



**Correlation of the UMath X© Program
With the Pennsylvania Math Assessment Anchors and Eligible Content
Grade 8**

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:

| | | | |
|------|-------------------------------|--------|-----------------|
| M8.A | Numbers and Operations | M8.A.1 | (pages 3 - 4) |
| | | M8.A.2 | (pages 4 - 7) |
| | | M8.A.3 | (pages 7 - 14) |
| M8.B | Measurement | M8.B.1 | (pages 15 - 15) |
| | | M8.B.2 | (pages 16 - 17) |
| M8.C | Geometry | M8.C.1 | (pages 18 - 19) |
| | | M8.C.2 | (pages 19 - 19) |
| | | M8.C.3 | (pages 20 - 20) |
| M8.D | Algebraic Concepts | M8.D.1 | (pages 20 - 22) |
| | | M8.D.2 | (pages 23 - 25) |
| | | M8.D.3 | (pages 25 - 25) |
| | | M8.D.4 | (pages 26 - 27) |
| M8.E | Data Analysis and Probability | M8.E.1 | (pages 27 - 28) |
| | | M8.E.2 | (pages 29 - 29) |
| | | M8.E.3 | (pages 29 - 31) |
| | | M8.E.4 | (pages 31 - 32) |

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 8**

M8.A Numbers and Operations

M8.A.1 Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems.

M8.A.1.1 Represent numbers in equivalent forms.

M8.A.1.1.1 Represent numbers using scientific notation and/or exponential forms.

| Exponents | Notes |
|--|--------------|
| <p>The Meaning of Exponents</p> <p>Introduction... The Money Game</p> <p style="padding-left: 150px;">Money Grab Game Show Graphs... Game Show Results Graphs... Compare The Two Results</p> <p>Introduction... Bacteria Doubling</p> <p>Introduction... Paper Folding</p> <p style="padding-left: 150px;">Experiment Pattern</p> <p>Exponents, Powers, Bases</p> <p>Powerful Explosions</p> <p>Introductory Examples</p> <p style="padding-left: 150px;">Example 1 Example 2</p> | |
| <p>Exponents</p> <p>Scientific Notation</p> <p>Why Use Scientific Notation?</p> <p>Scientific Notation for Large Numbers</p> <p style="padding-left: 150px;">Introduction Chart The Rule The Steps Park Question</p> <p>Examples</p> | Notes |



| | |
|--|--|
| | Example 1 |
| | Example 2 |
| 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 |
| | 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

Exponents

The Meaning of Exponents

Examples - Order of Operation

Example 1
 Example 2
 Example 3

Notes

M8.A.2.2 Represent or solve problems using rates, ratios, proportions and/or percents.

M8.A.2.2.1 Solve problems involving percents (e.g., tax, discounts, etc) Do not include percent increase or decrease.

Percent

Percent of a Number

Concept
 Examples

1. Money
2. Service Charge
3. Birds
4. Marathon Race
5. Freezing
6. Pie Chart

Notes

Percent

Percent in Business

Sales Tax

Discount

Commission

The Bike
 The Coat
 Restaurant Tipping
 Football Sale
 What Can I Afford?
 What is Cheaper?
 Competitor's Discount
 Car Salesman
 Real Estate
 Car Dealerships

Notes



M8.A.2.2.2 Represent or solve rate problems (e.g., unit rates, simple interest, distance, etc.) Students may be asked to solve for any term (formulas provided on the reference sheet for distance and interest).

| | | | |
|-------------------------------|----------------------|--|--------------|
| 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 in Business | | | |
| Simple Interest | What is it? | | |
| | Complete the Table | | |
| | Bank Interest | | |
| | Credit Card Bill | | |

M8.A.3 Compute accurately and fluently and make reasonable estimates.

M8.A.3.1 Determine the appropriateness of overestimating, underestimating or calculating an exact answer in problem solving situations.

