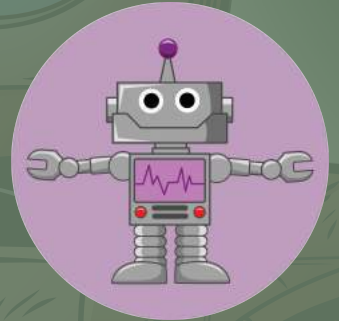


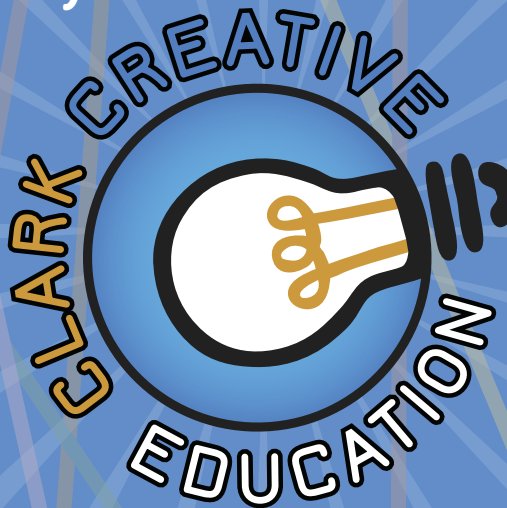
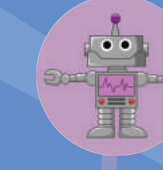
TARGET IDENTIFIED...
READY TO ENGAGE...



USER GUIDE



CLARKCREATIVEEDUCATION



THE UNIVERSE
EXPANDS
(CLICK TO VISIT)

(WHERE IT ALL BEGAN)

80,000+ users
35,000+ pages
3,000+ resources
+++ rigor
∞ smiles

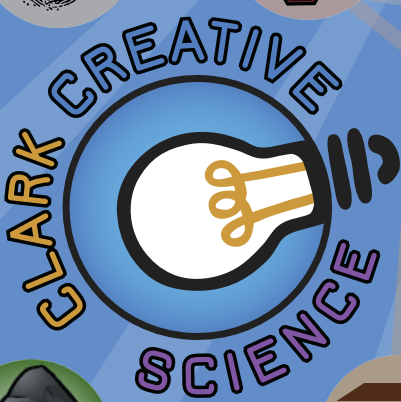
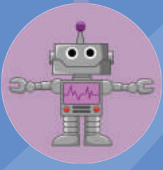


TABLE OF CONTENTS

To advance ahead to a specific section click on the links below.

Entire Curriculum Bundles

- Pre-Algebra
- Algebra
- Geometry
- Algebra 2 & Pre-Calculus

Resource Types Introduction

Icons You'll See

Specific Resource Type Overviews



21st Century Math Projects



STEMersion



Mathlete Sports Tasks



CSI



TableTop Math



Adventure Math



Boot Camp



Escape Math



Person Puzzles



Whodunnits



Herowork



Drive Instruction

Skills Map (for Pre-Algebra, Algebra, Geometry, Algebra 2 & Pre-Calculus)

Unit Planning Ideas

CURRICULUM BUNDLES

all curriculum bundles include free lifetime downloads of new content that belong in the included units.



Each Elementary Curriculum contains content across all strands.

Numbers and Base-10
Fractions

Measurement & Data

Geometry

Algebraic Thinking & Operations



includes

10 units

308+ items

3,200+ pages

includes

11 units

296+ items

3,100+ pages

includes

10 units

214+ items

2,300+ pages

includes

13 units

238+ items

2,500+ pages

These curriculum bundles contain instructional materials (*Drive Instruction* warm-ups, slides, notes, digital interactive notebooks & tests), skill practice worksheets and activities (*Boot Camps*, *Person Puzzles*, *Escapes*, *Herowork & Whodunnits*), application content (*STEMersions*, *Mathletes*, *Choose Your Own Adventures*), unit review content (*CSIs & TableTops*) and project-based learning content (21st Century Math Projects).



PRE-ALGEBRA

Practice → Activities → Application → Projects

THE REAL NUMBER SYSTEM

This Bundle Lives...

Practice → Activities → Application → Projects

INTEGERS

This Bundle Lives...

Practice → Activities → Application → Projects

RATIONAL NUMBERS

This Bundle Lives...

Practice → Activities → Application → Projects

ORDER OF OPERATIONS

This Bundle Lives...

Practice → Activities → Application → Projects

EXPONENTS & ROOTS

This Bundle Lives...

Practice → Activities → Application → Projects

GCF & LCM

This Bundle Lives...

Practice → Activities → Application → Projects

VARIABLES & EXPRESSIONS

This Bundle Lives...

Practice → Activities → Application → Projects

RATIO & PROPORTIONS

This Bundle Lives...

Practice → Activities → Application → Projects

PERCENTS

This Bundle Lives...

Practice → Activities → Application → Projects

SHAPE CLASSIFICATION

This Bundle Lives...

Practice → Activities → Application → Projects

AREA & PERIMETER

This Bundle Lives...

Practice → Activities → Application → Projects

VOLUME & SURFACE AREA

This Bundle Lives...

Practice → Activities → Application → Projects

COORDINATE PLANE

This Bundle Lives...

Practice → Activities → Application → Projects

DISTANCE & MIDPOINT

This Bundle Lives...

Practice → Activities → Application → Projects

TRANSFORMATIONS

This Bundle Lives...

Practice → Activities → Application → Projects

SCIENTIFIC NOTATION

This Bundle Lives...

Practice → Activities → Application → Projects

DATA DISPLAYS & ANALYSIS

This Bundle Lives...

Practice → Activities → Application → Projects

MEASURES OF CENTRAL TENDENCY & VARIANCE

This Bundle Lives...

Practice → Activities → Application → Projects

PROBABILITY & EXPECTED VALUE

This Bundle Lives...

ALGEBRA 1

Practice → Activities → Application → Projects

VARIABLES & EXPRESSIONS

This Bundle Lives...

Practice → Activities → Application → Projects

THE REAL NUMBER SYSTEM

This Bundle Lives...

Practice → Activities → Application → Projects

EQUATIONS

This Bundle Lives...

Practice → Activities → Application → Projects

INEQUALITIES

This Bundle Lives...

Practice → Activities → Application → Projects

ABSOLUTE VALUE EQUATIONS & INEQUALITIES

This Bundle Lives...

Practice → Activities → Application → Projects

RELATIONS & FUNCTIONS

This Bundle Lives...

Practice → Activities → Application → Projects

FUNCTION OPERATIONS

This Bundle Lives...

Practice → Activities → Application → Projects

DIRECT & INVERSE VARIATION

This Bundle Lives...

Practice → Activities → Application → Projects

LINEAR FUNCTIONS & RATE OF CHANGE

This Bundle Lives...

Practice → Activities → Application → Projects

SYSTEMS OF EQUATIONS & INEQUALITIES

This Bundle Lives...

Practice → Activities → Application → Projects

MONOMIALS & POLYNOMIALS

This Bundle Lives...

Practice → Activities → Application → Projects

FACTORING

This Bundle Lives...

Practice → Activities → Application → Projects

QUADRATIC FUNCTIONS

This Bundle Lives...

Practice → Activities → Application → Projects

EXPONENTIAL & LOGARITHMIC FUNCTIONS

This Bundle Lives...

GEOMETRY

Practice → Activities → Application → Projects

SHAPE CLASSIFICATION

This Bundle Lives...

Practice → Activities → Application → Projects

LINES & ANGLES

This Bundle Lives...

Practice → Activities → Application → Projects

AREA & PERIMETER

This Bundle Lives...

Practice → Activities → Application → Projects

VOLUME & SURFACE AREA

This Bundle Lives...

Practice → Activities → Application → Projects

COORDINATE PLANE

This Bundle Lives...

Practice → Activities → Application → Projects

DISTANCE & MIDPOINT

This Bundle Lives...

Practice → Activities → Application → Projects

TRANSFORMATIONS

This Bundle Lives...

Practice → Activities → Application → Projects

LOGIC, REASONING & PROOF

This Bundle Lives...

Practice → Activities → Application → Projects

CONGRUENCE, SIMILARITY & SCALE

This Bundle Lives...

Practice → Activities → Application → Projects

TRIANGLES

This Bundle Lives...

Practice → Activities → Application → Projects

TRIGONOMETRY

This Bundle Lives...

Practice → Activities → Application → Projects

CIRCLES

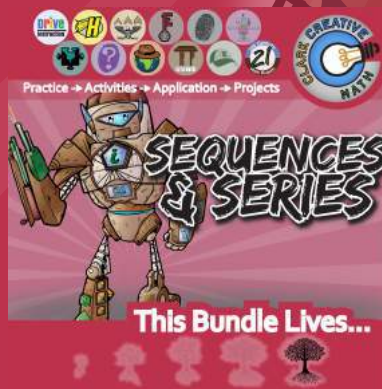
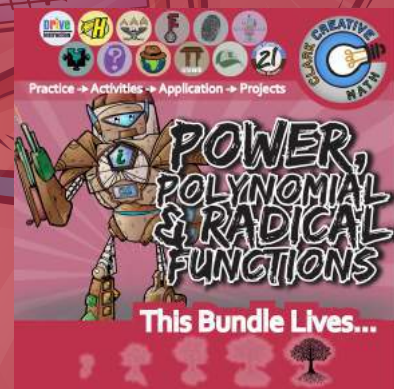
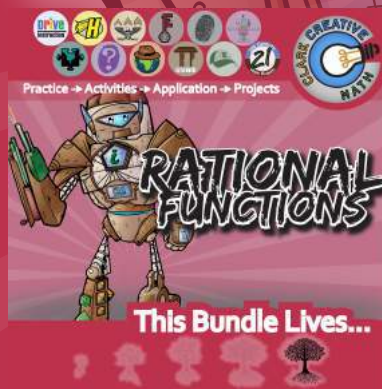
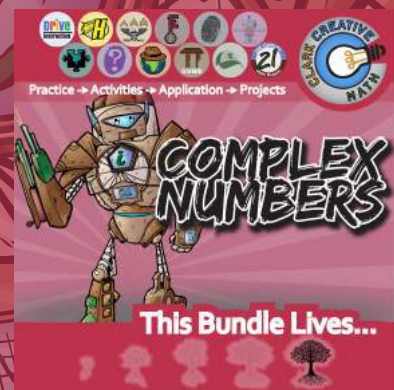
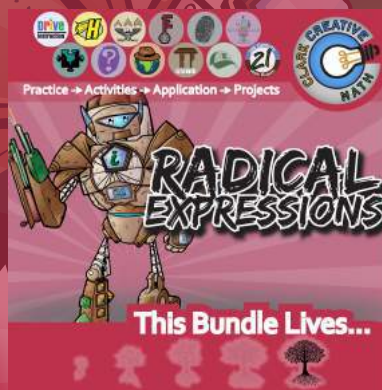
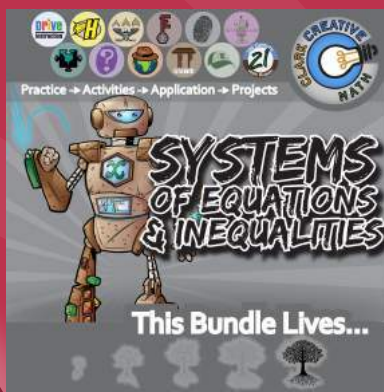
This Bundle Lives...

