compare Fractions... Method 2	
Equations		Notes
Solving Inequalities		
Comparing Integers	Example 1... Greater Than Example 2... Less Than Explanation Example 3... Greater Than Example 4... Less Than Greater Than or Less Than	
Exponents		Notes
Square Root		
Example Questions	1. Radicals First	

M11.A.2 Understand the meanings of operations, use operations and understand how they relate to each other.

M11.A.2.1 Apply ratio and/or proportion in problem-solving situations.

M11.A.2.1.1 Solve problems using operations with rational numbers including rates and percents (single and multi-step and multiple procedure operations) (e.g., distance, work and mixture problems, etc.).

Equations		Notes
Problem Solving		
Pool Puzzler - The First Problem		
Perimeter Problem with Diagram		
Fish Problem with Diagram		
Money Problem with Chart		
Age Problem with Chart		
Buying CDs		
Meat Mixture		
Coffee Mixture		
Rate of Work		
Summary - Problem Solving Using Equations		



M11.A.2.1.2 Solve problems using direct and inverse proportions.

		Notes
Percent		
Ratios and Proportions		
Proportions	Example 1 Example 2 - Lemonade Example 3 - Marbles Example 4 - Trout Example 5 - Tree Height Example 6 - Map Example 7 - Scale Drawing	

M11.A.2.1.3 Identify and/or use proportional relationships in problem solving settings.

		Notes
Percent		
Ratios and Proportions		
Proportions	Example 1 Example 2 - Lemonade Example 3 - Marbles Example 4 - Trout Example 5 - Tree Height Example 6 - Map Example 7 - Scale Drawing	

M11.A.2.2 Use exponents, roots and/or absolute value to solve problems.

M11.A.2.2.1 Simplify/evaluate expressions involving positive and negative exponents, roots and/or absolute value (may contain all types of real numbers - exponents should not exceed power of 10).

		Notes
Equations		
Solving Absolute Value Equations		
Absolute Value Equations in 1 Variable	Example 1 Example 2	
Absolute Value Inequalities in 1 Variable	Example 1 Example 2	
Algebra		Notes
Adding Expressions		
Adding Expressions without Tiles	Example 1 Example 2	
Practice Questions Without Tiles	10 questions (randomly generated)	



<p>Algebra</p> <p>Subtracting Expressions</p> <p>Subtracting Expressions Without Tiles Practice Questions With Tiles</p> <p>3 questions (randomly generated)</p>	<p>Notes</p>
<p>Exponents</p> <p>The Meaning of Exponents</p> <p>Examples - Order of Operation</p> <p>Example 1 Example 2 Example 3</p>	<p>Notes</p>
<p>M11.A.2.2.2 Simplify/evaluate expressions involving multiplying with exponents (e.g. $x^6 \times x^7 = x^{13}$), powers of powers (e.g., $(x^6)^7 = x^{42}$) and powers of products ($(2x^2)^3 = 8x^6$ (positive exponents only)).</p>	
<p>Algebra</p> <p>Multiplying Expressions</p> <p>Multiplying Monomials</p> <p>Powers- Concept Powers- Example 1 Powers- Example 2 Powers- Example 3 Powers- Example 4</p>	<p>Notes</p>
<p>Exponents</p> <p>Exponent Rules</p> <p>In The Topic</p> <p>Multiplication of Powers with the Same Base</p> <p>Raising a Power to an Exponent</p> <p>Raising a Product to an Exponent</p> <p>Expanding the Exponents The Pattern In General Expanding the Exponents The Pattern In General Expand the Exponent In General</p>	<p>Notes</p>



M11.A.3 Compute accurately and fluently and make reasonable estimates.

M11.A.3.1 Apply the order of operations in computation and in problem-solving situations.

M11.A.3.1.1 Simplify/evaluate expressions using the order of operations to solve problems (any rational numbers may be used).

