

SCORE!

Strategies for Effective & Fun Math Instruction



HOW DO YOU KNOW WHAT SKILLS DIFFERENT GRADE LEVELS NEED TO MASTER?

Do we just guess?

How do we ensure what we're teaching is effective and helpful? Especially if we have limited time?



WHAT ABOUT?

- Kids who have 'gotten behind'
- Classes with multiple grades
- OSY
- Adult students



A TOOL WE USE: COMMON CORE STANDARDS ('THE SPREADSHEET')

The Basic Set-up

The EXCEL workbook contains the TN state standards and Common Core standards for grades K-12 and it also has the Academic Vocabulary for each subject grade level as well. Notice at the bottom left hand side there are several tabs at the bottom. The standards and vocabulary are color coded as to subject and before each subject there is a tab which contains the related Academic Vocabulary.

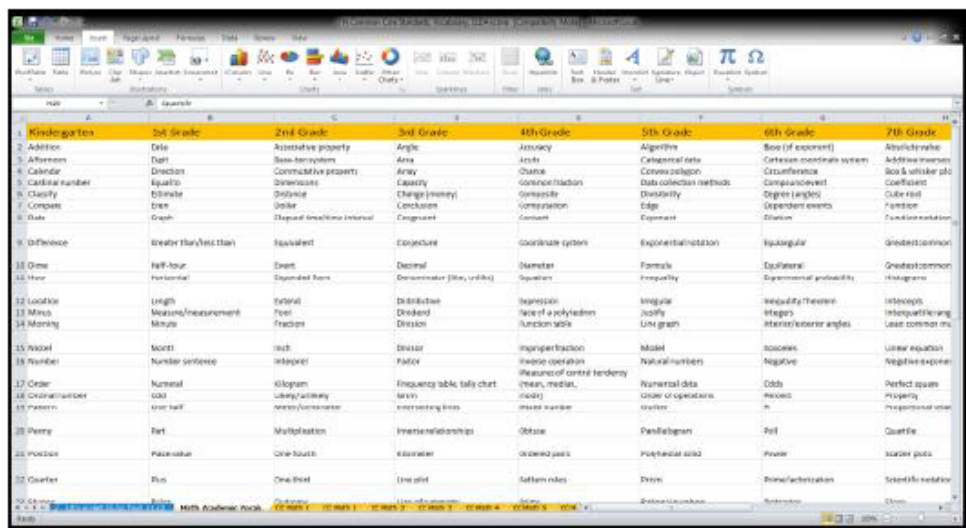
For example:

Blue: English Language Arts (ELA)

	Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade	7th Grade
1	Alphabet	Blend	Adjective	Abbreviation	Alliteration	Allyses	Employ	Interaction with text
2	Author	Capitalization	Adverb	Adverb	Analogy	Comparative	Foreign phrases	Persphrase
3	Illustrator	Character	Pronoun	Antonyms	Audience (as listener)	Conjunctions	Genre	Etymology
4	Beginning	Setting	Dictionary	Appositive	Author's purpose	Figurative language	Hyperbole	Juxtaposition
5	Ending	Contextual	Encyclopedia	Cause	Caption	Hyperbole	Imagery	Juxtaposition
6	Consonant	Vowel sound	Fiction	Effect	Compare	Idiom	Inference	Denotation
7	Visual	Fantasy	Nonfiction	Contraction	Contract	Implied	Mnemonic devices	Stress
8	Drawing	Illustrate	Folklore	Declarative	Double-negative	Clause	Writing modes	Pitch
9	Key/Title	Sequence	Fable	Exclamatory	Drawing conclusions	Interjections	Multiple meanings	Juxtaposition
10	Letter	Prefix	Discussion	Fair	Concluding	Introductory paragraph	Personification	Onomatopoeia
11	Letter sound/relationship	Punctuation (e.g., comma, quotation, etc.)	Main idea	Interrogative	Genre	Main ideas	Rhyme	Accent
12	Message book	Message	Multiple-meaning words	Message	Metaphor	Metaphor	Rhyme	Repetition
13	Theme	Question	Repeating	Opinion	Metaphor	Metaphor	Point of view	Foreign phrases
14	Story	Statement	Repetition	Organization	Metaphor	Metaphor	Point of view	Internal rhyme
15	Song	Reality	Shift	Plural	Making inferences	Oral presentation	Relevant	Irony
16	Print	Syllable	Edit	Possessive	Metaphor	Personification	Relevance	Mood
17	Distal	Vocabulary	Publish	Punctuation (comma)	Metaphor	Personification	Relevance	Mood
18	Rhyme	Media (e.g., book, video, film, illustration)	Author's purpose	Thesaurus	Possessive nouns	Preposition	Sequencing order	Forecasting
19	Sentence	Plan, illustration	Table of contents	Interpret	Prepositional phrase	Preposition	Sequencing order	Flashback
20	Speech	Summarize	Glossary	Interpret	Prepositional phrase	Punctuation marks (colon, semi-colon)	Synonym	Inference
21	Title	Information	Triangular	Encyclopedia	Questions/question marks	Reference source	Text features	Viewpoint
22	Uppercase (capital)	Noun	Plural	Run-on sentence	marks	Reference source	Text features	Epilogue
23	Lower-case	Verb	Plural	Sequential	Sentence fragment	(intentional, adjectives)	Thesis statement	Assessment
24	Noun	Compound noun	Punctuation (e.g., comma, semi-colon, etc.)	Sequential	Simple	(intentional, adjectives)	Thesis statement	Assessment
25	Personal	Base (root) word	Base (root) word	Stanza	Subject/verb agreement	Stanza	Clause	Clause
26	Question mark	Prefix	Setting	Character	Time order/transitional words	Citations	Clause	Clause
27	Endation mark	Suffixes	Setting	Character	Time order/transitional words	Citations	Clause	Clause
28	Read	Suffixes	Setting	Character	Time order/transitional words	Citations	Clause	Clause
29			Setting	Character	Time order/transitional words	Citations	Clause	Clause
30			Setting	Character	Time order/transitional words	Citations	Clause	Clause
31			Setting	Character	Time order/transitional words	Citations	Clause	Clause