M8.A.3.1.1 Identify, use and/or explain when it is appropriate to round up or round down.

| | | | |
|-------------------------------------|-----------|--|--------------|
| Whole Numbers and Integers | | | Notes |
| The Meaning of Whole Numbers | | | |
| Rounding Large Numbers | Example 1 | | |
| | Example 2 | | |
| | Example 3 | | |
| | Example 4 | | |
| | Example 5 | | |
| Fractions | | | Notes |
| Introduction to Decimals | | | |
| Rounding Decimals | Example 1 | | |
| | Example 2 | | |
| | Example 3 | | |
| | Example 4 | | |



| | | |
|--|---|--------------|
| | <p>Example 5 Special Case #1 Special Case #2 Summary</p> | |
| Fractions | | Notes |
| Multiplication and Division of Decimals | | |
| Rounding Decimals | <p>Example 1 Example 2 Example 3 Example 4 Example 5 Special Case #1 Special Case #2 Summary Example 6 Example 7</p> | |

M8.A.3.1.2 Identify, apply and/or explain when an exact answer is needed or when estimation is appropriate.

Not yet correlated

M8.A.3.2 Use estimation strategies in problem solving situations.

M8.A.3.2.1 Estimate answers to problems involving percents (percents will be limited to: 1%, 10%, 15%, 20%, 25%, 50% or 75%).

| | | |
|---|---|--------------|
| Fractions | | Notes |
| Percent... A Special Fraction | | |
| Estimating Percent (randomly generated) | | |
| Percent | | Notes |
| The Meaning of Percent | | |
| Estimating Percent of a Bar (randomly generated) | | |
| Estimation on the Percent Line (randomly generated) | | |
| Percent | | Notes |
| Problems Involving Percent | | |
| Mental Calculation | <p>Number Example Typing Example</p> | |



M8.A.3.3 Compute and/or explain operations with integers, fractions and/or decimals.

M8.A.3.3.1 Add, subtract, multiply and/or divide integers, fractions and/or decimals with and without a calculator (straight computation or word problems).

Fractions

Notes

Adding Fractions

| | |
|-----------------------------------|---|
| Adding Fractions on a Number Line | Example 1 Example 2 Example 3 |
| The Lowest Common Denominator | Example 1 Example 2 |
| Word Problems | Alexander's Friend Eating Candy Goal Scoring Taking a Walk |
| Fraction Card Game | Instructions Level 1 Level 2 |

Fractions

Notes

Subtracting Fractions

| | |
|--|--|
| Subtracting Fractions on a Number Line | Example 1 Example 2 Example 3 |
| Lowest Common Denominator | Example 1 Example 2 |
| Word Problems | Pedro and Alex's Race Washing the Cars Planting a Garden |

Fractions

Notes

Multiplying Fractions

| | |
|----------------------------------|-------------------------------------|
| Pattern Blocks | Hexagon 1 Hexagon 2 Hexagon 3 |
| Fraction Strips | Concept 1 Concept 2 |
| Word Problems | Boris' Money Maria's Trip |
| Developing the Rule | Example 1 Example 2 |
| A Summary The Meaning of "OF" | |



Order in Multiplying

Example 1
Example 2

Fractions

Dividing Fractions

Understanding Division

Recall from Whole Numbers
Introduction

Examples With Diagrams

Soda Pop
Ice Cream
Shape 1
Shape 2

Patterns from Examples

Another Explanation

Example 1
Example 2

Examples Without Diagrams

Numerical Example 1
Numerical Example 2
Central High School

Practice Questions

10 questions (randomly generated)

Notes

Fractions

Addition and Subtraction of Decimals

Adding Decimals

Click and Drag- 5 questions (randomly generated)

Tenths -The Pencil- Example 1

Tenths -The Pencil- Example 2

Tenths -The Pencil- Example 3

Tenths -The Pencil- Example 4

Tenths -The Pencil- Example 5

Tenths -The Line- Example 1

Tenths -The Line- Example 2

Tenths -The Line- Example 3

Tenths -The Line- Example 4

Hundredths -The Town- Example 1 (randomly generated maps)

Hundredths -The Town- Example 2 (randomly generated maps)

Hundredths -The Town- Example 3 (randomly generated maps)

Hundredths -The Town- Example 4 (randomly generated maps)