Whole Numbers and Integers

Notes

Order of Operations

Why Use Order of Operations? - Whole Numbers

Why Use Order of Operations? - Integers

BEDMAS

Please Excuse My Dear Aunt Sally

Example Questions - Whole Numbers

BEDMAS- Example 1

BEDMAS- Example 2

BEDMAS- Example 3

BEDMAS- Example 4

BEDMAS- Example 5

BEDMAS- Example 6

BEDMAS- Example 7

BEDMAS- Example 8

BEDMAS- Example 9

BEDMAS- Example 10

Please Excuse My Dear Aunt Sally- Example 1

Please Excuse My Dear Aunt Sally- Example 2

Please Excuse My Dear Aunt Sally- Example 3

Please Excuse My Dear Aunt Sally- Example 4

Please Excuse My Dear Aunt Sally- Example 5

Please Excuse My Dear Aunt Sally- Example 6

Please Excuse My Dear Aunt Sally- Example 7

Please Excuse My Dear Aunt Sally- Example 8

Please Excuse My Dear Aunt Sally- Example 9

Please Excuse My Dear Aunt Sally- Example 10

Example Questions - Integers

BEDMAS- Example 1

BEDMAS- Example 2

BEDMAS- Example 3

BEDMAS- Example 4

BEDMAS- Example 5

BEDMAS- Example 6

BEDMAS- Example 7

BEDMAS- Example 8

BEDMAS- Example 9

BEDMAS- Example 10



Word Problems
 Practice Questions

Please Excuse My Dear Aunt Sally- Example 1
 Please Excuse My Dear Aunt Sally- Example 2
 Please Excuse My Dear Aunt Sally- Example 3
 Please Excuse My Dear Aunt Sally- Example 4
 Please Excuse My Dear Aunt Sally- Example 5
 Please Excuse My Dear Aunt Sally- Example 6
 Please Excuse My Dear Aunt Sally- Example 7
 Please Excuse My Dear Aunt Sally- Example 8
 Please Excuse My Dear Aunt Sally- Example 9
 Please Excuse My Dear Aunt Sally- Example 10
 Shipping
 Babysitting
 Garbage
 BEDMAS- 10 questions (randomly generated)
 Please Excuse My Dear Aunt Sally- 10 questions (randomly generated)

Algebra

Adding Expressions

Adding Expressions without Tiles
 Practice Questions Without Tiles

Example 1
 Example 2
 10 questions (randomly generated)

Notes

Algebra

Subtracting Expressions

Subtracting Expressions Without Tiles
 Practice Questions Without Tiles

10 questions (randomly generated)

Notes

Algebra

Multiplying Expressions

Multiplying Monomials
 Multiplying Monomials and Binomials
 Multiplying Binomials
 Examples... True or False
 Examples

Powers- Concept
 Powers- Example 1
 Powers- Example 2
 Powers- Example 3
 Powers- Example 4
 Without Tiles
 Without Tiles
 Pattern (FOIL)
 Example 1
 Example 2
 Example 3
 Example 1
 Example 2

Notes



Example 3
Example 4
Example 5

M11.A.3.2 Use estimation strategies in problem-solving situations.

M11.A.3.2.1 Use estimation to solve problems.

Not yet correlated

M11.B Measurement

M11.B.1 Demonstrate an understanding of measurable attributes of objects and figures, and the units, systems and processes of measurement.

Not assessed at grade 11.

M11.B.2 Apply appropriate techniques, tools and formulas to determine measurements.

M11.B.2.1 Use and/or compare measurements of angles.

M11.B.2.1.1 Measure and/or compare angles in degrees (up to 360 degrees) (protractor must be provided or drawn).

Measurement and Geometry

Notes

Angles and Their Measure

In This Topic

Lines and Rays

Angles... An Introduction

The Degree

Classify Angles

Classification

Memory Game



Measuring Angles	
Estimating Angle Measure	10 questions (randomly generated)
Practice Questions	5 questions (randomly generated)

M11.B.2.2 Use and/or develop procedures to determine or describe measures of perimeter, circumference, area, surface area and/or volume. (May require conversions within the same system.)

M11.B.2.2.1 Calculate the surface area of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.

Measurement and Geometry

Notes

Solids.. Volume and Surface Area

In This Topic

Classifying Solids

A Solid is...
 Recall Polygons
 A Polyhedron is...
 A Prism is...
 Some Special Prisms
 A Pyramid is...
 Some Special Pyramids
 A Cylinder is...
 A Cone is...
 Platonic Solids

Surface Area of a Solid

Concept
 Surface Area of a Pyramid
 Surface Area of a Cylinder
 Surface Area of a Sphere

M11.B.2.2.2 Calculate the volume of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.

Measurement and Geometry

Notes

Solids.. Volume and Surface Area

Volume of a Solid

Concept
 Volume of a Prism: Example 1
 Volume of a Prism: Example 2
 Volume of a Cylinder
 Volume of a Pyramid
 Volume of a Cone
 Volume of a Sphere



M11.B.2.2.3 Estimate area, perimeter or circumference of an irregular figure.