Practice → Activities → Application → Projects

CONIC SECTIONS

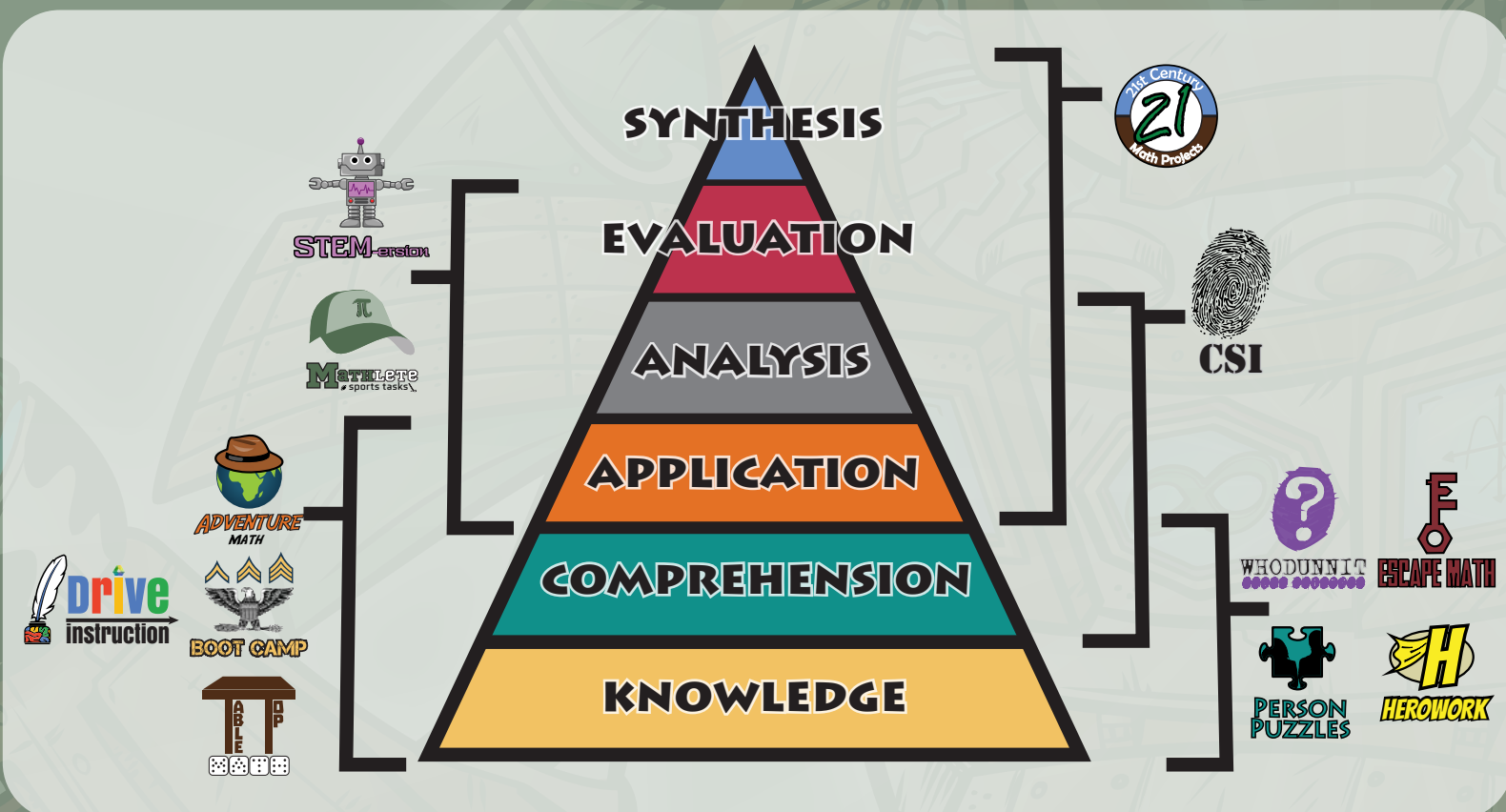
This Bundle Lives...

ALGEBRA 2 & PRE-CALC

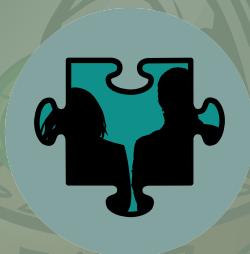
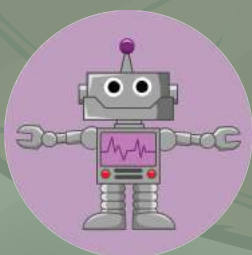


RESOURCE TYPES

Each resource type is designed to hit different instructional targets. Whether it be foundational, increasing conceptual understanding, skill practice, application, advanced critical thinking and beyond, there is a Clark Creative Math resource for that!

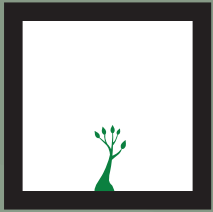


To learn more about a specific resource type, you can click on the logo to skip ahead.



ICONS YOU'LL SEE

Throughout the guide you will see tree icons that represent how complete a specific resource type is within a curriculum set. Eventually, all resource types will reach full coverage status.



getting started



about 50% complete



most topics/skills are hit



a little more content coming



full coverage

GROUP COMPOSITION



INDEPENDENT

best if done on their own



INDIVIDUAL OR STATION

can be done independently or as a station in elementary



SMALL GROUP

ideally done in groups of 2-4 because of complexity or team benefits



ABILITY GROUPS

it is optimal for students to be grouped with those of similar ability

IDEAL ENVIRONMENT



CLASSWORK

best if done with a teacher present due to complexity or need for groups



HOMEWORK

can be done as homework as skill practice



HOMEWORK/CLASSWORK

will work flexibly with or without a teacher

POINT IN THE UNIT



INSTRUCTION & DISCOVERY

ideal for the start of a unit because it focuses on conceptual understanding and basic skill practice



SKILL PRACTICE

intended to refine skills through practice that increases in difficulty



ACTIVITY

includes an active element and often a group aspect that focuses on refining skills or deepening understandings



UNIT REVIEW

best if used at the end of a unit after all content has been taught

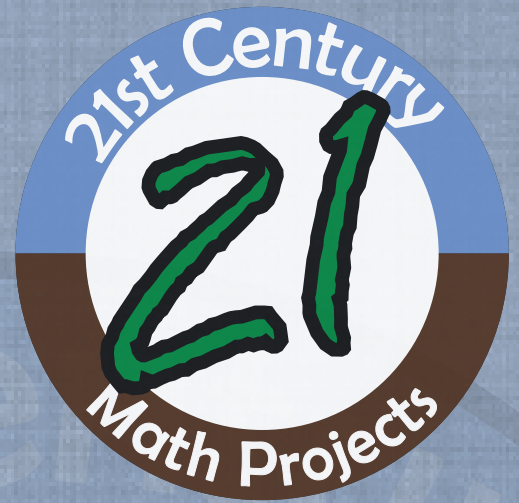


ASSESSMENT

can be used as a summative measure of how well a student understands the content



“Oh, My Goodness!
These are seriously amazing!
The kids are so engaged with
these projects. The discussions
that take place are phenomenal!”



real world contexts / rigorous critical thinking / culminating experiences

21st Century Math Projects are immersive real world experiences where students build toward a final product or real world simulation. Each 21st Century Math Project is a little different, but are designed to captivate and enrich all learners.



**3 - 10
DAYS***

**Varies with each project.
All projects can be shortened.*



**1 - 2
STUDENTS**

BEST USE

WHERE?



CLASSWORK

WHAT?



ACTIVITY

WHEN?



ASSESSMENT

COURSE COVERAGE

**3RD
GRADE**



**4TH
GRADE**



**5TH
GRADE**



**PRE-
ALGEBRA**



ALGEBRA



GEOMETRY



**ALGEBRA 2 &
PRE-CALCULUS**



MATHEMATICALLY
RIGOROUS

CRITICAL
THINKING

Note: these images come from a variety of projects.

AUTHENTIC
CONTEXTS

REAL
WORLD

A LITTLE BIT
OF SWAGG

Mathematical Projects:

- The Placebo Effect
- Trial 1 - Melanoma Dept.
- Restaurant Profitability
- Design a Menu
- ANGRY PENGUINS
- BUILD-YOUR-OWN ANGRY PENGUINS LEVEL
- ZOMBIE APOCALYPSE
- OUTBREAK
- CURE THE ZOMBIES
- REVENUE FORECAST
- Into the TANK
- SCALE MODEL
- BUILD A SCALE MODEL
- 7th Grade Code for Laddies
- EGG DROP COMPETITION DATA
- EGG DROP CONTEST SCORING
- Consolidate Your Debt
- Year 2
- LIVE AS AN ADULT
- Model UN Country Research
- Health v. Wealth
- THE LEONARDO
- Model B
- RESCALING & REMODELING
- The Pirate Code for Laddies
- ENTER THE SHARK TANK
- A MODEL UN SIMULATION
- DESIGN A DREAM HOUSE
- CURE THE ZOMBIES
- FIND THE TREASURE
- CONSTRUCT AN EGG PARACHUTE

Best Practice:

Choosing a project for each unit of teaching can work well. As you teach through the unit, you can use different parts of the projects and end the unit with the culminating experience.

21st Century 21 Math Projects

AND MANY MANY MORE...

120 more to be precise!

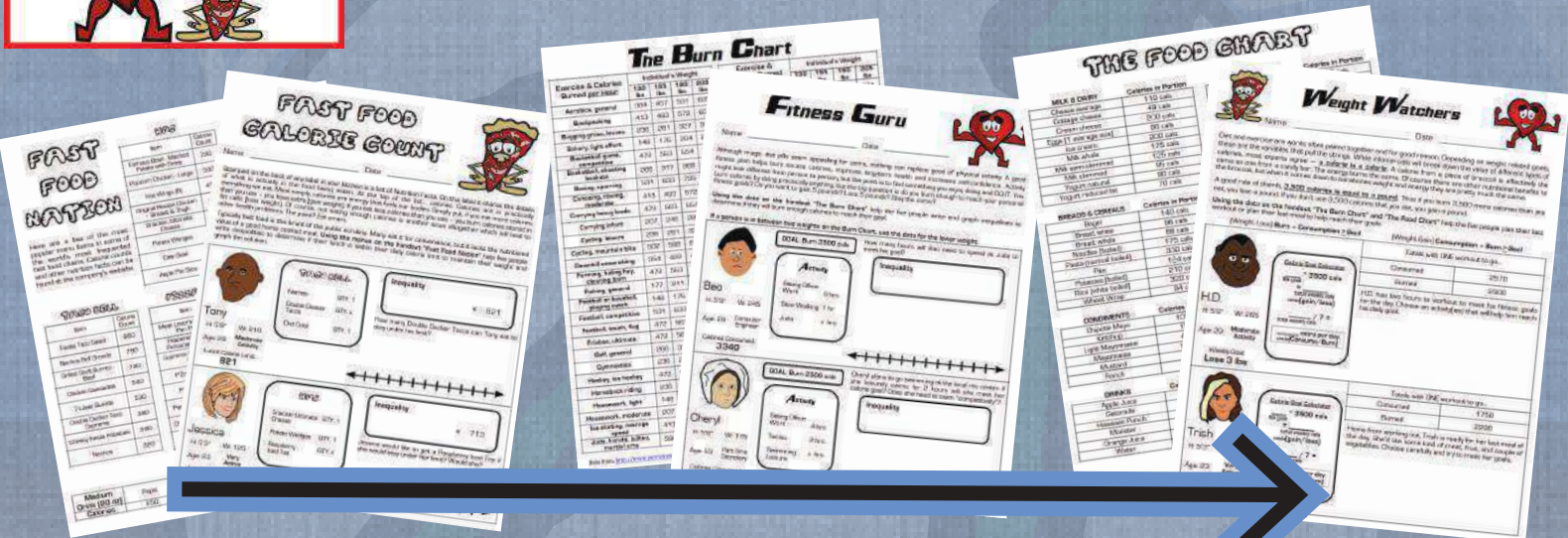
how one works

Note: these images come one project and they are all a little different.