Method 1 -Partial Sums- Example 1 -With Grids

Method 1 -Partial Sums- Example 2 -With Grids

Method 1 -Partial Sums- Example 3 -Without Grids

Method 1 -Partial Sums- Example 4 -Without Grids

Method 1 -Partial Sums- Example 5 -Without Grids

Method 1 -Partial Sums- Example 6 -Without Grids

Method 2 -Columns- Example 1 -With Grids

Notes



Subtracting Decimals

Method 2 -Columns- Example 2 -With Grids
Method 2 -Columns- Example 3 -Without Grids
Method 2 -Columns- Example 4 -Without Grids
Method 2 -Columns- Example 5 -Without Grids
Method 2 -Columns- Example 6 -Without Grids
Method 3 -Right to Left- Example 1 -With Grids
Method 3 -Right to Left- Example 2 -With Grids
Method 3 -Right to Left- Example 3 -Without Grids
Method 3 -Right to Left- Example 4 -Without Grids
Method 3 -Right to Left- Example 5 -Without Grids
Method 3 -Right to Left- Example 6 -Without Grids
Click and Drag- 5 questions (randomly generated)
Tenths - The Pencil- Example 1
Tenths - The Pencil- Example 2
Tenths - The Pencil- Example 3
Tenths - The Pencil- Example 4
Tenths - The Pencil- Example 5
Hundredths - The Field- Example 1
Hundredths - The Field- Example 2
Hundredths - The Field- Example 3
Hundredths - The Field- Example 4
Method 1 - Right to Left- Example 1 -With Grids
Method 1 - Right to Left- Example 2 -With Grids
Method 1 - Right to Left- Example 3 -Without Grids
Method 1 - Right to Left- Example 4 -Without Grids
Method 1 - Right to Left- Example 5 -Without Grids
Method 1 - Right to Left- Example 6 -Without Grids
Method 2 - Trade First- Example 1 -With Grids
Method 2 - Trade First- Example 2 -With Grids
Method 2 - Trade First- Example 3 -Without Grids
Method 2 - Trade First- Example 4 -Without Grids
Method 2 - Trade First- Example 5 -Without Grids
Method 2 - Trade First- Example 6 -Without Grids
Method 3 - Add Up- Example 1 -With Grids
Method 3 - Add Up- Example 2 -With Grids
Method 3 - Add Up- Example 3 -With Grids
Method 3 - Add Up- Example 4 -With Grids
Method 3 - Add Up- Example 5 -Without Grids
Method 3 - Add Up- Example 6 -Without Grids
Method 3 - Add Up- Example 7 -Without Grids
Method 3 - Add Up- Example 8 -Without Grids
Method 4 - Add Up to Zero- Example 1
Method 4 - Add Up to Zero- Example 2



Decimals Around Us

Length in Metric Units- Tools
 Length in Metric Units- Example 1
 Length in Metric Units- Example 2
 Length in Metric Units- Example 3
 Length in Metric Units- Example 4
 Length in Metric Units- Example 5
 Pencils- Example 1
 Pencils- Example 2
 Pencils- Example 3
 Pencils- Example 4
 Pencils- Example 5
 Money- Example 1
 Money- Example 2
 Money- Example 3
 Money- Example 4
 Money- Example 5
 Track Meet- Example 1
 Track Meet- Example 2
 Track Meet- Example 3
 Track Meet- Example 4
 Track Meet- Example 5
 School Supplies

Practice Questions
 Topic Test

10 questions (randomly generated)
 10 questions (randomly generated)

Fractions

Multiplication and Division of Decimals

Recall Basic Facts

Multiply by Repeated Addition

Example 1
 Example 2

Special Case: Multiply a Decimal by a Whole Number

Example 1 with Blocks

Multiply by Partial Products - Area

Example 2 with Blocks
 Example 1 with Blocks
 Example 2 with Blocks
 Example 3 with Blocks
 Example 4 without Blocks
 Example 5 without Blocks
 Example 6 without Blocks