Measurement and Geometry

Notes

Perimeter and Area of Polygons

Areas of Polygons

Polygons Broken into Simpler Shapes- Example 1
Polygons Broken into Simpler Shapes- Example 2
Polygons Broken into Simpler Shapes- Example 3

M11.B.2.2.4 Find the measurement of a missing length given the perimeter, circumference, area or volume.

Equations

Notes

Solving Multi-Step Equations

Literal Equations

What Are They?
How Do You Solve Them?
Why Solve the Literal Equation?
A Perimeter Example

Equations

Notes

Problem Solving

Area of Walls

Perimeter Problem with Diagram

M11.B.2.3 Describe how a change in one dimension of a figure (2 or 3 dimensional) affects other measurements of that figure.

M11.B.2.3.1 Describe how a change in the linear dimension of a figure affects its perimeter, circumference, area or volume. - How does changing the length of the radius of a circle affect the circumference of the circle?

Measurement and Geometry

Notes

Circles

In This Topic

Circles All Around Us!

Radius, Circumference, Diameter

PI... A Special Number

Introduction
How do we Measure Circumference?
Measuring Circles
Summary
Circumference of a Circle
Ex. 1 - Gog
Ex. 2 - The Well
Ex. 3 - The Rolling Coin
Ex. 4 - The Semi-Circle

Circumference of a Circle



AREA of a Circle	Recall Area Area Exploration #1 Area Exploration #2 Ex. 1 - Wheel Ex. 2 - Pizza Ex. 3 - The Semi-Circle Ex. 4 - The Dog's Run Ex. 5 - The Hockey Rink Ex. 6 - Circle and Square
Practice Questions	5 questions (randomly generated)

M11.B.2.3.1 Describe how a change in the linear dimension of a figure affects its perimeter, circumference, area or volume. - How does changing the length of the edge of a cub

Measurement and Geometry Solids.. Volume and Surface Area Volume of a Solid	Concept Volume of a Prism: Example 1	Notes
Measurement and Geometry Ratios for Areas and Volumes In This Topic Ratios	Introduction Area Volume	Notes
Practice Questions	10 questions (randomly generated)	

M11.B.2.3.1 Describe how a change in the linear dimension of a figure affects its perimeter, circumference, area or volume. - How does changing the length of the base of a triangle affect the area of the triangle?

Measurement and Geometry Perimeter and Area of Polygons Introduction to Area Areas of Polygons	Units Area of a Triangle- Concept 1 Area of a Triangle- Concept 2 Area of a Triangle- Example 1 Area of a Triangle- Example 2	Notes
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M11.C Geometry

M11.C.1 Analyze characteristics and properties of two- and three- dimensional geometric shapes and demonstrate understanding of geometric relationships.

M11.C.1.1 Identify and/or use parts of circles and segments associated with circles.

M11.C.1.1.1 Identify and/or use the properties of a radius, diameter and/or tangent of a circle (given numbers should be whole.)

Measurement and Geometry

Notes

Circles

In This Topic

Circles All Around Us!

Radius, Circumference, Diameter

PI... A Special Number

Circumference of a Circle

AREA of a Circle

Practice Questions

Introduction

How do we Measure Circumference?

Measuring Circles

Summary

Circumference of a Circle

Ex. 1 - Gog

Ex. 2 - The Well

Ex. 3 - The Rolling Coin

Ex. 4 - The Semi-Circle

Recall Area

Area Exploration #1

Area Exploration #2

Ex. 1 - Wheel

Ex. 2 - Pizza

Ex. 3 - The Semi-Circle

Ex. 4 - The Dog's Run

Ex. 5 - The Hockey Rink

Ex. 6 - Circle and Square

5 questions (randomly generated)

M11.C.1.1.2 Identify and/or use the properties of arcs, semicircles, inscribed angles and/or central angles.

Not yet correlated



M11.C.1.2 Recognize and/or apply properties of angles, triangles and quadrilaterals.

M11.C.1.2.1 Identify and/or use properties of triangles (e.g., medians, altitudes, angle bisectors, side/angle relationships, Triangle Inequality Theorem).

Measurement and Geometry

Notes

Constructions

Bisector of an Angle

Construction Steps

Summary

M11.C.1.2.2 Identify and/or use properties of quadrilaterals (e.g., parallel sides, diagonals, bisectors, congruent sides/angles and supplementary angles).