DO PART OR
DO ALL

Projects are made of multiple components that can be interspersed throughout a unit or all together.



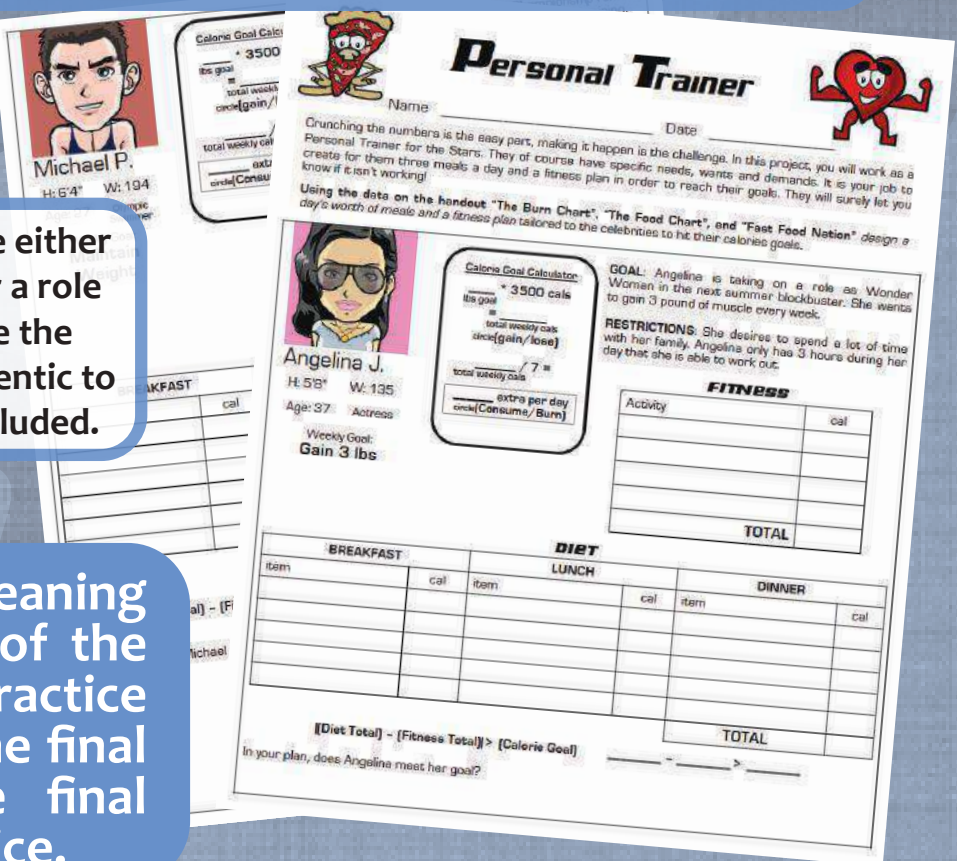
As the difficulty of the math content increases, the critical thinking does too. Thus, both the math content and real world context are scaffolded.

CULMINATING
EXPERIENCES

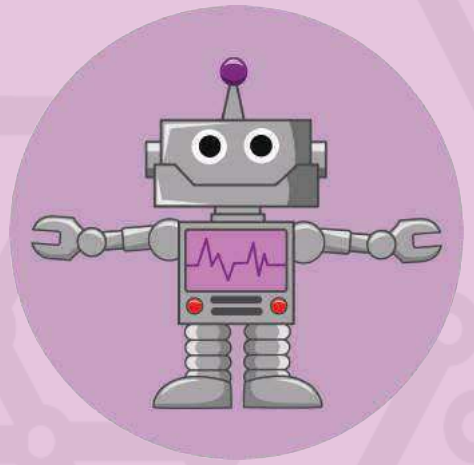
Culminating experiences are either traditional final products or a role playing simulations where the student takes on a role authentic to the context. Rubrics are included.

BEST PRACTICE

Each project is modular, meaning you can use some or all of the parts. You can do the practice activities without doing the final product or attempt the final product without the practice.



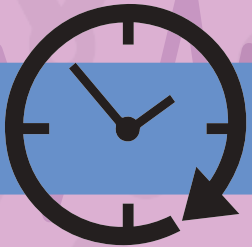
STEM-ersion



"Not only am I in love with these resources, so are my students."

problem-based / real world / higher-order critical thinking

STEMersions are rich problem-based tasks that integrate a real life occupation with a math skill. Students are required to make a recommendation and use the evidence and analysis from their calculations to support their decision. Answers will vary!



**10 - 20
MINUTES**



**2 - 3
STUDENTS**

BEST USE

WHERE?



CLASSWORK

HOW?



**SMALL
GROUP**

WHEN?



**SKILL
PRACTICE**

COURSE COVERAGE

**3RD
GRADE**



**4TH
GRADE**



**5TH
GRADE**



**PRE-
ALGEBRA**



ALGEBRA



GEOMETRY



**ALGEBRA 2 &
PRE-CALCULUS**



REAL
WORLD

Framed in the
context of an
actual career.

dissection

STEM-version

w/ Solving Systems of Equations with Substitution

Name _____

Date _____

Accountant

Jami is an accountant at a mid-sized firm and has been hired by an investor to make recommendations about five local small businesses. These businesses are all in debt, but the investor sees potential in each idea. The investor wants to know when each company is projected to break even and would prefer companies that will turn a profit within the next 24 months. The investor secured the expense and revenue reports of each of the businesses to review.

Jami has created linear models to project the Cost and Revenue of each business and now must use the results to finalize her findings. In each equation x represents months. What should her recommendation be? How do the businesses rank?

	Appster (Technology Start-up)	Enrich (Education Program)	Green Team (Alternate Energy)	Southwest Fusion (Restaurant)	Zoo to You (Children's Parties)
Cost	$y = 13124 + 3190x$	$y = 69419 + 15384x$	$y = 178420 + 64421x$	$y = 42891 + 15387x$	$y = 5420 + 9539x$
Revenue	$y = 3586x$	$y = 21954x$	$y = 68419x$	$y = 13174x$	$y = 10381x$

Use this space to make any calculations and show work.

PROBLEM
BASED

HIGHER-ORDER
THINKING

Each begins with an
authentic situation
within the career.

Evidence

ANALYZE THE
EVIDENCE

Students use the
focus skill to
uncover evidence.

Conclusion
or Recommendation

NO ONE
CORRECT
ANSWER

MAKE A
RECOMMENDATION

Students make a
data-driven decision
based on the
information they have.

Just like in
the
REAL WORLD!

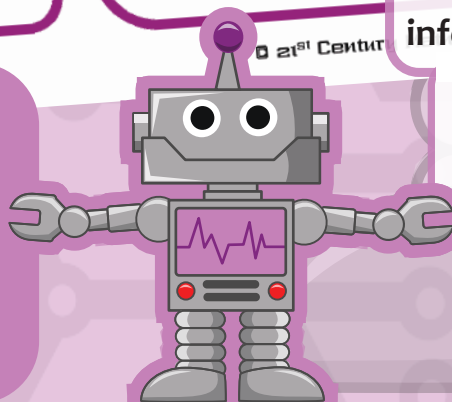
Interpret the Evidence. What does it mean?

Analysis
of the evidence

Interpret the meaning
of the evidence in the
context of the problem.

BEST PRACTICE

After groups complete their recommendations, lead a class discussion. Ask groups to share their decision and rationale. Encourage debate and applaud thoughtful uses of data.



Mathlete

sports tasks



"My students LOVE
the sports tie in!"

problem-based / real world / higher-order critical thinking

Mathlete Sports Tasks are problem-based tasks that focus on a specific math skill in an authentic situation in sports where a decision must be made. Students compute with provided data, develop multiple arguments and make the decision they believe is best.



**10 - 20
MINUTES**



**2-3
STUDENTS**

BEST USE

WHERE?



CLASSWORK

HOW?



**SMALL
GROUP**

WHEN?



**SKILL
PRACTICE**

COURSE COVERAGE

**3RD
GRADE**



**4TH
GRADE**



**5TH
GRADE**



**PRE-
ALGEBRA**



ALGEBRA



GEOMETRY



**ALGEBRA 2 &
PRE-CALCULUS**



**AUTHENTIC
SCENARIOS**

**A VARIETY
OF SPORTS**

Framed
within a
real sports
context.

STRATEGY



Unit Rate

Name _____

Date _____

BACKGROUND

You are the coach for a basketball team. Listed below are statistics for 5 of your players that come off the bench. Analyze the data below. Which players would you be most willing to put in at the end of a game if one of your starters fouled out? Find their Points per Minute and Assists per Minute to help make your decision. What game situations would dictate which player you chose?

	Ginobili	Havlicek	Kukoc	Schrempf	Terry
Minutes Played	320	140	202	72	180
Points	63	20	47	39	45
Assists	45	10	2	4	37

**PROBLEM
BASED**

Each begins with an
authentic situation
within the sport.

RESEARCH

Use this space to make
calculations and show work.

**ANALYZE THE
EVIDENCE**

Students use the
focus skill to compute
with the data.

ARGUMENTS

What are the two or three best choices to make and why?

Students outline
arguments for two or
three options.

DECISION

Make a decision and provide
reasons to support it.

**MAKE A
DECISION**

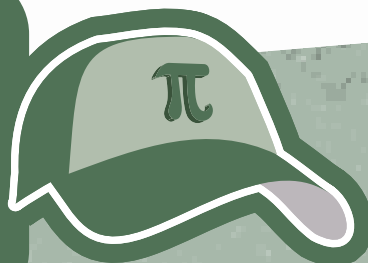
Students make a
data-driven decision
based on the
information they have.

Just like it
happens in
real sports!

**CONSIDER THE
OPTIONS**

BEST PRACTICE

After groups make their choice, lead a class discussion. Ask groups to share their decision, and other arguments they considered. Encourage debate and strong use of data.



CSI



*“My students have NEVER
been more ENGAGED!
SO FUN! Perfect Review!”*

unit review / critical thinking / rigor

CSI activities are captivating review assignments where investigators encounter six crime scenes, uncover clues and apprehend a criminal. While students solve each crime scene, they answer challenging math questions around a given topic.



**45 - 60
MINUTES**



**2 - 3
STUDENTS**

BEST USE

WHERE?



CLASSWORK

WHAT?



ACTIVITY

WHEN?



**UNIT
REVIEW**

COURSE COVERAGE

**3RD
GRADE**



**4TH
GRADE**



**5TH
GRADE**



**PRE-
ALGEBRA**



ALGEBRA



GEOMETRY



**ALGEBRA 2 &
PRE-CALCULUS**



FORENSICS

NOTE: THESE IMAGES COME FROM A VARIETY OF CSI ACTIVITIES

REVIEW THE SUSPECTS

A thief is terrorizing a world region and there are 6 suspects.

SOLVE THE CRIME SCENES

Six crime scenes range from rigorous skill practice to application.

CAN YOU REACH THE TOP OF THE TEMPLE OF INSCRIPTIONS?

spaces with the correct answers and move them higher to help answer the next level of problems.

G'Day it's Tenth's Dontsaypoint here to reorient your place value and word view. Below is a trail marked with Aboriginal rock art. If you get all the way to Ayers Rock, you will have your first clue.

$$= 1.2 + 3.4$$

$$= -2.8$$

COLLECT THE EVIDENCE

AYERS ROCK

$$40.5 = +2.2$$

$$.25 = +$$

$$9.25 =$$

At the end of each crime scene, students earn part of a secret code

BEST PRACTICE

Cut the six crime scenes out and scatter them around the room. Since the activity is self checking, you can focus on groups with more needs. Detective music always adds nice ambiance.

Scene #6 Nintendo of America -- Seattle, Washington
Museum security guards were surprised to discover that Your Imaginary BFF stole the famous bronze Super Mario statue and his pedestal. Later investigators were sent a cryptic text message.

