

Math Activity Links for GEMS - November 2022

Activity	GEMS based	3rd party link	Grade Level	Whole number relationships	Geometry	Addition and Subtraction	Measurements	Operations	Algebraic Thinking
Hands-on games and explorations									
<u>Create a Math Zine (small magazine) with these ideas (Elementary, Middle, High)</u>		✓	K-6	✓	✓	✓	✓	✓	✓
<u>Wild.Maths — Math games, activities and stories to encourage mathematical creativity. (Elementary, Middle, High)</u>		✓			✓		✓		
<u>Challenge 24 games—your girls probably play this, but you can go much further and deeper (Elementary, Middle)</u>		✓	1,2,3,4,5			✓			✓
<u>The Game of Nim — help your girls develop strategies and even move into binary computation (Elementary, Middle, High)</u>		✓	5						
<u>Printable Math puzzles –fun and challenging puzzles from +plus Magazine (Elementary, Middle)</u>		✓	2,3,4,5		✓		✓		
<u>Dara and Achi from the Mind Research Institute (Elementary, Middle)</u>		✓	2,3,4,5		✓				
<u>Pentro — a great strategy game (Elementary)</u>	✓		2,3,4,5		✓				
<u>Disaster Math—Expect the unexpected—combine this with natural disasters (Middle)</u>		✓	2						
<u>NCTM's Figure This — many great group math games (Elementary, Middle)</u>		✓	2,3,4,5		✓		✓		
<u>Geometric Art and Toys — creative mathematics for all levels (Elementary, Middle)</u>		✓	1,2		✓				

Math Activity Links for GEMS - November 2022

Activity	GEMS based	3rd party link	Grade Level	Base Ten Notation	Data Analysis	Standard Units	Statistics and Probability	Arrays and Area	Volume
Hands-on games and explorations									
Create a Math Zine (small magazine) with these ideas (Elementary, Middle, High)		✓	K-6	✓	✓	✓	✓	✓	✓
Wild.Maths — Math games, activities and stories to encourage mathematical creativity. (Elementary, Middle, High)		✓			✓				
Challenge 24 games—your girls probably play this, but you can go much further and deeper (Elementary, Middle)		✓	1,2,3,4,5						
The Game of Nim — help your girls develop strategies and even move into binary computation (Elementary, Middle, High)		✓	5	✓					
Printable Math puzzles –fun and challenging puzzles from +plus Magazine (Elementary, Middle)		✓	2,3,4,5						
Dara and Achi from the Mind Research Institute (Elementary, Middle)		✓	2,3,4,5					✓	
Pentro — a great strategy game (Elementary)	✓		2,3,4,5					✓	
Disaster Math—Expect the unexpected—combine this with natural disasters (Middle)		✓	2			✓			
NCTM's Figure This — many great group math games (Elementary, Middle)		✓	2,3,4,5			✓			
Geometric Art and Toys — creative mathematics for all levels (Elementary, Middle)		✓	1,2						

Math Activity Links for GEMS - November 2022

Activity	GEMS based	3rd party link	Grade Level	Place Value	Multiplication	Division	Fractions	Decimals	Multi Digit Division
Hands-on games and explorations									
Create a Math Zine (small magazine) with these ideas (Elementary, Middle, High)		✓	K-6	✓	✓	✓	✓	✓	✓
Wild.Maths — Math games, activities and stories to encourage mathematical creativity. (Elementary, Middle, High)		✓							
Challenge 24 games—your girls probably play this, but you can go much further and deeper (Elementary, Middle)		✓	1,2,3,4,5		✓	✓	✓		✓
The Game of Nim — help your girls develop strategies and even move into binary computation (Elementary, Middle, High)		✓	5					✓	
Printable Math puzzles –fun and challenging puzzles from +plus Magazine (Elementary, Middle)		✓	2,3,4,5				✓		
Dara and Achi from the Mind Research Institute (Elementary, Middle)		✓	2,3,4,5						
Pentro — a great strategy game (Elementary)	✓		2,3,4,5						
Disaster Math—Expect the unexpected—combine this with natural disasters (Middle)		✓	2		✓	✓			
NCTM's Figure This — many great group math games (Elementary, Middle)		✓	2,3,4,5						
Geometric Art and Toys — creative mathematics for all levels (Elementary, Middle)		✓	1,2						