The first tab is the Academic Vocabulary then when you scroll [using the arrows in the bottom left hand corner of Excel] it goes to the K English Language Arts Standards, 1st Grade, etc, all the way through 12th Grade ELA.

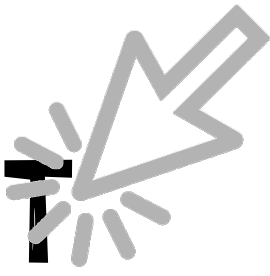
Just keep scrolling along the bottom and you will come to **Orange**: Mathematics and the format is the same. First the Mathematics Academic Vocabulary then the K-12th grade mathematics standards, each in their own tabs.



As you continue to scroll you will find **Science**, **Visual Arts**, **Social Studies**, **Health Education**, **Physical Education**, **Computer Technology**, **ELL Standards**, a group of **Black or Grey Tabs** that have the Academic Vocabulary for ELA, Math, Science, & Social Studies all in the same tab, for the grade level marked, and finally, the ELDA Skills sheets for the 5 levels.

We use the core subject standards of Science related subjects, Math, and Reading Language Arts in our lesson plans. For high school students you can use any of the higher Math courses, Science related courses and English courses.

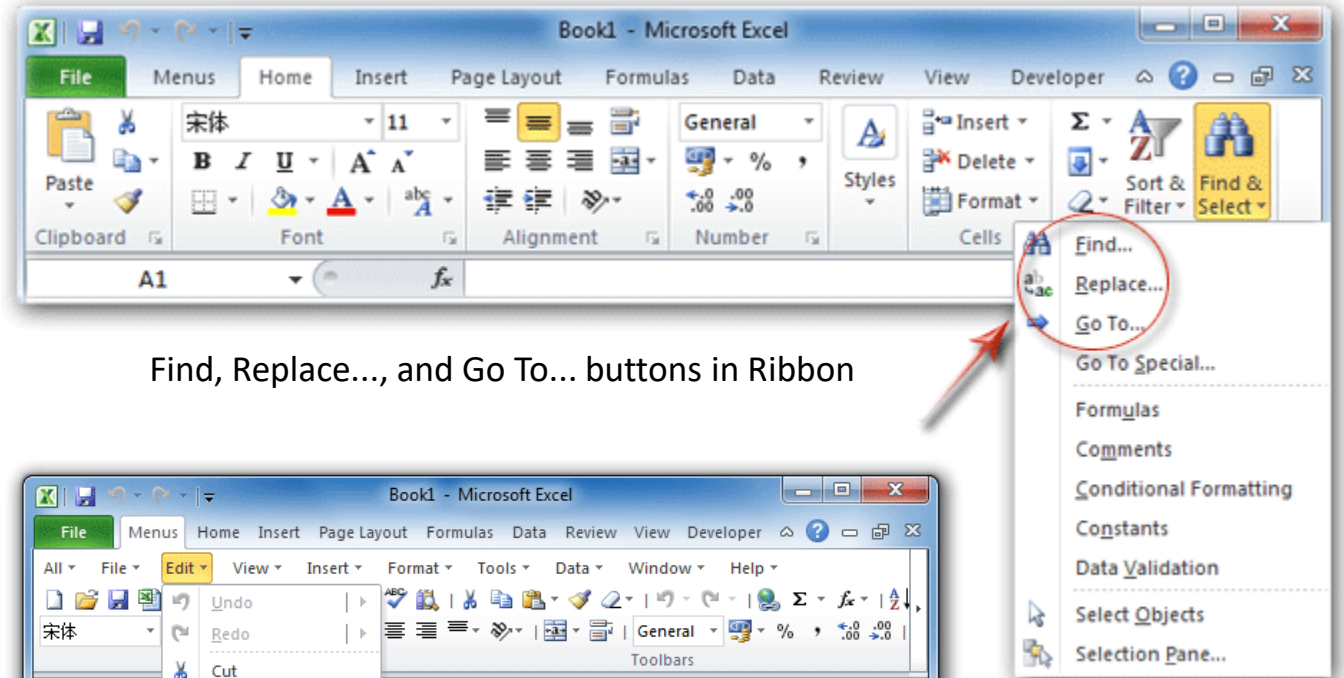
FIND & SELECT



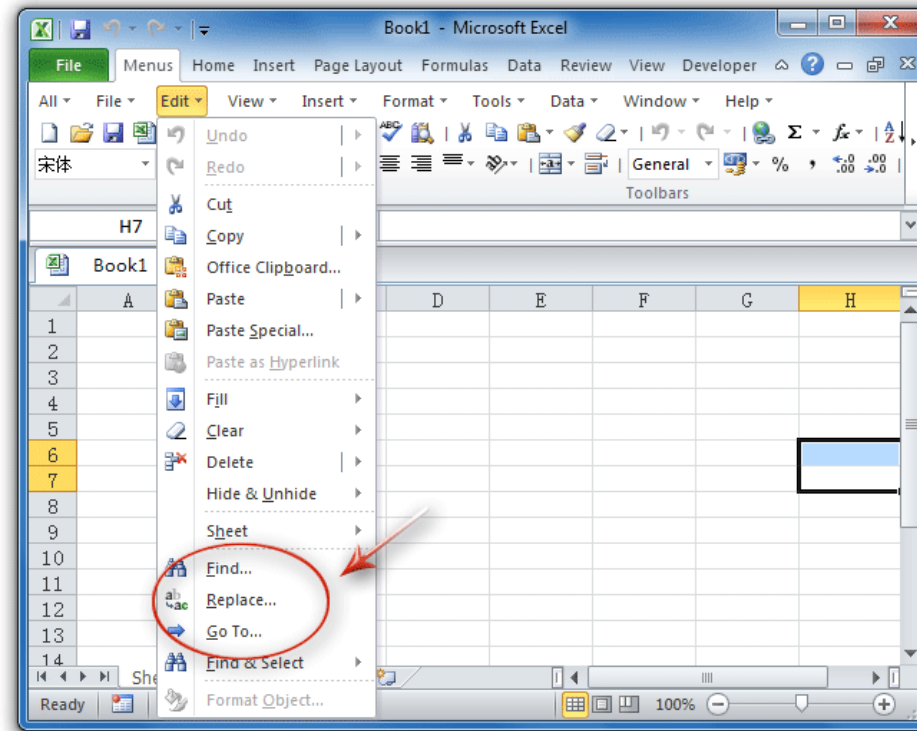
Correlating standards may easily be found by using the Find & Select feature. Excel allows you to filter information and search for single words, phrases or groups of numbers within a document.

Open the worksheet. Click inside any cell, blank or otherwise. Make sure you are on the "Home" tab in the toolbar.

Move your cursor to the "Editing" section, then click on "Find & Select" (it usually has a small icon of binoculars). Click the tab that says "Find." Type in the word you'd like to search for and click "Find All" to locate all instances in that worksheet, or "Find Next" to search only for the next instance on the worksheet.