Womp. Womp. Womp. I just snuck in through the green planter tube and I'm about to use some video game mathematics to jump on your head.

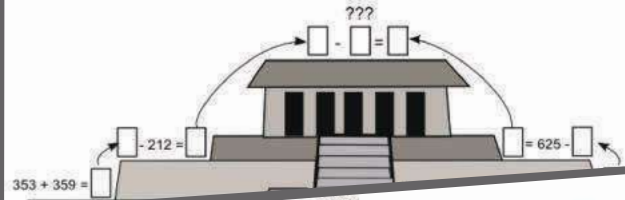
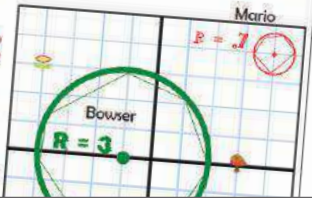
Collisions in video games decide points and penalties and are essential for gameplay. The collision of objects is determined by mapping the polygons of characters to a circle and then programming some math. Below is code and a gameboard of Mario (the small circle) colliding with Bowser (the monstrous circle). Can Mario collect the three powerups without colliding with Bowser ending the game?

--SAMPLE GAME CODE--

Two polygons -- poly1, located at (x1,y1) with radius r1 and poly2 located at (x2, y2) with radius r2.

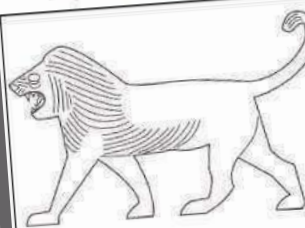
// (//) symbolizes comments not actual game code! to test if the polygons' radii are overlapping, you can use the code:

distance = ((x1-x2)^2 + (y1-y2)^2);
distance formula in code and distance between the center



Scene #3 Ancient Babylon -- Iraq

Etched into the grounds of Babylon, Kareem Al-Jabr left this note. It's suspected he used Babylonian numerals.



I was going to etch this a few spots over, but it seems the US military built a helipad in Babylon. Good thing it's not an ancient civilization that should be cherished forever. Well at least they didn't crush the ground with their tanks. Oh wait, are those tank tracks?

See if you can solve this puzzle from the ruins.

$$\text{Babylonian numerals: } \text{𐎶}(\text{𐎵} + \text{𐎶}) = \text{𐎶𐎶}(\text{𐎵} - \text{𐎶𐎶})$$

CRYPTIC PUZZLE SOLVER TEXT MESSAGE

Here's my two cents... round to the nearest hundredth. ~ Peace, Tenth's Dontsaypoint

$$\text{Target symbol} \div C + E \div A + N \bullet i \div A$$

UNLOCK THE CRYPTIC TEXT

CATCH THE CRIMINAL

Once students have all parts of the code, they can crack the secret text message

TABLETOP



"My kids beg to play"

game-based learning / flexible usage / next-gen task cards

TableTop Math are skill practice activities that can be played in multiple game formats including card games and board games. Each game has a different twist, play one or let the students choose! Designed to be an upgrade to task cards.



**40 - 60
MINUTES***

**each game has end game trigger guidance to stop early.*



**2 - 4
STUDENTS**

BEST USE

WHERE?



CLASSWORK

WHAT?



ACTIVITY

WHEN?



**UNIT
REVIEW**

COURSE COVERAGE

**3RD
GRADE**



**4TH
GRADE**



**5TH
GRADE**



**PRE-
ALGEBRA**



ALGEBRA



GEOMETRY



**ALGEBRA 2 &
PRE-CALCULUS**




CHOOSE A
GAME TYPE

PLAY ONE TYPE
OR MIX IT UP

Partners or groups
work for different
game types.

HOW TO PLAY

-GAME RULES-

MYSTERY  **3 - 4 PLAYERS**
A SECRET MISSION CARD GAME **ADDITIONAL NEEDS: SECRET TASKS**

-SET-UP-
Two secret task cards are dealt to each player. All math cards are shuffled together. The player who most recently had a nightmare gets to be the First Chooser.

-GAMEPLAY-
The number of rounds depends on the number of players. If there are three players, there will be three rounds. The rounds will have two phases a Drafting Phase and a Solving Phase.

JOURNEY



EVOLUTION OF TASK CARDS

CONQUER



FLEXIBLE

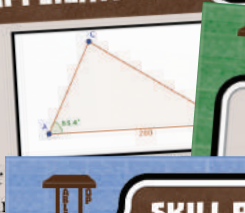
Game cards have three levels of questions and tiered values. Without the games, these can be used as task cards.

Although student may want to play different games, they practice the same skills.

SECRET TASK  **MYSTERY** 

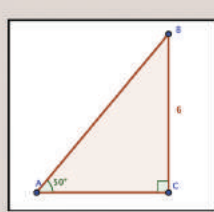
ACTION  **DRAFT** 

APPLICATION **TRIGONOMETRY**



A surveyor has measured the distance between two points. How far is the tree?

SKILL PRACTICE **TRIGONOMETRY**



What is the length of \overline{AC} ?

2 POINTS

1 POINTS

SELF CHECKING

A "Key Card" is passed each turn and allows student to check the answers.

DECKS CAN BE COMBINED

BEST PRACTICE

Since there are multiple fun play styles, it works best to introduce them one at a time so everyone can learn it. Once they learn the games, they can choose which they would like to play.



For quarter, semester or final exam review, decks can be shuffled together and played!

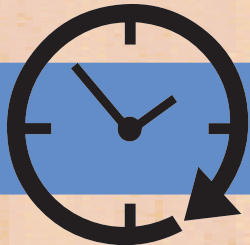
ADVENTURE MATH



“This was perfect.
They almost forgot
they were working.”

scaffolded / student choice / international mystery

Adventures are skill practice assignments that incorporate international data, sites and culture. As students choose problems to solve, they uncover clues about the mystery country they are in. Can they guess the country?



**20 - 40
MINUTES**



**1 - 2
STUDENTS**

BEST USE

WHERE?

HOW?

WHEN?



**HOMEWORK/
CLASSWORK**



**INDIVIDUAL
OR STATION**



**SKILL
PRACTICE**

COURSE COVERAGE

**3RD
GRADE**



**4TH
GRADE**



**5TH
GRADE**



**PRE-
ALGEBRA**



ALGEBRA



GEOMETRY



**ALGEBRA 2 &
PRE-CALCULUS**



DIRECTION

Solving Quadratics by Square Roots



ADVENTURE

Date _____

In this assignment you will explore a mystery country. As you make choices and solve problems you will receive pieces of information about where in the world you are.

FACT FINDING

Solve each quadratic equation by square roots. The greater solution will reveal the clue. (Choose 4 out of 5)

POPULATION (IN MILLIONS)	GDP (IN BILLIONS)	AREA (IN SQUARE KILOMETERS)	LIFE EXPECTANCY (IN YEARS)	YEAR OF INDEPENDENCE
$p^2 = 40,000$	$g^2 - 9 = 5,076,000$	$a^2 + 18 = 72,503,181,414,418$	$6l^2 = 32,325.36$	$\frac{y^2}{4} = 829,921$

In upper grades, students can try to solve the mystery. See "Best Practice" for lower grades.

WHAT COUNTRY ARE YOU IN?

EARN THE CLUES

FOOD OR FUN?

Factor and solve each equation. The lesser solution will reveal the clue. Use the Decoder to uncover the clues. (Choose a set of three problems)

THINGS TO EAT		
-Appetizer-	$-5x^2 + 15 = -20$	-See-
-Entrée-	$-9x^2 - 18 = 4$	-Try-
-Dessert-	$4x^2 - 1 = 2x^2 + 30$	-Visit-

THINGS TO DO

$$4x^2 + 10x = 199$$

LEARN FACTS ABOUT THE COUNTRY

Facts about a mystery country are revealed through answers

CHOOSE YOUR PROBLEMS

CHOOSE FOOD OR FUN

For an element of choice, students pick a group of skill practice questions and which two applications problems to try.

BEST PRACTICE

In early grades, it works best to reveal the country at the outset. This makes it a fact finding exploration, but does not require additional tools or knowledge to figure out the country at the end.



FANTASTIC FINALE

(Choose 2 of the 3 application problems. Use the Decoder to uncover the clues)

MYSTERY A	MYSTERY B	MYSTERY C
Djamil stands under a waterfall that is 75 feet tall. The distance of the waterfall with respect to time is: $h(t) = -16t^2 + 75$ How long will it take water from the top to reach the bottom?	Rebecca skydives out of a plane that is 1000 meters in the air. She is supposed to open her parachute at 300 meters above ground. If her height is modeled by the equation: $h(t) = -4.9t^2 + 1000$ In how many seconds should she open her parachute?	Kyana read that the height of an ocean wave was related to the windspeed. An equation to model his height (m) $h(t) = 0.0058s^2$ where s is the wind speed in knots. Determine how fast the wind must go to have a wave 20 m high.

Find the answers from the prior problems to retrieve the clues. Not all

DECODER			
5.82	Textiles	41.3	Nazca Lines
1.11	Yttizui	-2.65	Coxinhas
2.17	Portuguese	8.385	Ostkaka
1.19	Basil Salmon Terrine	-2.45	Christ the Redeemer Statue
-5.72	Los Alamos	15	Automobiles
88.7	Food	-4.3	Cable Car to the Mountains
-99.8	Spanish	-3.94	Brigadeiro

USE THE DECODER

SOLVE THE MYSTERY

Student answers correspond to clues in the Decoder. This also allows students to self-check their work.



WHERE IN THE WORLD?

THE COUNTRY	
Capital City	Population
Official Language	GDP
Chief Export	Area
Foods to eat	Life Expectancy
Things to do	Year of Independence



© Clark Creative Education

BOOT CAMP

"This was the first year I
used a Boot Camp.
It was a game changer."



differentiated / mastery learning / gamified skill practice

Boot Camps are differentiated, leveled skill practice assignments that require students show mastery on one problem difficulty before moving on to the next. As students pass mastery tests, they are promoted in rank. Ideal as homework or an in-class workshop.



as workshop

**3 - 5
DAYS**

used separately
as homework

**10 - 20
MINUTES**



as workshop

**3 - 5
STUDENTS**

**1
STUDENT**

BEST USE

WHERE?

HOW?

WHEN?



**HOMEWORK/
CLASSWORK**



**ABILITY
GROUPS**



**SKILL
PRACTICE**

COURSE COVERAGE

**3RD
GRADE**



**4TH
GRADE**



**5TH
GRADE**



**PRE-
ALGEBRA**



ALGEBRA



GEOMETRY



**ALGEBRA 2 &
PRE-CALCULUS**




YOUR ORDERS

TAKE A
PLACEMENT
TEST

DIFFERENTIATED
PRACTICE













ACCELERATE
OR CATCH UP

Give the placement test
to get students started
at the right difficulty.



DECIMAL BOOT CAMP

NAME _____

INSIGNIA	RANK	MASTERY <input checked="" type="checkbox"/>
	PRIVATE	
	SPECIALIST	
	CORPORAL	
	SERGEANT	
	STAFF SERGEANT	
	LIEUTENANT	
	CAPTAIN	
	MAJOR	
	COLONEL	
	GENERAL	

DECIMAL BOOT CAMP
PLACEMENT TEST

NAME _____

1) What is 1.2 rounded to the nearest tenth? _____

2) What is 7.497 rounded to the nearest hundredth? _____

3) What is 0.54385 rounded to the nearest thousandth? _____

4) Which decimal number is the greatest? 1.477, 1.47, 1.4777 _____

5) Fill in the statement with ">" or "<". 5.8 _____ 4.8 _____

6) Which of the following decimal number is more than 5? _____

DECIMAL BOOT CAMP
LEVEL 5 PRACTICE

NAME _____

1) 1.9×3 _____

2) 4×1.7 _____

3) 3.2×2.8 _____

4) 0.4×0.8 _____

5) 1.7×0.3 _____

6) 0.6×0.57 _____

Practice assignments
lead to brief mastery
tests (two versions).