Distributive Method

Question 1
 Question 2
 Question 3
 Example 1

Notes



| | |
|------------------------------------|---|
| | Example 2 |
| | Example 3 |
| | Question 1 |
| | Question 2 |
| | Question 3 |
| Standard Method | Example 1 |
| | Example 2 |
| | Example 3 |
| | Question 1 |
| | Question 2 |
| | Question 3 |
| Preliminaries to Division | Graphic Example |
| | Multiplication Table |
| | Summary for Decimals |
| Partial Quotients | Example 1 |
| | Example 2 |
| | Example 3 |
| | Example 4 |
| Fair Sharing - Long Division | Example 1 |
| | Example 2 |
| | Question 1 |
| | Question 2 |
| | Question 3 |
| | Question 4 |
| Decimals Around Us - Word Problems | Example 1 - Oranges |
| | Example 2 - Bananas |
| | Example 3 - Cycling |
| | Example 4 - Baseball Cards |
| | Example 5 - Cookies |
| | Example 6 - Running |
| | Example 7 - Apples |
| | Example 8 - Saving |
| | Example 9 - Skipping |
| Fractions to Decimals | Method 1 - Long Division- Example 1 |
| | Method 1 - Long Division- Example 2 |
| | Method 1 - Long Division- Example 3 |
| | Method 2 - A Special Equivalent Fraction- Example 1 |
| | Method 2 - A Special Equivalent Fraction- Example 2 |
| | Method 2 - A Special Equivalent Fraction- Example 3 |
| | Method 2 - A Special Equivalent Fraction- Example 4 |
| | Method 2 - A Special Equivalent Fraction- Example 5 |
| Repeating Decimals | An Example |
| | How to Write Them |



| | |
|------------------------------------|--|
| Rounding Decimals | <ul style="list-style-type: none"> Example 1 Example 2 Example 3 Example 4 Example 5 Special Case #1 Special Case #2 Summary Example 6 Example 7 |
| Fraction to Decimal Division Table | <ul style="list-style-type: none"> 5 divided by 7 3 divided by 8 1 divided by 11 2 divided by 9 2 divided by 3 8 divided by 9 11 divided by 12 9 divided by 5 |
| Compare Fractions | <ul style="list-style-type: none"> Compare Fractions... Method 1 Compare Fractions... Method 2 |
| Decimals to Fractions | <ul style="list-style-type: none"> Place Value Example 1 Example 2 Example 3 Example 4 Example 5 |
| Decimals Parts of a Tangram | <ul style="list-style-type: none"> Tangram Introduction Tangram Construction Example 1 Example 2 |
| Shapes in a Square | <ul style="list-style-type: none"> Example 1 Example 2 |
| My Day | |
| Practice Questions | 10 questions (randomly generated) |
| Topic Test | 10 questions (randomly generated) |



M8.B Measurement

M8.B.1 Demonstrate an understanding of measurable attributes of objects and figures, and the units, systems and processes of measurement.

M8.B.1.1 Convert measurements.

M8.B.1.1.1 Convert among metric measurements (milli, centi, kilo using meter, liter and gram) (table of equivalency provided on the reference sheet).

Measurement and Geometry
An Introduction to Measurement
Metric Conversions - Length

Metric Match - Examples- 3 questions (randomly generated)
Converting

Notes

M8.B.1.1.2 Convert customary measurements up to 2 units above or below the given unit (e.g., inches to yards, pints to gallons) (table of equivalency provided on the reference sheet).

Measurement and Geometry
An Introduction to Measurement
US Standard Conversions - Length

Introduction - Off Computer
Converting

Notes

M8.B.1.1.3 Convert time up to 2 units above or below given unit (e.g., seconds to hours).

Not yet correlated

M8.B.1.1.4 Convert from Fahrenheit to Celsius or Celsius to Fahrenheit (formulas provided on the reference sheet).

Not yet correlated



M8.B.2 Apply appropriate techniques, tools and formulas to determine measurements.

M8.B.2.1 Determine the measurement of a missing side(s) or angle(s) in a polygon.