Math Activity Links for GEMS - November 2022

Activity	GEMS based	3rd party link	Grade Level	Multi Digit Multiplication	Multiples/ Factors	Patterns
Hands-on games and explorations						
<u>Create a Math Zine (small magazine) with these ideas (Elementary, Middle, High)</u>		✓	K-6	✓	✓	✓
<u>Wild.Maths — Math games, activities and stories to encourage mathematical creativity. (Elementary, Middle, High)</u>		✓			✓	✓
<u>Challenge 24 games—your girls probably play this, but you can go much further and deeper (Elementary, Middle)</u>		✓	1,2,3,4,5	✓		✓
<u>The Game of Nim — help your girls develop strategies and even move into binary computation (Elementary, Middle, High)</u>		✓	5			
<u>Printable Math puzzles –fun and challenging puzzles from +plus Magazine (Elementary, Middle)</u>		✓	2,3,4,5		✓	
<u>Dara and Achi from the Mind Research Institute (Elementary, Middle)</u>		✓	2,3,4,5			✓
<u>Pentro — a great strategy game (Elementary)</u>	✓		2,3,4,5			✓
<u>Disaster Math—Expect the unexpected—combine this with natural disasters (Middle)</u>		✓	2			
<u>NCTM's Figure This — many great group math games (Elementary, Middle)</u>		✓	2,3,4,5			
<u>Geometric Art and Toys — creative mathematics for all levels (Elementary, Middle)</u>		✓	1,2			

Math Activity Links for GEMS - November 2022

Activity	GEMS based	3rd party link	Grade Level	Whole number relationships	Geometry	Addition and Subtraction	Measurements	Operations	Algebraic Thinking
<u>Teach Engineering's Math Hub—very teacher-oriented but great lessons for combining math and engineering (Elementary, Middle, High)</u>		✓	K-5				✓		
<u>Mathigon: Combine math and origami! (Elementary, Middle, High)</u>		✓	1,2,3		✓				
<u>Play and Learn with OKGO — the mathematics behind their amazing music videos (Elementary, Middle, High)</u>		✓	K-5				✓		
Data Science									
<u>Census at School—Make an account for your club/school and explore data with real numbers. (Elementary, Middle, High)</u>		✓	4-5						
Online Activities									
<u>National Library of Virtual Manipulatives — games and applets for almost every math concept (Elementary, Middle, High)</u>		✓	K-5		✓	✓	✓	✓	✓
<u>NCTM's Illuminations — Brain teasers and interactive games for all levels (Elementary, Middle, High)</u>		✓	K-5	✓	✓	✓	✓	✓	
<u>GeoGebra — so many opportunities to visualize math and develop spatial reasoning (Elementary, Middle, High)</u>		✓	K-5		✓		✓	✓	
<u>Calculation Nation —join and learn with the fabulous games and challenges (Elementary, Middle, High)</u>		✓							
<u>PBS' Cyberchase — so many great games and apps, mostly for younger girls (Elementary)</u>		✓							
<u>Jefferson Lab Math Games — great games to build and strengthen skills (Elementary, Middle)</u>		✓							
<u>NRICH Maths — solve problems with students all over the world (Elementary, Middle, High)</u>		✓	K-6						