DECIMAL BOOT CAMP
LEVEL 5 MASTERY B

NAME _____

1) 2.1×6 _____

2) 0.8×0.7 _____

3) 0.7×3.3 _____

4) 0.6×0.57 _____

SHOW
MASTERY

GET TO THE
NEXT LEVEL
EARN YOUR
STRIPES

After passing mastery
tests, they earn the
next military rank.

DECIMAL BOOT CAMP
LEVEL 6 PRACTICE

NAME _____

1) $0.16 \div 2$ _____

2) $0.39 \div 3$ _____

3) $3.24 \div 4$ _____

4) $9.723 \div 3$ _____

5) $5.855 \div 5$ _____

6) $1.81 \div 2$ _____

7) $4.72 \div 5$ _____

8) $0.79 \div 5$ _____

9) $0.819 \div 3$ _____

10) $16.44 \div 12$ _____

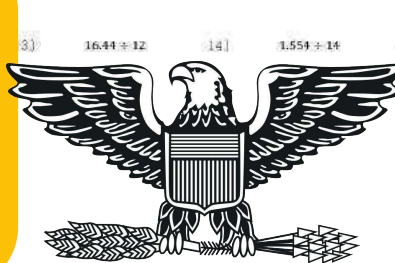
11) $1.554 \div 14$ _____

Students grow at their
own pace. "Leveling
up" brings more gusto
to their efforts.

If a student reaches
General, they become
a teaching assistant!

BEST PRACTICE

When using as homework,
sending students home with
practice and using a mastery test
as a warm-up the next day can
work well. When in a workshop
format, ability grouping is ideal.



CAN YOU
MAKE GENERAL?

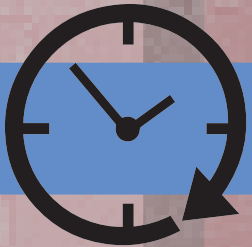
ESCAPE MATH

“Not only am I in love with these resources, so are my students.”



conceptual / critical thinking / high-energy

Escape Math is a pulse-pumping activity in the style of an escape-the-room experience. Students must piece together clues, compute as necessary and unlock codes to receive the next envelope. Optional apps provide a blended experience to up the thrill.



**30 - 45
MINUTES**



**3 - 5
STUDENTS**

BEST USE

WHERE?



CLASSWORK

WHEN?



**INSTRUCTION
& DISCOVERY**

WHAT?



**SKILL
PRACTICE**

COURSE COVERAGE

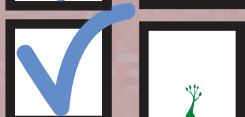
**3RD
GRADE**



**4TH
GRADE**



**5TH
GRADE**



**PRE-
ALGEBRA**



ALGEBRA



GEOMETRY



**ALGEBRA 2 &
PRE-CALCULUS**



PLAN

GET THE ENVELOPE

Each game includes four clue sets that go in envelopes.

CONCEPTUAL

Vocab & conceptual understanding is a focus in each game.

i. Equation

vi. Isolate Variable

0. The value of a variable that satisfies an equation, i.e. the two sides of the equal sign are equal.

1. A symbol for an unknown value. Usually a letter.

3. Two expressions, equated with an equals sign. A statement of equality.

$$2x + 4) - 3x =$$

$$4 + 7(2x - 1)$$

$$5(3x - 4) - 200x - 437$$

FIND THE CODE

Once a puzzle is solved, students will get a code to move on.

COMPLETE THE PUZZLES

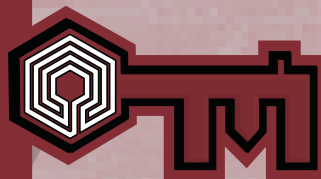
Puzzles often, must be pieced together before solving.

ESCAPE THE ROOM

If you can piece together the final problem, solve it and use the answer to evaluate -- you may, just may, escape in time. The final code has a special significance. You might learn a bit of history if you can **ESCAPE MATH.**

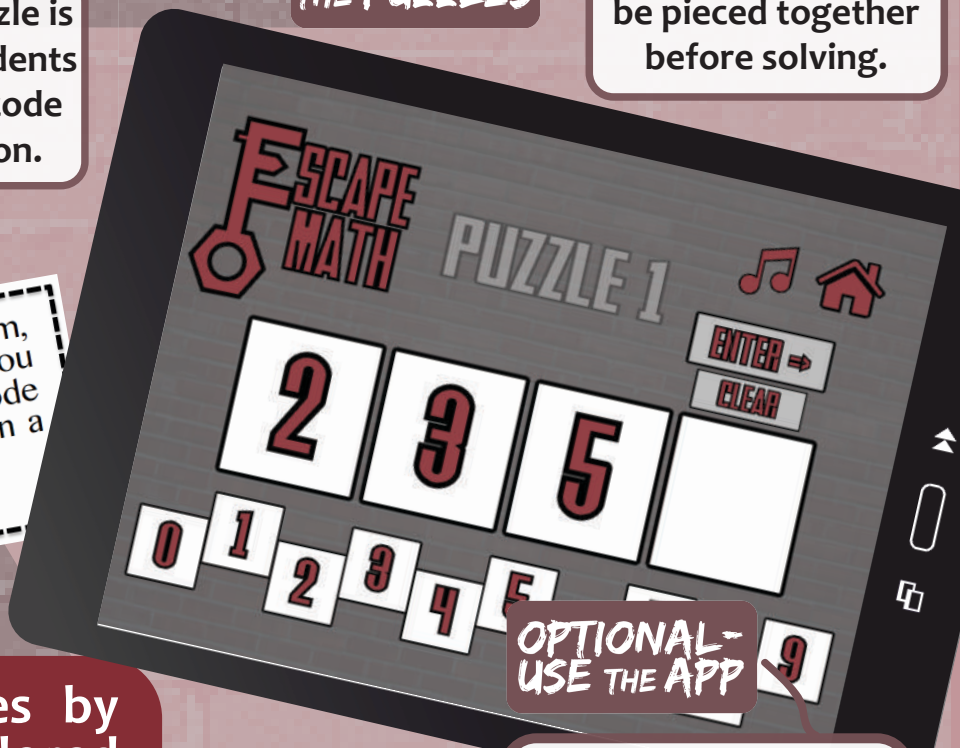
BEST PRACTICE

Labeling the back of clues by envelope (1-4) and with a colored dot (to correspond with one set of clues) will help you (or the students) reset the envelopes before the next class period.



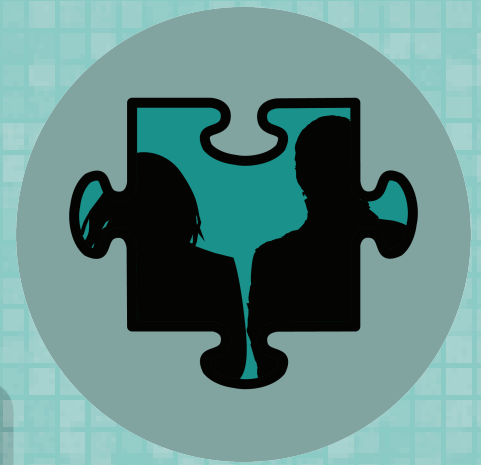
OPTIONAL - USE THE APP

Tablet, phone and desktop apps can be used to allow students to enter the codes electronically.



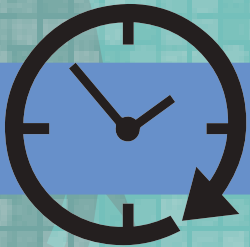
PERSON PUZZLES

"I am obsessed.
These are amazing!"



integrated / inspirational / focused skill practice

Person Puzzles are quick skill practice assignments that integrate biographies of humanitarians, leaders and inspirational people. As students solve math problems, they learn facts about the person's life. Designed to hook the reluctant math student.



**10 - 15
MINUTES**



**1
STUDENT**

BEST USE

WHERE?

HOW?

WHEN?



**HOMEWORK/
CLASSWORK**



**INDIVIDUAL
OR STATION**



**SKILL
PRACTICE**

COURSE COVERAGE

**3RD
GRADE**



**4TH
GRADE**



**5TH
GRADE**



**PRE-
ALGEBRA**



ALGEBRA



GEOMETRY



**ALGEBRA 2 &
PRE-CALCULUS**



OUTLINE

The biographies include early life facts, major events and unique successes.

SOCIAL STUDIES MEETS MATH

PERSON PUZZLE MULTIPLYING RADICALS

DATE _____



MALALA YOUSAFZAI

An outspoken activist for the education of girls, Malala Yousafzai (1997 -) used a blog to speak out against Taliban rule in her country. Yousafzai's rise to notoriety made her a target of the Taliban and they attempted to assassinate her in 2012. Yousafzai continues to recuperate from the attack and in 2013 became the youngest nominee for the Nobel Peace Prize in history.

DIRECTIONS: Simplify each radical expression completely. The word or phrase next to the equivalent answers will complete the statement correctly.

1. $(\sqrt{2})(\sqrt{6})$
Malala Yousafzai was born in _____, Pakistan.
a. $\sqrt{12}$ Hangu
b. $2\sqrt{3}$ Mingora
c. $\sqrt{26}$ Peshawar

2. $(\sqrt{10})(\sqrt{15})$
In addition to primary schooling, Yousafzai was educated by her _____.
a. $\sqrt{150}$ brother
b. $5\sqrt{6}$ father
c. $25\sqrt{6}$ uncle

3. $(-3\sqrt{5})(\sqrt{20})$
In 2009, Yousafzai began to write for _____ as an anonymous blogger about living under Taliban rule.
a. $-\sqrt{300}$ Al Jazeera
b. -30 the BBC
c. $-3\sqrt{100}$ USA Today

5. $(\sqrt{12x^2})(\sqrt{45x})$
On January 15, 2009 the Taliban ruled that no _____ would be allowed to attend school.
a. $9x\sqrt{11x^2}$ children
b. $6x\sqrt{15x}$ girls
c. $x^2\sqrt{540x}$ peasants

7. $(-5\sqrt{150xy})(-2\sqrt{6x^2})$
On _____, 2012 the Taliban boarded Yousafzai's school bus and shot her in the head.
a. $30x\sqrt{10xy}$ September 13
b. $10x\sqrt{110x}$ October 1
c. _____ October 9

4. $(7\sqrt{18})(2\sqrt{15})$
Yousafzai's blog p _____ between Pakistan and notoriety.
a. $42\sqrt{30}$
b. $14\sqrt{270}$
c. $17\sqrt{30}$

6. $(2\sqrt{7d^3})(3\sqrt{28d})$
Yousafzai _____
a. _____ re
b. $8\sqrt{28d}$
c. _____

8. $(\sqrt{20})(\sqrt{5})$
Her _____
a. _____
b. _____
c. _____

SOLVE THE PROBLEMS

Students complete 8 skill practice problems on a focused topic that increase in difficulty.

LEARN THE FACTS

Solutions to problems complete fill-in-the-blanks with correct facts via multiple choice format.

BEST PRACTICE

As you review answers or work in a station you can chip in mentions about careers, colleges and commentary on the person to infuse positive energy into "going over the answers" time.



INSPIRING

Students are curious about people. Person Puzzles are created with diversity in mind. Diversity in race, nationality, gender & thought. This aims to reflect the diversity of our students and encourage perspective taking. Moreover, it shows the impact a single person can make on the world.