Not yet correlated

M11.C.1.2.3 Identify and/or use properties of isosceles and equilateral triangles

Not yet correlated

M11.C.1.3 Use properties of congruence, correspondence and similarity in problem-solving settings involving two- and three- dimensional figures.

M11.C.1.3.1 Identify and/or use properties of congruent and similar polygons or solids.

Not yet correlated

M11.C.1.4 Solve problems involving right triangles using the Pythagorean Theorem.

M11.C.1.4.1 Find the measure of a side of a right triangle using the Pythagorean Theorem (Pythagorean Theorem included on the reference sheet).

Exponents

Notes

Pythagorean Theorem

In This Topic

The Right Triangle

Math or Magic?

Squares on a Grid

Introduction

Omar's Rope Trick #1

Omar's Rope Trick #2

Our Rope Trick

Example 1

Example 2



Squares on the Sides of a Right Triangle	Example 3 Example 4 Triangle #1 Triangle #2 Triangle #3
The Pythagorean Theorem	The Pattern In General Theorem
Example Questions	Example 1... Pole Example Example 2... Tower Example Example 3... Walking Example Example 4... Lake Example Example 5... Geometric Example
Practice Questions	5 questions (randomly generated)

M11.C.2 Identify and/or apply concepts of transformations or symmetry.

Not assessed at grade 11.

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M11.C.3 Locate points or describe relationships using the coordinate plane.

M11.C.3.1 Solve problems using analytic geometry.

M11.C.3.1.1 Calculate the distance and/or midpoint between 2 points on a number line or on a coordinate plane (formula provided on the reference sheet).

Not yet correlated

M11.C.3.1.2 Relate slope to perpendicularity and/or parallelism (limit to linear algebraic expressions; slope formula provided on the reference sheet).

Graphing	Notes
Slope of a Line	
Formula	
Parallel Lines	Introduction



Perpendicular Lines

Example 1
Example 2
Example 3
Introduction
Example 1
Example 2
Example 3

M11.D Algebraic Concepts

M11.D.1 Demonstrate an understanding of patterns, relations and functions.

M11.D.1.1 Analyze and/or use patterns or relations

M11.D.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.

Algebra

Patterns, Patterns, Patterns

Patterns to Formulas

Example 1
Example 2
Example 3
Example 4
Example 5

Notes

Algebra

Patterns, Formulas, Substitution

Introduction... Math is Patterns

Expressions, Terms, Variables

Definitions
Summary

Patterns... Hockey Standings

Patterns... Squares - Perimeter and Area

Patterns... Toothpicks

Introduction
Exploration
To Formula- Pattern 1
To Formula- Pattern 2

Notes



Patterns... Counting Money	To Formula- Pattern 3 To Formula- Pattern 4 Summary The Pattern... Method 1 The Pattern... Method 2 The Pattern... In General
Patterns... Angles in a Polygon	Summary Interior Angles The Pattern
Patterns... The Bridge	Summary Introduction Exploration To Formula- Pattern 1 To Formula- Pattern 2 To Formula- Pattern 3 Summary

M11.D.1.1.2 Determine if a relation is a function given a set of points or a graph.

Graphing		Notes
Relations, Equations and Functions		
Functions	What is a Function? Example 1 Example 2 Example 3	
Vertical Line Test	Example 1 Example 2 Example 3	
Function Notation	Example 1 Example 2	

M11.D.1.1.3 Identify the domain, range or inverse of a relation (may be presented as ordered pairs or a table).

Graphing		Notes
Relations, Equations and Functions		
Relations	Domain and Range	



M11.D.2 Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs.

M11.D.2.1 Write, solve and/or graph linear equations and inequalities using various methods.

M11.D.2.1.1 Solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).

Equations

Notes

Solving Inequalities

Solving Inequalities	Example 1 Example 2 Example 3 Example 4 Example 5 Example 6
Solving Compound Inequalities	Example 1 Example 2
Graphing Linear Inequalities in Two Variables	Concept 1 Concept 2 Example 1 Example 2 Example 3
Solving Systems of Linear Inequalities by Graphing	Example 1 Example 2

Equations

Notes

Solving Absolute Value Equations

Absolute Value... What is it?	Concept Example 1 Example 2 Summary
Absolute Value Equations in 1 Variable	Example 1 Example 2
Absolute Value Inequalities in 1 Variable	Example 1 Example 2
Absolute Value Equations in 2 Variable	Example 1 Example 2
Practice Questions	10 questions (randomly generated)



M11.D.2.1.2 Identify or graph functions, linear equations or linear inequalities on a coordinate plane.