Math Activity Links for GEMS - November 2022

Activity	GEMS based	3rd party link	Grade Level	Base Ten Notation	Data Analysis	Standard Units	Statistics and Probability	Arrays and Area	Volume
<u>Teach Engineering's Math Hub—very teacher-oriented but great lessons for combining math and engineering (Elementary, Middle, High)</u>		✓	K-5		✓	✓			
<u>Mathigon: Combine math and origami! (Elementary, Middle, High)</u>		✓	1,2,3						
<u>Play and Learn with OKGO — the mathematics behind their amazing music videos (Elementary, Middle, High)</u>		✓	K-5		✓	✓		✓	
Data Science									
<u>Census at School-Make an account for your club/school and explore data with real numbers. (Elementary, Middle, High)</u>		✓	4-5		✓		✓		
Online Activities									
<u>National Library of Virtual Manipulatives — games and applets for almost every math concept (Elementary, Middle, High)</u>		✓	K-5		✓	✓		✓	
<u>NCTM's Illuminations — Brain teasers and interactive games for all levels (Elementary, Middle, High)</u>		✓	K-5		✓	✓		✓	✓
<u>GeoGebra — so many opportunities to visualize math and develop spatial reasoning (Elementary, Middle, High)</u>		✓	K-5		✓				
<u>Calculation Nation –join and learn with the fabulous games and challenges (Elementary, Middle, High)</u>		✓							
<u>PBS' Cyberchase — so many great games and apps, mostly for younger girls (Elementary)</u>		✓							
<u>Jefferson Lab Math Games — great games to build and strengthen skills (Elementary, Middle)</u>		✓							
<u>NRICH Maths — solve problems with students all over the world (Elementary, Middle, High)</u>		✓	K-6						

Math Activity Links for GEMS - November 2022

Activity	GEMS based	3rd party link	Grade Level	Place Value	Multiplication	Division	Fractions	Decimals	Multi Digit Division
<u>Teach Engineering's Math Hub—very teacher-oriented but great lessons for combining math and engineering (Elementary, Middle, High)</u>		✓	K-5						
<u>Mathigon: Combine math and origami! (Elementary, Middle, High)</u>		✓	1,2,3						
<u>Play and Learn with OKGO — the mathematics behind their amazing music videos (Elementary, Middle, High)</u>		✓	K-5						
Data Science									
<u>Census at School-Make an account for your club/school and explore data with real numbers. (Elementary, Middle, High)</u>		✓	4-5						
Online Activities									
<u>National Library of Virtual Manipulatives — games and applets for almost every math concept (Elementary, Middle, High)</u>		✓	K-5	✓	✓	✓	✓	✓	
<u>NCTM's Illuminations — Brain teasers and interactive games for all levels (Elementary, Middle, High)</u>		✓	K-5		✓	✓	✓		
<u>GeoGebra — so many opportunities to visualize math and develop spatial reasoning (Elementary, Middle, High)</u>		✓	K-5						
<u>Calculation Nation –join and learn with the fabulous games and challenges (Elementary, Middle, High)</u>		✓							
<u>PBS' Cyberchase — so many great games and apps, mostly for younger girls (Elementary)</u>		✓							
<u>Jefferson Lab Math Games — great games to build and strengthen skills (Elementary, Middle)</u>		✓							
<u>NRICH Maths — solve problems with students all over the world (Elementary, Middle, High)</u>		✓	K-6						

Math Activity Links for GEMS - November 2022

Activity	GEMS based	3rd party link	Grade Level	Multi Digit Multiplication	Multiples/ Factors	Patterns
<u>Teach Engineering's Math Hub—very teacher-oriented but great lessons for combining math and engineering (Elementary, Middle, High)</u>		✓	K-5			
<u>Mathigon: Combine math and origami! (Elementary, Middle, High)</u>		✓	1,2,3			
<u>Play and Learn with OKGO — the mathematics behind their amazing music videos (Elementary, Middle, High)</u>		✓	K-5			
Data Science						
<u>Census at School-Make an account for your club/school and explore data with real numbers. (Elementary, Middle, High)</u>		✓	4-5			
Online Activities						
<u>National Library of Virtual Manipulatives — games and applets for almost every math concept (Elementary, Middle, High)</u>		✓	K-5			✓
<u>NCTM's Illuminations — Brain teasers and interactive games for all levels (Elementary, Middle, High)</u>		✓	K-5			✓
<u>GeoGebra — so many opportunities to visualize math and develop spatial reasoning (Elementary, Middle, High)</u>		✓	K-5			
<u>Calculation Nation –join and learn with the fabulous games and challenges (Elementary, Middle, High)</u>		✓				
<u>PBS' Cyberchase — so many great games and apps, mostly for younger girls (Elementary)</u>		✓				
<u>Jefferson Lab Math Games — great games to build and strengthen skills (Elementary, Middle)</u>		✓				
<u>NRICH Maths — solve problems with students all over the world (Elementary, Middle, High)</u>		✓	K-6			