M8.B.2.1.1 Determine the total number of degrees in the interior angles of a polygon in 3 - 8 sided figures (formula provided on the reference sheet).

| | | |
|---|--|---------------------|
| <p>Measurement and Geometry Angles and Polygons Angles in Triangles Angles in Polygons</p> | <p>Exploration Method 1 Method 2</p> | <p>Notes</p> |
| <p>Algebra Patterns, Formulas, Substitution Patterns... Angles in a Polygon</p> | <p>Interior Angles The Pattern</p> | <p>Notes</p> |

M8.B.2.1.2 Determine the measurement of one interior angle of a regular polygon (3-8 sided polygons, formula provided on the reference sheet).

| | | |
|---|--|---------------------|
| <p>Measurement and Geometry Angles and Polygons Angles in Polygons</p> | <p>Method 1 Method 2</p> | <p>Notes</p> |
| <p>Algebra Patterns, Formulas, Substitution Patterns... Angles in a Polygon</p> | <p>Interior Angles The Pattern Summary</p> | <p>Notes</p> |

M8.B.2.1.3 Determine the number of sides of a polygon given the total number of degrees in the interior angles (3-8 sided polygons, formula provided on the reference sheet).

| | | |
|---|--|---------------------|
| <p>Measurement and Geometry Angles and Polygons Angles in Polygons</p> | <p>Method 1 Method 2</p> | <p>Notes</p> |
| <p>Algebra Patterns, Formulas, Substitution Patterns... Angles in a Polygon</p> | <p>Interior Angles The Pattern Summary</p> | <p>Notes</p> |



M8.C Geometry

M8.C.1 Analyze characteristics and properties of two- and three- dimensional geometric shapes and demonstrate understanding of geometric relationships.

M8.C.1.1 Identify, use, and/or describe properties of angles, triangles, quadrilaterals, circles, pyramids, cubes, prisms, spheres, cones and/or cylinders.

M8.C.1.1.1 Match the three-dimensional figure with its net (cube, cylinder, cone, prism, pyramid). Any measurements used should be consistent in the stem and answer choices.

Measurement and Geometry
Solids.. Volume and Surface Area

Surface Area of a Solid

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

Notes

M8.C.1.1.2 Define, identify and/or use properties of angles formed by intersecting lines (complementary, supplementary, adjacent and/or vertical angles).

Measurement and Geometry
Angles and Polygons

Parallel Lines

Examples with Parallel Lines

Example 1
Example 2

Notes

M8.C.1.1.3 Define, identify and/or use properties of angles formed when two parallel lines are cut by a transversal (alternate interior, alternate exterior, vertical corresponding).

Measurement and Geometry
Angles and Polygons

Parallel Lines

Examples with Parallel Lines

Example 1
Example 2

Notes



M8.C.1.2 Compute measures of sides of right triangles using the Pythagorean Theorem.

M8.C.1.2.1 Use the Pythagorean Theorem to find the measure of a missing side of a right triangle (formula provided on the reference sheet – whole numbers only).

| Exponents | | Notes |
|--|----------------------------------|--------------|
| Pythagorean Theorem | | |
| In This Topic | | |
| The Right Triangle | | |
| Math or Magic? | Introduction | |
| | Omar's Rope Trick #1 | |
| | Omar's Rope Trick #2 | |
| | Our Rope Trick | |
| Squares on a Grid | Example 1 | |
| | Example 2 | |
| | Example 3 | |
| | Example 4 | |
| Squares on the Sides of a Right Triangle | 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) | |

M8.C.2 Identify and/or apply concepts of transformations or symmetry.

Not assessed at Grade 8.



M8.C.3 Locate points or describe relationships using the coordinate plane.

M8.C.3.1 Plot and/or identify ordered pairs on a coordinate plane.

M8.C.3.1.1 Plot, locate or identify ordered pairs on a coordinate plane (the point may be a vertex of a polygon).

| Graphing | | Notes |
|-------------------------|---|--------------|
| Points on a Grid | | |
| Ordered pairs | Axis Quadrants and Cartesian Plane Finding a Point Order is Important Examples- Example 1 Examples- Example 2 Examples- Example 3 | |
| Shapes | Randomly Generated | |
| Battleship | Randomly Generated | |

M8.D Algebraic Concepts

M8.D.1 Demonstrate an understanding of patterns, relations and functions.

M8.D.1.1 Analyze, extend or develop descriptions of patterns or functions.