Graphing

Notes

Linear Relations

In This Topic

What is a Linear Relation?

Graphs of Linear Relations

Concept

Examples- Example 1

Examples- Example 2

Examples- Example 3

Examples- Example 4

Examples- Example 5

Examples- Example 6

Equations

Notes

Solving Inequalities

Graphing Linear Inequalities in Two Variables

Concept 1

Concept 2

Example 1

Example 2

Example 3

M11.D.2.1.3 Write, solve and/or apply a linear equation (including problem situations).

Graphing

Notes

Equation of a Straight Line

Word Problems-Applications

The Taxi - Case 1- Task 1: Find the Equation

The Taxi - Case 1- Task 2: Graph the Equation

The Taxi - Case 1- Task 3: Interpret the Equation

The Taxi - Case 2- Task 1: Find the Equation

The Taxi - Case 2- Task 2: Graph the Equation

The Taxi - Case 2- Task 3: Interpret the Equation

The Taxi - Summary

The Walker

The Basketball

Food

Equations

Notes

Problem Solving

Area of Walls

Pool Puzzler - The First Problem

Perimeter Problem with Diagram

Fish Problem with Diagram

Money Problem with Chart

Age Problem with Chart

Buying CDs



Meat Mixture
 Coffee Mixture
 Rate of Work
 Summary - Problem Solving Using Equations
 Practice Questions 11 questions (randomly generated)

M11.D.2.1.4 Write and/or solve systems of equations using graphing, substitution and/or elimination (limit systems to 2 equations).

Graphing

Equation of a Straight Line

Points of Intersection of 2 Lines Example 1
 Example 2

Notes

Equations

Solving Linear Systems

About This Topic
 The Meaning of a Linear System
 The Meaning of Solving a Linear System
 Solving a Linear System by Graphing Example 1: Intersecting Lines
 Example 2: Intersecting Lines
 Example 3: Intersecting Lines Involving Fractions
 Example 4: Intersecting Lines Involving Fractions
 Example 5: Parallel Lines
 Example 6: Coincidental Lines
 Solving a Linear System by Substitution Example 1: Intersecting Lines
 Example 2: Intersecting Lines
 Example 3: Intersecting Lines Involving Fractions
 Example 4: Intersecting Lines Involving Fractions
 Example 5: Parallel Lines
 Example 6: Coincidental Lines
 Solving a Linear System by Elimination Example 1: Intersecting Lines
 Example 2: Intersecting Lines
 Example 3: Intersecting Lines Involving Fractions
 Example 4: Intersecting Lines Involving Fractions
 Example 5: Parallel Lines
 Example 6: Coincidental Lines
 Solving a Linear System by Comparison Example 1: Intersecting Lines
 Example 2: Intersecting Lines
 Example 3: Intersecting Lines Involving Fractions
 Example 4: Intersecting Lines Involving Fractions
 Example 5: Parallel Lines
 Example 6: Coincidental Lines

Notes



Solving Problems Using Linear Systems	Example 1- Beginning of Question Example 1- Draw Graph Example 2- Beginning of Question Example 2- Draw Graph
Practice Questions	10 questions (randomly generated)

M11.D.2.1.5 Solve quadratic equations using factoring (integers only – not including completing the square or the Quadratic Formula).

Graphing		Notes
Quadratic Function		
Intercepts of a Quadratic Function	Graphing - Method 2: Factoring (If Possible) Graphing - Method 2: Factoring (If Possible)	
Algebra		Notes
Factoring Expressions		
Factoring Trinomials	Without Tiles- Example 1 Without Tiles- Example 2 Without Tiles- Example 3 Without Tiles- Example 4	
Difference of Squares	Example 1 Example 2 Example 3 Example 4	

M11.D.2.2 Simplify expressions involving polynomials.

M11.D.2.2.1 Add, subtract and/or multiply polynomial expressions (express answers in simplest form – nothing larger than a binomial multiplied by a trinomial).