WHODUNNIT

SKILL BUILDERS



"They are begging me for more!"

active / focused skill practice / murder-mystery

Whodunnits are active skill practice activities in the style of Clue. As students solve math problems, they eliminate a suspect, method or location in hopes. If they solve the problems correctly they can learn the identity of the criminal and the circumstances of the crime.



**20 - 40
MINUTES**



**1 - 2
STUDENTS**

BEST USE

WHERE?



CLASSWORK

WHAT?



ACTIVITY

WHEN?



**SKILL
PRACTICE**

COURSE COVERAGE

**3RD
GRADE**



**4TH
GRADE**



**5TH
GRADE**



**PRE-
ALGEBRA**



ALGEBRA



GEOMETRY



**ALGEBRA 2 &
PRE-CALCULUS**



MYSTERY

CLUE MEETS
MATH

examination

A contestant on a murder-mystery reality TV show is “murdered” and the others must figure out what happened.

Who is the “Killer”?

(The three boxes left unchecked will reveal the crime. If you cannot figure out, you may be next)

The Players

Dr. Alpha
Miss Beta
Mrs. Gamma
Professor Delta
Mr. Epsilon
Coach

X

The Last Known Whereabouts

Atrium
Gym
Kitchen
Library
Movie Theater

X

The Method

Chemical Poisoning
Drowning
Electrocution
Fallen Object
Mauled by a Cat
Venomous Bite

X

ACTIVE

PLACE CLUES
AROUND THE ROOM

Students will be up and active during the investigation.

STUDENTS
ELIMINATE OPTIONS

As students answer questions, they receive evidence.

Clue #5

WHO DUNNIT?

$$1^5 + 3^5 = ?$$

Mr. Epsilon was watching a movie in the theater.

243 The murder was not a drowning.

244 Professor Delta was reading by the pool.

248 The victim was not electrocuted.

SOLVE THE
CRIME

SELF
CHECKING

BEST PRACTICE

Cut all 10 scenes apart and spread them around the room/school. Limit to partners or individuals to insure everyone practices. If students are at the same clue they'll naturally help each other.

When students answer all the questions, there should only be one option left. If not, they need to retrace their steps and double check their work.



"These are fantastic!
I look forward to others!"

focused skill practice / engaging / funny

Herowork is a pair of skill practice tasks with double the trouble. In the Riddlers, students must solve problems to assemble a mystery picture. In the Jokers, students must solve problems to earn letters to piece together a very, very epic, groan-inducing Dad Joke!



**15 - 20
MINUTES**



**1
STUDENT**

BEST USE

WHERE?

HOW?

WHEN?



**HOMEWORK/
CLASSWORK**



**INDIVIDUAL
OR STATION**



**SKILL
PRACTICE**

COURSE COVERAGE

**3RD
GRADE**



**4TH
GRADE**



**5TH
GRADE**



**PRE-
ALGEBRA**



ALGEBRA



GEOMETRY



**ALGEBRA 2 &
PRE-CALCULUS**



HOW HEROES ARE MADE

Heroes have to practice if they are going to be able to save the world!

MISSION

HEROWORK RIDDLER NAME _____ DATE _____

Complete the following addition and subtraction sentences. Sketch or cut/paste the associated image in the correct box.
Can you solve the riddle?

RIDDLE ME THIS...
I AM A LIVING LAND GIANT OF THE BEAUTIFUL YELLOW SAVANNAS.
I DO NOT HAVE THE BEST EYESIGHT, BUT I GET HELP FROM MY FEATHERED FRIENDS.
I AM NOT MEDICINE.
WHAT AM I?

-12	70	-151	-2
			3

1. $(+5) + (-7) =$
2. $(-3) + (-8) =$
3. $(+5) - (-8) =$
4. $(-8) - (+47) =$
5. $(-15) + (-36) =$
6. $(+53) -$

7. $(+25) + (-42) =$
8. $(+35) - (+56) =$
9. $(+153) + (-76) =$
10. $(-425) - (-717) =$
11. $(+122) - (+273) =$
12. $(+215) + (-437) =$

HEROWORK JOKER NAME _____ DATE _____

Complete the following addition and subtraction sentences. Find the answer in the bank.

1. $(-5) + (-7) =$
2. $(+8) + (-7) =$
3. $(-6) - (+7) =$
4. $(+12) + (-26) =$
5. $(+87) - (+93) =$
6. $(+53) + (-76) =$
7. $(-125) + (+73) =$
8. $(+246) - (-271) =$
9. $(-371) + (-224) =$
10. $(-75) - (-328) =$

BANK

-6	d	-109	oo	-13	a
14	as	512	u	-253	or
-52	nd	-12	he	-23	
-14	g	-595	ct	1	

THE MAN DRIVING A TRAIN GOT STRUCK BY LIGHTNING...

Write the words or letters in the correct spaces. In some cases letter will be combined to build words.

1 _____ 2-3 _____ 4 _____ 5-6-7 _____

SOLVE THE RIDDERS

Students can sketch in the corresponding boxes or can cut & paste since the images are on the outer edge of the page.

BUILD A DAD JOKE

Each answer corresponds to a letter string from the bank. These strings may be put together to create words.

CRACK THE JOKERS

BEST PRACTICE

Each skill practice topic comes with both types of assignments: Riddlers & Jokers. Both have 12 problems that get more difficult. You can assign one, both or let students choose.

To achieve full groan-inducing effect -- after students finish, read the bit, pause three moments and slam the answer. Then say, "Get it? You get it?" Then proceed to explain the very obvious joke as everyone cringes.





“Not only am I in love with these resources, so are my students.”



cloud-based / instructional / interactive / editable

Drive Instruction is a collection of 21st century teaching materials. Each Drive Instruction resource includes warm-ups, exit tickets, notes, slides, digital interactive notebooks, and assessments all hosted in editable format in the cloud or usable as PDFs. Equipped with top-of-the-line instructional materials, teachers can *Drive* learning for their students.



1 UNIT*

* each assignment type has different specification and are listed separately.



1 STUDENT

BEST USE

WHERE?



CLASSWORK

WHEN?



**INSTRUCTION
& DISCOVERY**

WHAT?



**SKILL
PRACTICE**

COURSE COVERAGE

**PRE-
ALGEBRA**



ALGEBRA



GEOMETRY



**ALGEBRA 2 &
PRE-CALULUS**



Warmups



pump

**CLOUD-BASED
& EDITABLE**

As an option, each Drive Instruction document is also provided in Google Drive

LEVELED

Pump Warm-Ups span 5 days are increase in difficulty as you'd naturally teach the topics.

**CRITICAL
THINKING**

The last question of each warm-up focuses on critical thinking and many of the exit tickets do too.

**CONCEPTUAL
UNDERSTANDING**

Exit tickets either have critical thinking focus or targets deepening a conceptual understanding.

Pump

Equations (Day 2)

Solve each equation for the unknown variable.

Practice

$$3n + 2 = 26$$

2.

$$2m + 1 = 9$$

1.

$$\frac{w}{4} + 1 = 21$$

4.

$$\frac{r}{5} - 1 = 2$$

3.

$$2q - 7 = -25$$

6.

$$5j + 3 = 33$$

**3 - 8
MINUTES**

CRITICAL THINKING

The 156 students on the field trip are evenly split among n buses. If there are 39 students on each bus, then how many buses are there?

exit tickets

Flex

Equations (Day 4)

Name: _____

Date: _____

Think about the process of solving equations.

- A. Under what circumstances will an equation in which the variable appears on both sides NOT have a solution? Under what circumstances will the equation have an infinite number of solutions?

**1-3
MINUTES**





hustle

notes

CORNELL

Editable notes, are provided with in the familiar Cornell, 2-column style.

FLEXIBLE

You can use the completed teacher edition notes for students who are absent or need differentiation.

1 - 2 DAYS

COMPLETE PRESENTATION

Vocabulary, Concepts, Skills Practice and Applications that correspond with the notes

slides



hustle



1 - 2 DAYS

READY TO GO

Presentations are all intuitively animated on clicks, but of course can be edited.

Equations
Notes
Name: _____
Date: _____

Keepin' it Real
Djamil works as a physicist for a crash test group. His job is to calculate variables from the crashes to include in the safety report. With each crash he is missing a variable in his formula. His supervisor wants the data to be completed, ranked by category for each vehicle tested and a recommendation of the vehicle with the least force on impact. To do so, Djamil needs to solve equations.

Vocabulary
Write the definition to the term and include an image or example that represents it.

Term	Definition	Example
Equation		
Solution		
Term		
Inverse operation		

Performing Inverse Operations to Both Sides
If you do the inverse operation of add 3 you will isolate the variable. We need to subtract 3.
so...
 $x + 3 = 4$
 -3
 $x = 4$
Is incorrect
What you do to one side you have to do to the other side. Otherwise, like in the above example, it is not equal any more.
 $x + 3 = 4$
 $-3 -3$
 $x = 1$
The inverse operation has isolated the variable to give us the solution to the equation. *Learning new languages*

Skill Practice #1
One-Step Equation
 $x + 3 = 5$

Applications
Four friends get the lunch special at a restaurant and leave a \$3 tip. The total amount paid was \$24.00. How much does the lunch special cost?

VOCABULARY
The difference between expressions and equations?
Write examples of each in each box.

Term	Definition	Image/Example
Equation	Two expressions, equated with an equals sign. A statement of equality.	$5x = 15$
Variable	A symbol for an unknown value. Usually a letter, such as a, x or y.	In $5x = 15$ The x is the variable
Solution	A value that variable that makes the equation true.	
Term	Either a single number or a number and a variable together.	

ONE-STEP
CONCEPT
 $5x = 15$
 $\frac{5x}{5} = \frac{15}{5}$
 $x = 3$

- The inverse of multiply by 5 is divide by 5. Divide both sides by 5.
- Simplify, x is isolated. (the coefficient to be written).

HOOK REVISITED
Djamil's supervisor wants the data to be completed, ranked by category for each vehicle tested and a recommendation of the vehicle with the least force on impact. To do so, Djamil needs to solve equations.
 $F \cdot t = m(v_1 - v_2)$
Djamil uses a formula where F is the average force, t is the time length of the impact, m is the mass of the car, v1 is the velocity before the crash and v2 is the velocity after the crash on the recoil.
Suppose a Monte Carlo created a force of 93,373.16 N, lasted 0.86 seconds, had a pre-crash velocity of 36.21 m/s and a post-crash velocity of -21.91 m/s. What was the mass of the Monte Carlo?
solution...
 $93,373.16(0.86) = m(36.21 - (-21.91))$ substitution
 $80,300.92 = m(58.12)$ simplification
 $1381.6 = m$ division
The mass is 1,381.6 kg

VARIABLES ON BOTH SIDES
Example 6
 $11 - 6y = -4y + 1$
 $+6y +6y$
 $11 = 2y + 1$
 $-1 -1$
 $10 = 2y$
 $\div 2 \div 2$
 $5 = y$
Check the solution
 $11 - 6(5) = -4(5) + 1$
 $11 - 30 = -20 + 1$
 $-19 = -19$
The solution is correct.

digital interactive notebook



hustle

VOCABULARY

Drag the correct word to its definition. Replace the image with an accurate one from "Search" or an example.

Term	Definition	Image/Example
	Two expressions, equated with an equals sign. A statement of equality.	$+$
	A symbol for an unknown value. Usually a letter, such as a , x or y .	$+$
	A value that can be substituted into the variable that can satisfy an equation.	$+$
	Either a single number, a variable, or numbers and/or variables multiplied together.	$+$

Term Bank Equation Solution

CONCEPT

difference between expressions and equations?

Drag the expressions and equations into the correct group.

expressions	equations
$5x = 15$ $5xy$ $V = lwh$ πr^2 $2x - 9$	

DRAG 'N DROP

Drag the equations into the box to classify them as one-step or multi-step equations.