M8.D.1.1.1 Continue a numeric or algebraic pattern (pattern must show 3 repetitions – may include up to 2 operations, squares and square roots).

| Algebra | | Notes |
|-------------------------------------|-----------|--------------|
| Patterns, Patterns, Patterns | | |
| Introduction... Math is Patterns | | |
| Geometric Patterns | Example 1 | |



| | |
|-------------------------------|-----------|
| | Example 2 |
| | Example 3 |
| | Example 4 |
| | Example 5 |
| | Example 6 |
| | Example 7 |
| | Example 8 |
| | Example 9 |
| Number Patterns | Example 1 |
| | Example 2 |
| | Example 3 |
| | Example 4 |
| | Example 5 |
| | Example 6 |
| Number and Geometric Patterns | Example 1 |
| | Example 2 |

M8.D.1.1.2 Find missing elements in numeric or geometric patterns and/or functions (may be given a table or rule – pattern must show 3 repetitions).

| Algebra | | Notes |
|-------------------------------------|-----------|--------------|
| Patterns, Patterns, Patterns | | |
| Introduction... Math is Patterns | | |
| Geometric Patterns | Example 1 | |
| | Example 2 | |
| | Example 3 | |
| | Example 4 | |
| | Example 5 | |
| | Example 7 | |
| | Example 8 | |
| | Example 9 | |
| Number Patterns | Example 1 | |
| | Example 2 | |
| | Example 3 | |
| | Example 4 | |
| | Example 5 | |
| | Example 6 | |
| Number and Geometric Patterns | Example 1 | |
| | Example 2 | |



M8.D.1.1.3 Determine the rule of a function (given elements in an input-output table, chart or list – limit to linear functions).

Algebra

Introduction to Algebraic Thinking

Function Machine

Find the Rule- Rule 1
 Find the Rule- Rule 2
 Find the Rule- Rule 3
 Find the Rule- Rule 4

Notes

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
 To Formula- Pattern 3
 To Formula- Pattern 4
 Summary

Patterns... Counting Money

The Pattern... Method 1
 The Pattern... Method 2
 The Pattern... In General
 Summary

Patterns... Angles in a Polygon

Interior Angles
 The Pattern
 Summary

Patterns... The Bridge

Introduction
 Exploration
 To Formula- Pattern 1
 To Formula- Pattern 2
 To Formula- Pattern 3
 Summary

Notes



M8.D.2 Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs.

M8.D.2.1 Select and/or use a strategy to simplify an expression, solve an equation or inequality and/or check the solution for accuracy.

M8.D.2.1.1 Solve one- or two-step equations and inequalities (should not include absolute values – one variable only).

| Equations | | Notes |
|-----------------------------------|---|--------------|
| Solving One-Step Equations | | |
| Our Problem | | |
| Concept - Examples with Tiles | Example 1 Example 2 Example 3 Example 4 Example 5 | |
| Concept - Examples without Tiles | Example 1 Example 2 Example 3 Example 4 Example 5 | |
| Practice Questions | 10 questions (randomly generated) | |
| Equations | | |
| Solving Two-Step Equations | | |
| Our Problem | | |
| Concept - Examples with Tiles | Example 1 Example 2 Example 3 Example 4 | |
| Concept - Examples without Tiles | Example 1 Example 2 Example 3 Example 4 Example 5 Example 6 | |
| Practice Questions | 10 questions (randomly generated) | |
| Equations | | |
| Solving Inequalities | | |
| Comparing Integers | The Integer Line Example 1... Greater Than Example 2... Less Than Explanation Example 3... Greater Than Example 4... Less Than | |



| | |
|-------------------------------|---|
| Inequalities | Greater Than or Less Than What Are They? Inequalities vs. Equations Summary of Relationships |
| Inequalities on a Number Line | Example 1 Example 2 Example 3 Example 4 |
| Solving Inequalities | Example 1 Example 2 Example 3 Example 4 Example 5 Example 6 |