Algebra		Notes
Adding Expressions		
Adding Expressions without Tiles	Example 1 Example 2	
Practice Questions Without Tiles	10 questions (randomly generated)	
Algebra		Notes
Subtracting Expressions		
Subtracting Expressions Without Tiles		
Practice Questions Without Tiles	10 questions (randomly generated)	
Algebra		Notes
Multiplying Expressions		
Our Problem		
Recall Tile Concept		



<p>Multiplying Monomials</p> <p>Multiplying Monomials and Binomials</p> <p>Multiplying Binomials</p> <p>Examples... True or False</p> <p>Examples</p> <p>Squaring a Binomial</p> <p>Practice Questions</p>	<p>Powers- Concept</p> <p>Powers- Example 1</p> <p>Powers- Example 2</p> <p>Powers- Example 3</p> <p>Powers- Example 4</p> <p>Without Tiles</p> <p>Without Tiles</p> <p>Without Tiles</p> <p>Pattern (FOIL)</p> <p>Example 1</p> <p>Example 2</p> <p>Example 3</p> <p>Example 1</p> <p>Example 2</p> <p>Example 3</p> <p>Example 4</p> <p>Example 5</p> <p>Examples- Example 1 without Tiles</p> <p>Examples- Example 2 without Tiles</p> <p>Examples- Example 3 without Tiles</p> <p>Examples- Example 4 without Tiles</p> <p>The Pattern</p> <p>An Example</p> <p>10 questions (randomly generated)</p>
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M11.D.2.2.2 Factor algebraic expressions, including difference of squares and trinomials (trinomials limited to the form ax^2+bx+c where a is not equal to 0).

Algebra	Notes
<p>Factoring Expressions</p> <p>Common Factoring</p> <p>Factoring Trinomials</p> <p>Difference of Squares</p> <p>Factoring by Grouping</p>	<p>Without Tiles- Greatest Common Factor</p> <p>Without Tiles- Example 1</p> <p>Without Tiles- Example 2</p> <p>The Pattern</p> <p>Without Tiles- Example 1</p> <p>Without Tiles- Example 2</p> <p>Without Tiles- Example 3</p> <p>Without Tiles- Example 4</p> <p>Example 1</p> <p>Example 2</p> <p>Example 3</p> <p>Example 4</p> <p>Concept</p> <p>Example 1</p>



	Example 2
	Example 3
	Example 4
	Example 5
Summary	Example 1
	Example 2
	Example 3
	Example 4
Practice Questions	10 questions (randomly generated)

M11.D.2.2.3 Simplify algebraic fractions.

Algebra		Notes
Dividing Expressions		
Dividing a Monomial by a Monomial	Example 1	
	Example 2	
	Example 3	
	Example 4	
Dividing a Polynomial by a Monomial	Concept	
	Example 1	
	Example 2	
	Example 3	
	Summary	
Dividing a Polynomial by a Binomial	Example 1... Method 1	
	Example 1... Method 2... Long Division	
	Example 2	
	Example 3... Method 1	
	Example 3... Method 2... Long Division	
	Example 4... Method 1	
	Example 4... Method 2... Long Division	
Combination Questions	Example 1	
	Example 2	
	Example 3	
	Example 4	
Practice Questions	10 questions (randomly generated)	



M11.D.3 Analyze change in various contexts.

M11.D.3.1 Describe and/or determine change.

M11.D.3.1.1 Identify, describe and/or use constant or varying rates of change.

Graphing		Notes
Reading And Sketching Graphs		
Graphs With a Scale	Concept... Distance and Time Example 5... Cost and Distance Example 7... The Cyclists Example 10... Rate Example 11... Villeneuve Example 12... Volume and Time Example 13... The River Problem Example 14... Angelo's Walk	
Extrapolation		
Percent		Notes
Ratios and Proportions		
Rates and Unit Rate	Concept Examples The Best?- Example 1 The Best?- Example 2 The Best?- Example 3	
Percent		Notes
Percent of a Number		
The Bouncing Ball		
Successive percentage Changes	Julie and Amanda Brett and Carly	

M11.D.3.1.2 Determine how a change in one variable relates to a change in a second variable (e.g., $y=4/x$, if x doubles, what happens to y ?).

Graphing		Notes
Quadratic Function		
Maximize Cage Area	Summary	
Maximize Potato Income	By Quadratic Function: Summary	
Bob's Beach ball	Summary	
Hit the Brakes	Summary	



M11.D.3.2 Compute and/or use the slope of a line.

M11.D.3.2.1 Apply the formula for the slope of a line to solve problems (formula given on reference sheet).