One-Step	Multi-Step
$5x = 6$ $\frac{9}{4} + x = 16$	$3x + 4 = -10$ $\frac{3}{4}x = 12$ $\frac{8-2x}{3} = 7$

APPLICATION

Example 3

Drag the correct steps into the correct places and describe the steps.

$3x - 2 = 10$

Describe...

$3x = 12$ $+2$ $+2$ $\frac{3}{3}$ $\frac{3}{3}$ $3(4) - 2 = 10$ $x = 4$

Let the lunch special at a restaurant be \$26.00. How much should you leave a \$3 tip. The paid was \$26.00. How much lunch special cost?



1 - 2 DAYS

ACTIVATE THE BRAIN

Instead of a slides/note versions, students can build their own digital notebook to make learning more memorable.



assessment

test



35 - 50 MINUTES

WHOLE ASSESSMENT

Vocabulary, conceptual understanding, skill practice, applications and a 21st Century Math Challenge!

Equations

21st Century Math Test

Name: _____ Date: _____

Vocabulary & Concepts (2 points each)

Match the definition with the correct term.

- Solution
- Equation
- Term
- Variable

a. Two expressions, equated with an equals sign. A statement of equality.

b. The process of solving an equation by using inverse operations.

c. A value that can be substituted into the variable that can satisfy an equation.

d. Either a single number, a variable, or numbers and/or variables multiplied together.

Skills

(4 points each, choose 4)

Solve the following equations.

1. $1 = 6 + 18$

2. $31 - 3y = 8$

3. $x = 6$

4. $\frac{x-10}{3} = 2$

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

6. $4(2x-7) = \frac{4x}{3} + 12$

CRITICAL THINKING

(8 points each, choose 3)

General Directions

The DiLallo sisters are 57. Their ages can be represented as three consecutive integers. What is the age of the middle sister?

At a school trip, 324 students will go on the trip. The school has 12 vans. If the van can haul nine students, how many students will ride on the trip?

Leah has \$750 in his savings account and he deposits \$25 every week. Leah has \$750 in his savings account and he deposits \$25 every week. How many weeks will it take until Leah has \$10,000. He has been saving \$10,000 every week.

Urijah's business break-even amount is \$10,000. He has been saving \$10,000 every week. How many weeks will it take until Leah has \$10,000.

21st Century Challenge

(20 points)

General Directions

For a crash test group, his job is to calculate variables from the data. With each crash he is missing a variable that he needs to the data to be completed, ranked by category for each condition of the vehicle with the least force on impact.

$W(t) = -1.5t^2 + 1.5t$ where F is the average force, t is the time length of the crash, v_1 is the velocity before the crash and v_2 is the velocity after the crash.

Time (s)	Mass (kg)	Velocity 1 (m/s)	Velocity 2 (m/s)
0.05	1521.35	35.76	-20.12
0.06	1225.15	36.66	-20.46
0.07	1992.99	36.21	-21.91
0.08	1861.97	35.87	-19.86

UNIT PLANNING IDEAS

All of the resources are designed to allow a teacher to flexibly infuse them however they see fit. The teacher is best able to make plans for the specific needs of their classes. We in education know, that district-to-district, site-to-site and even class period-to-class period can vary in terms of pace. Below is an example outline to use 21st Century Math Projects everyday across a theoretical 10+ day unit.



OVERVIEW



WARM-UPS, NOTES, SLIDES,
INTERACTIVE NOTEBOOKS,
EXIT TICKETS & TESTS

ASSIGNMENT TYPES

SKILL PRACTICE



GAMES & ACTIVITIES



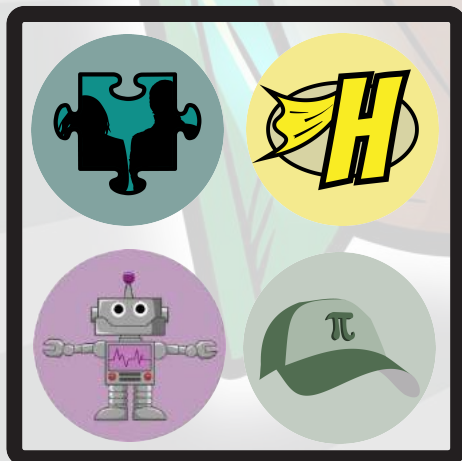
PROJECTS



HOW MUCH TIME?

QUICK

~15-20 minutes



"A CLASS PERIOD"

~45-60 minutes



EXTENDED

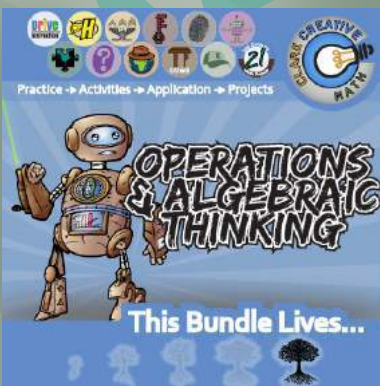
3+ Days (can be modified)



TO SEE MORE (OR DANCE)

WATCH THE VIDEO

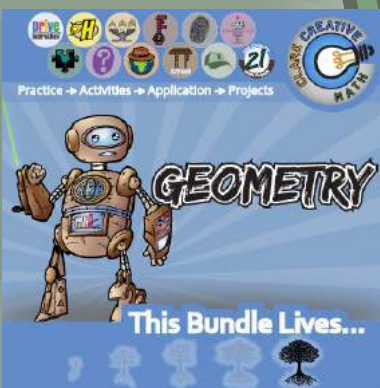
SKILLS MAP



- Multiplying & Dividing
- Divisibility Rules
- Mixed Operations
- One-Step Equations
- Shape Patterns
- Number Patterns
- Prime & Composite Numbers
- Prime Factorization
- Input & Output Tables
- Properties
- Order of Operations (w/o Exponents or Parenthesis)



- Elapsed Time
- Money
- Bar Graphs
- Pictographs
- Estimating Angle Measures
- Line Plots
- Convert Units
- Perimeter
- Area
- Volume



- 2-D & 3-D Shapes
- Classifying Quadrilaterals
- Sides & Vertices
- Vertices, Edges & Faces
- Types of Angles & Lines
- Types of Triangles
- Plotting in Quadrant I



- Ordinal Numbers
- Rounding Numbers
- Place Value
- Adding & Subtracting Numbers of Any Length
- Ordering Numbers
- Rounding Decimals
- Decimal Word Names
- Comparing Decimals
- Graphing Decimals on a Number Line
- Converting Between Decimals and Fractions
- Operations with Decimals



- Fraction Models
- Equivalent Fractions
- Fractions on a Number Line
- Comparing Fractions
- Converting Between Fractions and Decimals
- Adding & Subtracting Fractions & Mixed Numbers with Like Denominators
- Adding & Subtracting Fractions & Mixed Numbers
- Multiplying Fraction and Whole Numbers



- Classification of Numbers
- Properties of Real Numbers
- Distribution
- Irrational Numbers



- Ordering Integers
- Adding & Subtracting
- Multiplying & Dividing
- Mixed Operations
- Absolute Value



- Ordering Rational Numbers
- Adding & Subtracting
- Multiplying & Dividing
- Mixed Operations

SKILLS MAP



- Order of Operations
- With Parenthesis
- With Nested Parenthesis



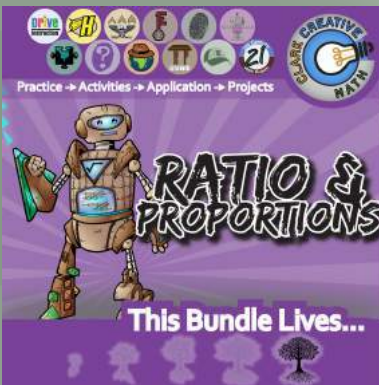
- Writing Repeated Multiplication as Exponents
- Evaluating Exponents
- Perfect Squares & Cubes
- Simplifying Square Roots
- Square Root Approximation



- Greatest Common Factor
- Least Common Multiple



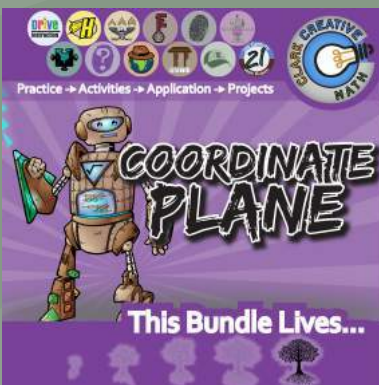
- Write Variable Expressions
- Combining Like Terms
- Evaluating Expressions



- Writing Ratios
- Unit Rate
- Recognizing Proportions
- Solving Proportions



- Percent/Fraction/Decimal
- Percent of a Number
- Percent Change
- Taxes & Discounts
- Interest



- Identifying Quadrants
- Plotting Points
- Identifying Coordinates of Points



- Midpoint Formula
- Distance Formula



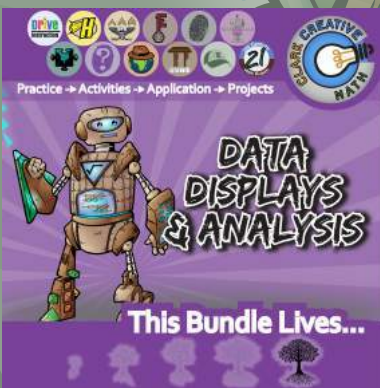
SKILLS MAP



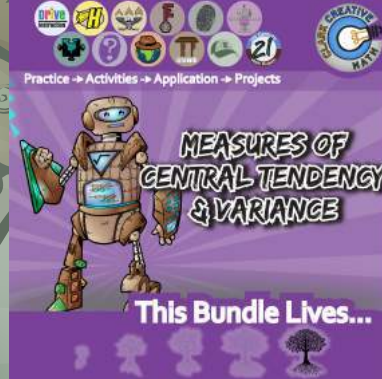
- Reflections, Rotations & Translations
- Dilations
- Identifying Transformations
- Symmetry



- Converting Between Scientific & Standard Form
- Operations in Scientific Notation



- Histograms
- Line Plots
- Stem and Leaf Plots
- Box and Whisker Plots



- Mean, Median, Mode & Range
- Standard Deviation
- Variance
- Margin of Error



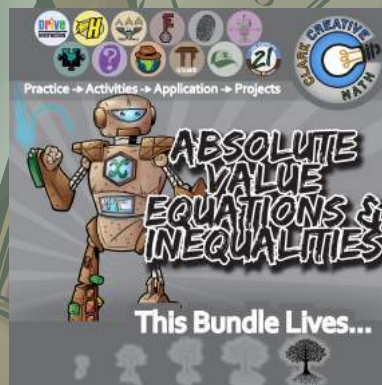
- Simple Probability
- Sample Space
- Combinations
- Permutations
- Probability of Compound Events
- Expected Value



- One-Step Equations
- Two-Step Equations
- Multi-Step Equations
- Variables on Both Sides
- Equations with Fractions & Decimals



- Solving Inequalities
- Graphing Inequalities
- Compound Inequalities



- Absolute Value Equations
- Graphing Absolute Value Inequalities



SKILLS MAP



- Relations
- Domain & Range of Graphs, Relations & Functions
- Evaluating Functions
- Inverse Functions
- Creating Functions from Patterns
- Arithmetic Sequences
- Geometric Sequences



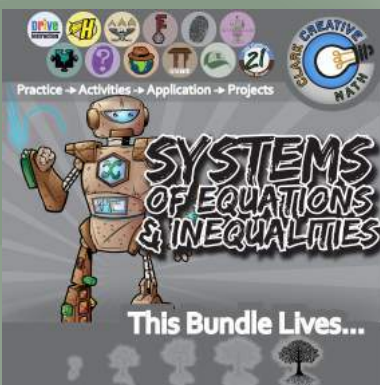
- Adding & Subtracting Functions,
- Multiplying & Dividing Functions
- Composition of Functions