| | |
|---|---|
| M8.D.2.1.2 Use substitution to check the accuracy of a given value for an equation or inequality (simple inequalities with one variable). | |
| Equations Tiles, Balances and Equations Solve by Systematic Trials | Notes |
| Algebra Patterns, Formulas, Substitution Substitution is... Math Scrabble 1 | Notes |
| | Scrabble 1 Scrabble 2 Scrabble 3 Challenge |

| | |
|---|--|
| M8.D.2.1.3 Determine the value of an algebraic expression by simplifying and/or substituting a number for the variable. | |
| Algebra Patterns, Formulas, Substitution Substitution is... Math Scrabble 1 | Notes |
| | Scrabble 1 Scrabble 2 Scrabble 3 Challenge |
| Substitution... Examples | Example 1: Evaluation Example 2: Area Formulas Example 3: Volume Formulas Example 4: Hit The Ball |



M8.D.2.2 Create and/or interpret expressions, equations or inequalities that model problem situations.

M8.D.2.2.1 Match a written situation to its numeric and/or algebraic expression, equation or inequality (up to two variables in equations or expressions – one variable with inequalities).

| Equations | Notes |
|---------------------------------------|---|
| Problem Solving | |
| Words and Symbols | |
| The Translation Machine | Example 1 Example 2 Example 3 Example 4 |
| The Trick Machine | Instructions The Machine Explanations with Pictures Explanation with Symbols |
| Expressions - The Language of Algebra | Example 1 Example 2 Example 3 |

M8.D.2.2.2 Write and/or solve an equation for a given problem situation (one variable only).

| Equations | Notes |
|---|-------|
| Problem Solving | |
| Area of Walls | |
| Chemistry | |
| 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 | |

M8.D.3 Analyze change in various contexts.

Not assessed at grade 8.



M8.D.4 Describe or use models to represent quantitative relationships.

M8.D.4.1 Represent relationships with tables or graphs on the coordinate plane.

M8.D.4.1.1 Graph a linear function based on an x/y table (integers only).

| | |
|---|--------------|
| Graphing Relations, Equations and Functions Patterns to Words to Equations Example 1 Example 3 Example 4 | Notes |
| Graphing Linear Relations In This Topic What is a Linear Relation? | Notes |

M8.D.4.1.2 Match the graph of a linear function to its x/y table (integers only).

| | |
|--|--------------|
| Graphing Equation of a Straight Line Graph $y = mx + b$ Example 1 Example 2 Example 3 Example 4 Patterns to Summary Example 5 Example 6 Example 7 Example 8 Match: Graph, Equation, Points, Story (randomly generated) | Notes |
|--|--------------|

M8.D.4.1.3 Match the linear equation ($y = mx + b$ form) to the x/y table (integers only in the table).

| | |
|---|--------------|
| Graphing Equation of a Straight Line Graph $y = mx + b$ Example 1 Example 2 Example 3 Example 4 Patterns to Summary Example 5 | Notes |
|---|--------------|



Example 6
Example 7
Example 8

M8.E Data Analysis and Probability

M8.E.1 Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.

M8.E.1.1 Choose, display or interpret data (tables, charts, graphs, etc.).

M8.E.1.1.1 Choose and/or explain the correct representation (graph) for a set of data.

Graphing

Notes

Reading And Sketching Graphs

In This Topic

Graphs Without a Scale

Concept... Age and Weight
Example 1... Height and Weight
Example 2... Errors and Years
Example 3... Pushups and Situps
Example 4... Nelia's Bike Ride
Example 5... Temperature and Time
Example 6... Melissa Eating Popcorn (situations are randomly generated)
Example 7... Glasses of Water
Example 8... Bottles of Water
Example 9... Bottles of Water... Matching
Example 10... Age and Height
Example 11... The Bathtub #1
Example 12... The Bathtub #2
Example 13... The Hot Tub

Graphs With a Scale

Concept... Distance and Time
Example 1... Wins in Soccer
Example 2... Books and Days
Example 3... The Travel Log



Example 4... Winning in Baseball
 Example 5... Cost and Distance
 Example 6... Ivan's Ride to the Party
 Example 7... The Cyclists
 Example 8... Baseball (situations are randomly generated)
 Example 9... The Beach
 Example 10... Rate
 Example 11... Villeneuve
 Example 12... Volume and Time
 Example 13... The River Problem
 Example 14... Angelo's Walk

M8.E.1.1.2 Analyze data and/or answer questions pertaining to data shown in multiple line graphs, circle graphs or histograms.