Find, Replace..., and Go To... buttons in Ribbon

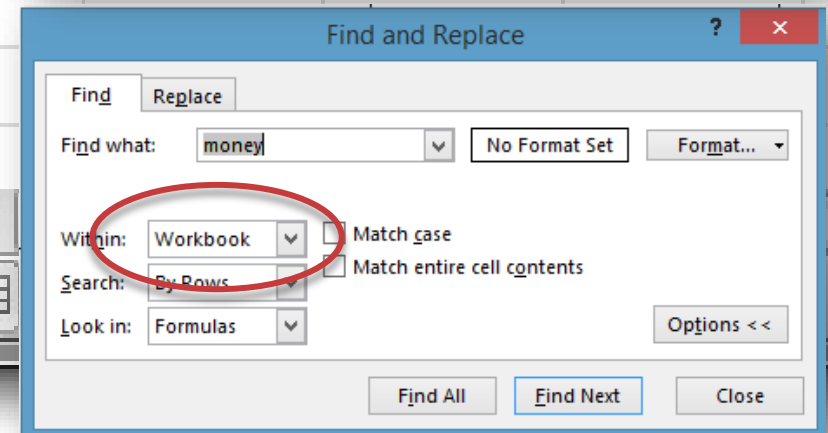
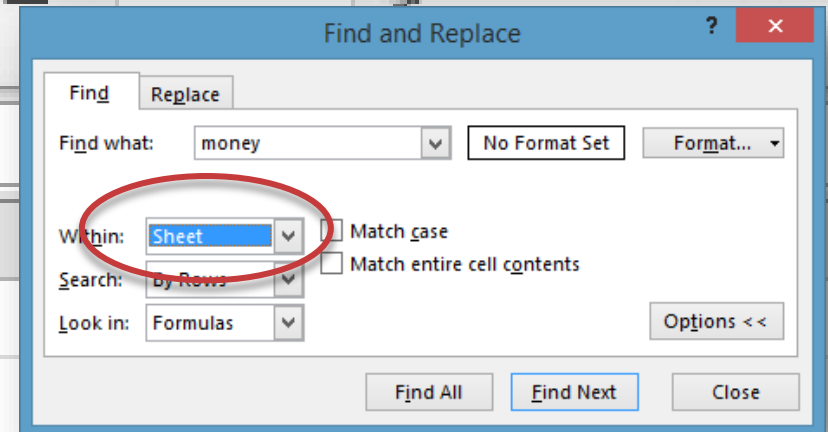
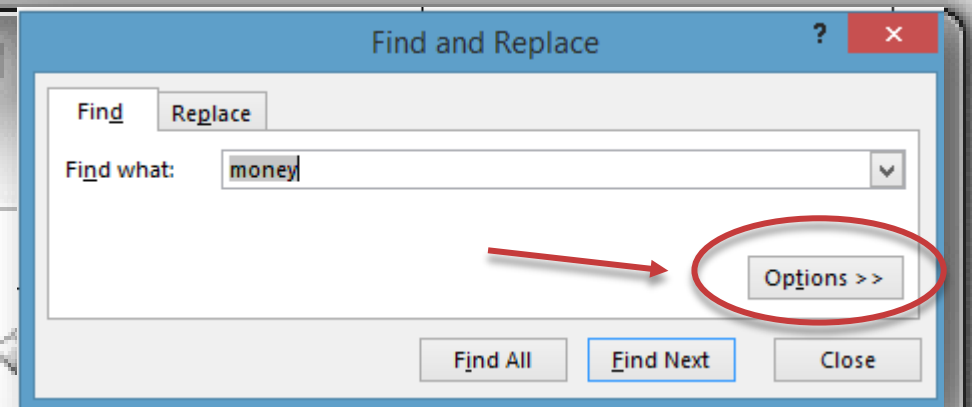


Edit Find, Replace, and Go To... commands from Classic Menu

LOOKING DEEPER

For more (or fewer) search parameters, click "Options" on the Find tab that you opened when you clicked on the icon. You can then choose to search for a term within just that sheet or within the entire workbook.

That means you can look for terms like "motion" or "money" in every page and through all the standards to find all the standards (from every grade) that use the term motion in them or what grade has that term in their Academic Vocabulary.



Find and Replace

Find what:

Within: Match case
 Match entire cell contents

Search:

Look in:

Book	Sheet	Name	Cell	Value
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	Math Academic Vocab.		SD\$6	Change (money)
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	CC Math 2		SC\$18	Work with time and money.
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	CC Math 4		SD\$6	4.MD.2. Use the four operation
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	SS Glossary		\$A\$106	Corporation is a type of busine
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	SS Glossary		\$A\$217	Inflation is an upward moveme
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	K (SS)		\$B\$2	
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	1 (SS) (2)		\$B\$2	Globalization of the economy,
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	1 (SS) (2)		\$B\$8	1.2.01 Describe the potential c
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	1 (SS)		\$B\$2	Globalization of the economy,
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	1 (SS)		\$B\$8	1.2.01 Describe the potential c
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	2 (SS)		\$B\$2	Globalization of the economy,
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	3 (SS)		\$B\$2	Globalization of the economy,
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	3 (SS)		\$B\$8	3.2.01 Describe the potential c
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	4 (SS)		\$B\$2	Globalization of the economy,
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	4 (SS)		\$B\$11	4.2.03 Understand fundameta
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	5 (SS)		\$B\$2	Globalization of the economy,
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	6 (SS)		\$B\$2	Globalization of the economy,
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	7 (SS)		\$B\$2	Globalization of the economy,
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	8 (SS)		\$B\$2	Globalization of the economy,
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	Ancient History		\$A\$12	Globalization of the economy,
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	Ancient History		\$B\$12	Globalization of the economy,
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	Ancient History		\$D\$12	Globalization of the economy,
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	Ancient History		\$C\$14	Globalization of the economy,