- Direct Variation
- Inverse Variation



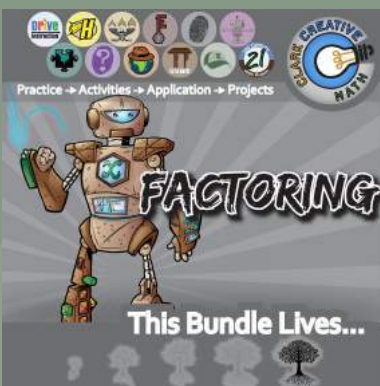
- Calculating Slope
- Graphing Linear Functions
- Linear Equations with Two Points
- Linear Equations with Point & Slope
- Rewriting Equations with Slope-Intercept Form
- Linear Regression



- Graphing Systems of Equations
- Solving Systems with Substitution
- Solving Systems with Elimination
- Solving Systems (Mixed)
- Graphing Systems of Inequalities



- Multiplying Monomials
- Power of a Power
- Dividing Monomials & Negative Exponents
- Multiplying Polynomials
- Adding & Subtracting Polynomials
- Polynomial Regression



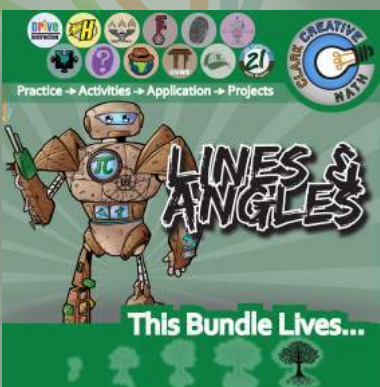
- Multiplying Binomials
- Solving Quadratics by Square Roots
- Factoring with GCF
- Factoring
- Factoring by Grouping
- Factoring ax^2+bx+c
- Completing the Square
- Sum or Difference of Cubes
- Quadratic Formula
- Graphing Quadratic Functions



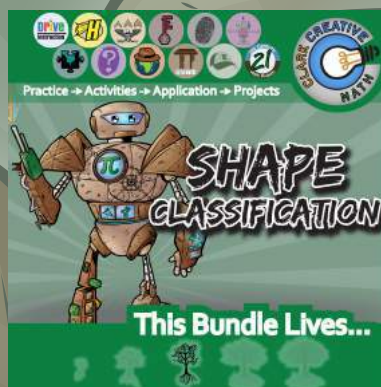
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- Solving Quadratics by Square Roots
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- Factoring ax^2+bx+c
- Completing the Square
- Sum or Difference of Cubes
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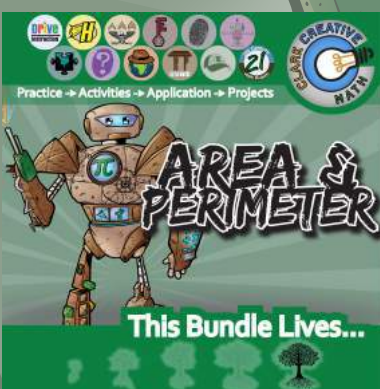
SKILLS MAP



- Segment Addition Postulate
- Angle Addition Postulate
- Estimating Angle Measures
- Exterior Angle Theorem
- Parallel, Perpendicular & Skew
- Transversals
- Angle Relationships



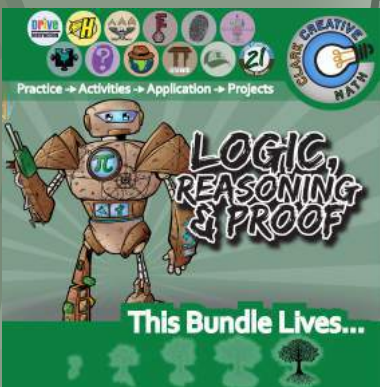
- Shape Classification
- Concave and Convex Shapes
- Types of Quadrilaterals
- Properties of Shapes



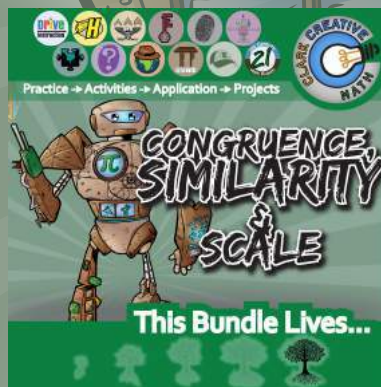
- Quadrilaterals
- Triangles
- Circles
- Regular Polygons
- Complex Figures
- Area Dissection



- Cuboids
- Cylinders
- Prisms
- Cones
- Pyramids
- Spheres
- Composite Solids



- Deductive Reasoning
- Postulates & Theorems
- Completing Proofs



- Similar Figures
- Congruent Figures
- Scale

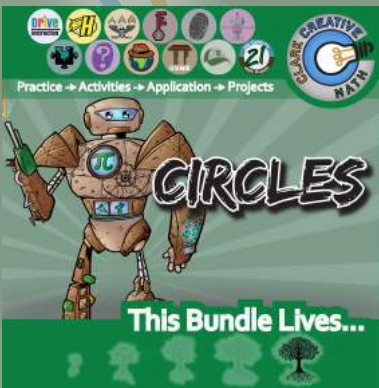


- Triangle Classification
- Angle Sum Theorem
- Triangle Inequality Theorem
- Centers of Triangles
- Angle Bisectors
- Medians
- Perpendicular Bisectors
- Triangle Congruency



- Pythagorean Theorem
- Finding Side Lengths
- Finding Angles
- Law of Sines
- Law of Cosines
- Multi-Step Trigonometry

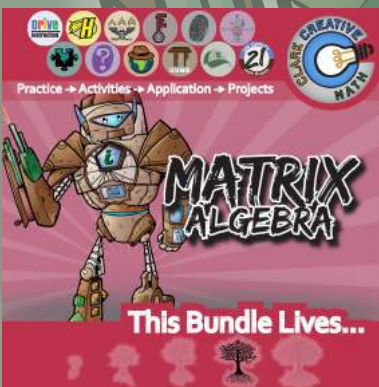
SKILLS MAP



- Radius, Diameter & Circumference
- Arc Length & Central Angle
- Circle Properties
- Tangents to Circles



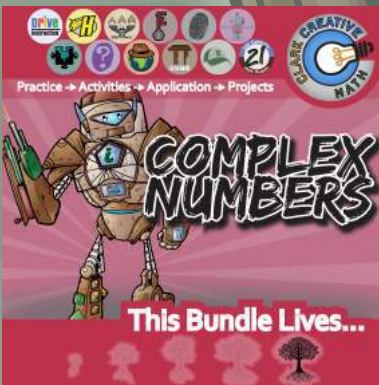
- Circle Properties
- Ellipse Properties
- Parabola Properties
- Hyperbola Properties
- Classifying Conic Sections



- Matrix Dimensions
- Adding & Subtracting
- Scalar Multiplication
- Matrix Multiplication
- Determinants
- Matrix Inverses



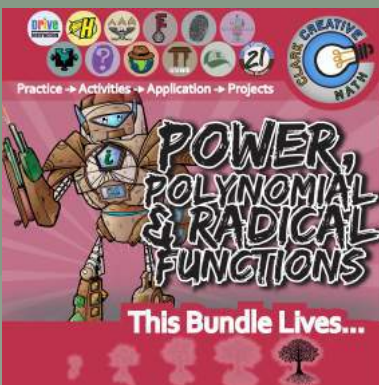
- Simplifying Radical Expressions
- Multiplying Radicals
- Radical Equations
- Rationalizing Denominators



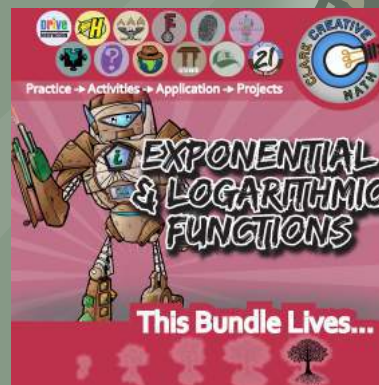
- Intro to i
- Graphing Complex Numbers
- Operations with Complex Numbers
- Absolute Value of Complex Numbers
- Rationalizing Imaginary Denominators



- Identifying Function Families
- Translating and Reflecting
- Dilating
- Defining Piecewise Functions
- Graphing Piecewise Functions



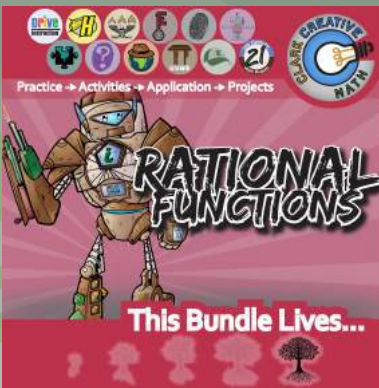
- Graphing, Evaluating, Solving and Modeling with Polynomial Functions
- Graphing, Evaluating, Solving and Modeling with Power Functions
- Graphing, Evaluating, Solving and Modeling with Radical Functions



- Graphing Exponential Functions
- Exponential Regression
- Exponential Equations
- Exponential Equations with Logarithms
- Converting Between Exponential Forms and Logs
- Simplifying Logarithms
- Logarithmic Equations
- Logistic Functions



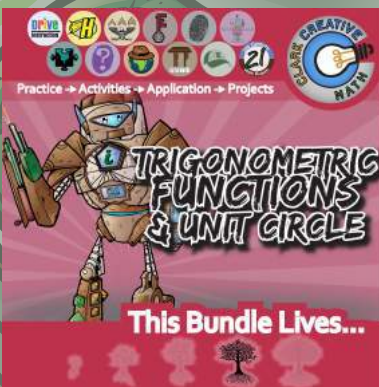
SKILLS MAP



- Simplifying Rational Expressions
- Graphing Rational Functions
- Adding & Subtracting Rational Expressions
- Multiplying & Dividing Rational Expressions
- Solving Rational Equations



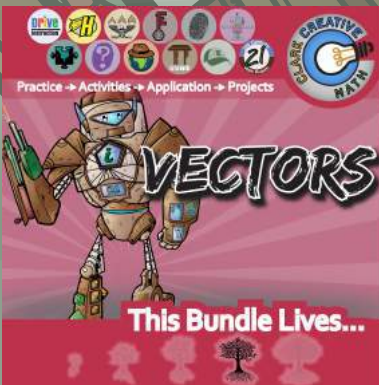
- Scatterplots
- Correlation Coefficients
- Margin of Error
- Normal Distribution
- T-Test



- Amplitude, Period & Frequency
- Graphing Trig Functions
- Inverse Trig Functions
- Sum & Difference Identities
- Double & Half Angle Identities
- Radians & Degrees
- Sketching an Angle
- Finding Exact Values



- Sequences & Series
- Convergent & Divergent Sequences
- Arithmetic Sequences & Series
- Geometric Sequences & Series



- Vector Addition & Subtraction
- Sketching Vectors
- Magnitude of Vectors
- Unit Vectors
- Dot Products of Vectors
- Angles Between Vectors
- Velocity Vectors



- Limits from Graphs
- Limits from Functions
- Continuity
- Types of Discontinuity



- Relative Extrema
- Intervals of Concavity
- Tangent Lines
- Power Rule
- Product Rule
- Quotient Rule
- Chain Rule
- Trig Functions
- Exponential & Logarithms
- Related Rates
- Implicit Differentiation
- Higher Order Derivatives



- Riemann Sums
- Indefinite Integrals
- Definite Integrals
- Area Under Curve
- Area Between Curves
- Integration with Substitution
- Integration of Exponential and Logarithms
- Integration by Parts
- Volume



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