Graphing

Reading And Sketching Graphs

Discrete Data
 Continuous Data
 Extrapolation
 Practice Questions

5 questions (randomly generated)

Notes

Graphing

Statistics

An Introduction
 Presenting Data

Line Graph #1
 Line Graph #2
 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

M8.E.1.1.3 Interpret data shown in stem-and-leaf or box-and-whisker plots.

Graphing

Statistics

Presenting Data
 Box and Whisker Plot

Stem and Leaf Diagram- Example 1... Age of Fans
 Stem and Leaf Diagram- Example 2... Height of Students
 Concepts
 Example1: Math Marks
 Example 2: Income in 1998

Notes



M8.E.2 Select and/or use appropriate statistical methods to analyze data.

Not assessed at grade 8.

M8.E.3 Understand and/or apply basic concepts of probability or outcomes.

M8.E.3.1 Calculate the probability of an event.

M8.E.3.1.1 Find the probability for a mutually exclusive or an independent event (written as a fraction in simplest form).

| Probability | | Notes |
|------------------------------------|---|--------------|
| Introduction to Probability | | |
| Experiment with Spinners | Experiment 1 Experiment 2 Experiment 3 Experiment 4 Experiment 5 Experiment 6 | |
| The Spinner Game | Board 1- Single Player Board 1- 2 player Board 2- Single Player Board 2- 2 player | |
| Probability | | Notes |
| What's the Chance | | |
| Probability | What is it Introduction 1 Introduction 2 | |
| 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 | |



| | | |
|---------------------------|--|--------------|
| Probability Scale | 12. Ahmed's Maze Examples Summary Follow up Soccer Example | |
| Experimental Probability | Introduction Example 1 Example 2 | |
| Practice Questions | 10 questions (randomly generated) | |
| Probability | | Notes |
| Dice Probabilities | | |
| Roll One Die | Your Experiment Computer's Experiment Theoretical Probability Patterns | |
| Roll Two Dice | Summary Your Experiment Computer's Experiment Theoretical Probability Patterns | |
| Practice Questions | Summary 5 questions (randomly generated) | |

M8.E.3.2 Determine the number of combinations and/or permutations for an event.

M8.E.3.2.1 Determine/show the number of permutations and/or combinations for an event using up to four choices (e.g., organized list, etc.).

| | | |
|---|---|--------------|
| Probability | | Notes |
| Introduction to Probability | | |
| Tree Diagrams | Coin and Die Meals Socks Rabbits Forest | |
| Problem Solving - Logic and Probability | Introduction Demonstration Level 1 Level 2 | |
| Practice Questions | 10 questions (randomly generated) | |



| | |
|--|--|
| Probability Binomial Probabilities Flipping a Coin... Twice Flipping a Coin... Three Times Summary Practice Questions | Notes 5 questions (randomly generated) |
|--|--|

M8.E.4 Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.

M8.E.4.1 Draw conclusions, make inferences and/or evaluate hypotheses based on statistical and data displays.

M8.E.4.1.1 Fit a line to a scatter plot and/or describe any correlation between the two variables (positive, negative, strong, weak or none).

| | |
|---|---|
| Graphing Statistics Presenting Data | Notes Scatter Plot- Example 1... The T-Shirt Tailor Scatter Plot- Example 2... Matching |
| Graphing Linear Relations In This Topic What is a Linear Relation? Graphs of Linear Relations | Notes Concept Examples- Example 1 Examples- Example 2 Examples- Example 3 Examples- Example 4 Examples- Example 5 Examples- Example 6 |
| Line of Best Fit | Example 1 Example 2 |

M8.E.4.1.2 Make predictions based on survey results or graphs (bar, line, circle, scatterplots, etc.).

| | |
|---|--------------|
| Graphing Reading And Sketching Graphs Extrapolation | Notes |
|---|--------------|



**Graphing
Statistics**

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

Notes