Graphing

Notes

Slope of a Line

Slope	Steepness Factor Definition
Introductory Examples	Example 1 Example 2 Example 3 Example 4
Formula	
Positive and negative Slope	Example 1 Example 2 Example 3 Example 4
Special Slopes	Pattern Example 1 Example 2 Example 3 Example 4 Pattern

M11.D.3.2.2 Given the graph of the line, 2 points on the line, or the slope and a point on a line, write or identify the linear equation in point-slope, standard and/or slope-intercept form.

Graphing

Notes

Equation of a Straight Line

Slope, Y-intercept Equations	Concept Example 1 Example 2 Example 3 Example 4
Exercise: Slope, Y-intercept	Concept Example 1 Example 2 Example 3 Example 4
Slope-Point Form of the Equation	Example 1- Solution 1 Example 1- Solution 2 Example 2- Solution 1 Example 2- Solution 2



Example 2- Solution 3
Example 2- Solution 4

Examples to Summarize
Match: Graph, Equation, Points, Story (randomly generated)

M11.D.3.2.3 Compute the slope and/or yintercept represented by a linear equation or graph.

Graphing

Slope of a Line

Formula
Positive and negative Slope

Example 1
Example 2
Example 3
Example 4
Pattern

Notes

Graphing

Equation of a Straight Line

Exercise: Slope, Y-intercept

Concept
Example 1
Example 2
Example 3
Example 4

Notes

M11.D.4 Describe or use models to represent quantitative relationships.

M11.D.4.1 Interpret and/or use linear, quadratic and/or exponential functions and their equations, graphs or tables.

M11.D.4.1.1 Match the graph of a given function to its table or equation.

Graphing

Equation of a Straight Line

Match: Graph, Equation, Points, Story
(randomly generated)

Notes



M11.E Data Analysis and Probability

M11.E.1 Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.

M11.E.1.1 Appropriately display and/or use data in problem-solving settings.

M11.E.1.1.1 Create and/or use appropriate graphical representations of data, including box-and-whisker plots, stem-and-leaf plots or scatter plots.

Graphing

Statistics

In This Topic

An Introduction

Tally Chart
Pictograph #1
Pictograph #2
Bar Graph #1
Bar Graph #2
Line Graph #1
Line Graph #2

Data... What is it?

Examples of Data

Example 1... Fast Food Earnings
Example 2... Infants Walk
Example 3... Canada and U.S.A. Forecast
Example 4... King of the Strike Out
Example 5... U.S. Stake in India
Example 6... Allergy Troubles
A Summary: Examples

Statistics... What is it?

Collecting Data

Throw A Die
Throw 2 Dice
Voting

Presenting Data

Primary Data-Gathering Methods
Secondary Data-Gathering Methods
Stem and Leaf Diagram- Example 1... Age of Fans
Stem and Leaf Diagram- Example 2... Height of Students
Bar Graph- Example 1... Energy
Bar Graph- Example 2... Lengths of Rivers
Histogram- Example 1... Height of Students
Histogram- Example 2... Roll of Die
Line Graph- Example 1... Life Expectancy
Line Graph- Example 2... Software Profits
Circle or Pie Graphs- Example 1... The Radio Station
Circle or Pie Graphs- Example 2... Heath Survey

Notes



Box and Whisker Plot	Scatter Plot- Example 1... The T-Shirt Tailor Scatter Plot- Example 2... Matching Concepts Example1: Math Marks Example 2: Income in 1998	
M11.E.1.1.2 Analyze data and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots or scatter plots).		
Graphing Statistics Presenting Data Measures of Central Tendency Box and Whisker Plot	Scatter Plot- Example 1... The T-Shirt Tailor Scatter Plot- Example 2... Matching Another Example Adding Data Points Example1: Math Marks Example 2: Income in 1998	Notes
M11.E.2 Select and/or use appropriate statistical methods to analyze data.		
M11.E.2.1 Use measures of central tendency to describe a set of data.		
M11.E.2.1.1 Calculate or select the appropriate measure of central tendency (mean, mode or median) of a set of data given or represented on a table, line plot or stem-and-leaf plot.		
Graphing Statistics Measures of Central Tendency	Introduction The Mean Average The Median Average The Mode Summary Another Example Adding Data Points	Notes
M11.E.2.1.2 Calculate and/or interpret the range, quartiles and interquartile range of data.		
Graphing Statistics Examples of Data	Example 1... Fast Food Earnings Example 2... Infants Walk	Notes



Box and Whisker Plot	Example 3... Canada and U.S.A. Forecast Concepts Example1: Math Marks Example 2: Income in 1998
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M11.E.2.1.3 Describe how outliers affect measures of central tendency.