Common Core Standards: Math				
Kindergarten	1st grade	2nd grade	3rd grade	4th grade
Representing, relating, and operating on whole numbers (initially with objects)	Develop addition and subtraction strategies within 20	Extending understanding of base-ten notation (up to multi-digit numbers)	Understanding multiplication and division strategies within 100	Understanding and fluency with multi-digit multiplication and multi-digit dividends
Describe shapes and space (describing the physical world using geometric ideas and vocabulary)	Whole number relationships and place value (grouping in tens and ones)	Fluency in addition and subtraction	Understanding fractions (especially unit fractions)	Understanding fraction equivalence , addition and subtraction of fractions with like denominators , and multiplication of fractions by whole numbers
Number names and count sequence	Linear measurements (indirectly and by iterating length units)	Using standard units to measure and estimate lengths	Structure of rectangular arrays and area	Classifying geometric figures based on properties (ie. parallel sides)
Compare numbers either through objects or as written numerals	Attributes of geometric shapes (composing and decomposing shapes)	Describing and analyzing shapes	Describing, analyzing, and comparing 2D shapes (classify shapes by sides and angles)	Represent verbal statements of multiplicative comparisons or equations
Addition and Subtraction	Applying properties of operations	Addition/subtraction problems involving unknowns	Understanding relationship between multiplication and division	Factors and multiples
Decompose numbers less than or equal to 10 in more than one way ($5 = 2+3$ and $5 = 4+1$)	Extend counting sequence to 120	Working with equal groups of objects- foundation for multiplication	Identify arithmetic patterns (ie. $4 \times a$ number is always even)	Generate and analyze patterns

Common Core Standards: Math				
Kindergarten	1st grade	2nd grade	3rd grade	4th grade
Foundation for place value by working with numbers 11-9	Using combination of place value and properties of operations to add/subtract	Place value with 3 digit numbers in combination of operations to add/subtract	Using place value and operations to perform multi-digit arithmetic	Place value understanding for multi-digit whole numbers (can round up to any place, compare multi-digit numbers, add/subtract, etc)
Describe and compare measurable attributes	Tell and write time	Use addition and subtraction in measurement contexts	Measurements and estimation of intervals of time, liquid volumes, and masses of objects	Extend understanding of fraction equivalence and ordering (fraction equivalence, fractions with diff denominators)
Classify and count objects in each category	Represent and interpret data up to three categories (ie. total number of data points)	Time and money	Represent and interpret data with several categories, and generate measurement data	Building fractions from unit fractions
	Reason with shapes and their attributes (2D and 3D)	Represent and interpret data by generating measurements and drawing graphs	Relating area to multiplication and addition	Understanding decimals and fractions relationship
		Reason with shapes (ie. partition shapes into equal shares)	Recognize perimeter as an attribute of plane figures	Conversion of measurements
			Reason with shapes and their attributes (ie. shapes share attributes; partition shape into parts with equal areas)	Represent and interpret data involving fractions
				Understanding angles

Common Core Standards: Math				
Kindergarten	1st grade	2nd grade	3rd grade	4th grade
				Classify shapes by their lines and angles (draw and identify lines and angles, recognizing lines of symmetry, parallel and perpendicular lines)

5th grade	6th grade
Fluency with fractions (understanding multiplication and division of fractions)	
Extending division to 2-digit divisors	
Place value system with decimals and understanding operations with decimals	
Understanding volume	
Write and interpret numerical expressions using parentheses, symbols, etc	
Analyze patterns and relationships between at least two numbers	

5th grade	6th grade
Place value system and operations in base ten	
Convert measurements within a given measurement system	
Represent and interpret data with fractions	
Relate volume with multiplication and addition	
Graph points on coordinate plane for real-world and math problems	
Classify 2D figures into categories (understanding figures can belong in multiple categories)	