Graphing Statistics	Notes
Box and Whisker Plot Concepts Example1: Math Marks Example 2: Income in 1998	

M11.E.3 Understand and/or apply basic concepts of probability or outcomes

M11.E.3.1 Apply probability and/or odds to practical situations.

M11.E.3.1.1 Find probabilities for independent, dependent or compound events and represent as a fraction, decimal or percent).

Probability	Notes
Independent Events	
In This Topic	
What Are They	
Examples	1. Toss 2 Coins 2. Replacing Marbles
Probability	1. Coin and Die 2. Balls 3. Letter Tiles
Patterns and Summary	1. Summary 2. Spinner 3. Cards
Practice Questions	5 questions (randomly generated)



Probability

Notes

Dependent Events

In This Topic
What Are They?

Examples

Probability

Patterns and Summary

Practice Questions

Independent Events

Dependent Events

- 1. Keep the First Marble
- 2. Choose the Flowers
- 1. Keep the First Ball
- 2. Keep the First Tile
- 3. Keep the First Flower

- 1. Summary
- 2. Money
- 3. Socks
- 4. Names

5 questions (randomly generated)

M11.E.3.1.2 Find, convert and/or compare the probability and/or odds of a simple event.

Probability

Notes

What's the Chance

Probability

Probability Examples

Probability Scale

What is it

- Introduction 1
- Introduction 2

- 1. Coin Toss
- 2. Picking 1 Ball
- 3. Picking 2 Balls
- 4. Spinner #1
- 5. Spinner #2
- 6. The Bag
- 7. Travel Example
- 8. Number Example
- 9. Rabbit Example
- 10. Mailing Letters
- 11. Forest
- 12. Ahmed's Maze

- Examples
- Summary
- Follow up
- Soccer Example



M11.E.3.2 Apply counting techniques in problem-solving settings.

M11.E.3.2.1 Determine the number of permutations and/or combinations or apply the fundamental counting principle. (Formula provided on the reference sheet).

Probability

Notes

Introduction to Probability

Possible Outcomes

1. Coins
2. Pick 1 Ball
3. Pick 2 Balls
4. Eye Test
5. Travel

Tree Diagrams

- Coin and Die
- Meals
- Socks
- Rabbits
- Forest

Problem Solving - Logic and Probability

- Introduction
- Demonstration
- Level 1
- Level 2

Probability

Notes

What's the Chance

Probability Examples

1. Coin Toss
2. Picking 1 Ball
3. Picking 2 Balls
4. Spinner #1
5. Spinner #2
6. The Bag
7. Travel Example
8. Number Example
9. Rabbit Example
10. Mailing Letters
11. Forest
12. Ahmed's Maze



M11.E.4 Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.

M11.E.4.1 Make predictions using data displays and probability.

M11.E.4.1.1 Estimate or calculate to make predictions based on a circle, line, bar graph or given situation.

Fractions			Notes
Ratios and Proportions			
Proportions		Example 4 - Trout	
Graphing			Notes
Reading And Sketching Graphs			
Extrapolation			
Graphing			Notes
Relations, Equations and Functions			
Relations		Example 1: Triangle- Display the Relation Example 1: Triangle- Describe the Relation Example 1: Triangle- Predict New Information Example 4 Running- Display the Relation Example 4 Running- Describe the Relation Example 4 Running- Predict New Information	

M11.E.4.1.2 Use probability to predict outcomes.

Fractions			Notes
Ratios and Proportions			
Proportions		Example 4 - Trout	
Percent			Notes
Ratios and Proportions			
Proportions		Example 4 - Trout	
Probability			Notes
What's the Chance			
Experimental Probability		Example 1 Example 2	



M11.E.4.2 Analyze and/or interpret data on a scatter plot and/or use a scatter plot to make predictions.

M11.E.4.2.1 Draw, find and/or write an equation for a line of best fit for a scatter plot.

Graphing

Linear Relations

Line of Best Fit

Example 1

Example 2

Notes

M11.E.4.2.2 Make predictions using the equations or graphs of best-fit lines of scatter plots.

Not yet correlated