43 cell(s) found

Find and Replace

Find

Replace

Find what:

money

No Format Set

Format...

Within:

Workbook

 Match case

Search:

By Rows

 Match entire cell contents

Look in:

Formulas

Options <<

Find All

Find Next

Close

Book	Sheet	Name	Cell	Value
TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	Math Academic Vocab.		SD\$6	Change (money)
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TN Common Core & New Science Standards, Vocabulary, ELDA scores.xls	Ancient History		\$C\$14	Globalization of the economy,

43 cell(s) found

P

Includes: Learn to count - up to 3 | Count using stickers - up to 5 | Above and below | Classify and sort by shape | Shape patterns | Name the shape | Pennies and nickels

[See all 131 skills >](#)

K

Kindergarten

Includes: Skip-count by tens | Squares | Subtract - numbers up to 10 | Make a number using addition - sums up to 5 | Counting on the hundred chart

[See all 252 skills >](#)

**ANOTHER HELPFUL
TOOL**

1

First grade

Includes: Place value models up to 20 | Subtract multiples of 10 | Select three-dimensional shapes | Equal parts - halves and fourths

[See all 256 skills >](#)

2

Second grade



Includes: Place value models up to 100 | Measure using an inch ruler | Identify a digit up to the hundreds place | Create line plots | Number lines - up to 100

[See all 305 skills >](#)

Let's check it out.

3

Third grade

Includes: Multiplication tables up to 10 | Divide by counting equal groups | Graph fractions on number lines | Show fractions: fraction bars | Create rectangles with a given area

[See all 395 skills >](#)

SCAFFOLDED INSTRUCTION

First you figure out the lesson or activity. Then look for skills you can practice through it.

When you know your students' needs you can clearly align both of these things with **what the student needs** to work on.

Identify Theme

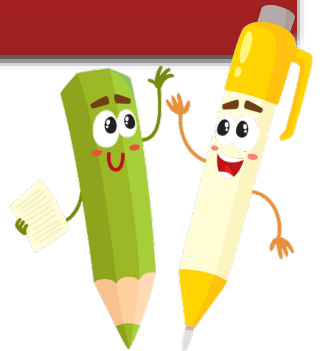
What is the focus of the lesson or activity?

Identify Related Standards

What standards relate to it?

Individualize Standards

What does the student need to work on?



Don't water down content. Provide support and structure.

It is important to hone-in on both content objectives related to the skills that support the student at his/her proficiency level.





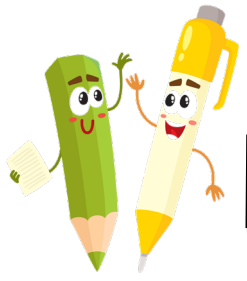
MODIFYING PER GRADE LEVEL: A SIMPLE FORMULA

Activity	Grade: Grade-level Skill	How would you bring them together?

As we go through the activities, keep in mind specific grade-level skills your students need to practice and master in the different grade levels. Use them to guide your approach in how you present the activities and what you have the students do.

FOR EXAMPLE...





MODIFYING PER GRADE LEVEL

Activity	Grade: Grade-level Math Skill(s)	How would you bring them together?
Creating a story map	Kindergarten: K.G.1. Describe objects a) in the environment using names of shapes, b) describe the relative positions of objects using terms such as above, below, beside, in front of, behind, and next to.	
Creating a story map	2 nd Grade: 2.MD.3. Estimate lengths using units of inches, feet, centimeters, and meters. 2.G.1. Recognize and draw shapes having specified attributes	
Creating a story map	5th Grade: 5.G.1. a) Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. 5.G.2. a. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane. 5.G.2. b. interpreting coordinate values of points in the context of the situation.	



HOW TO PRACTICE THOSE SKILLS?

Play a game to review: Incorporate math definitions, questions, and sample problems into review games!

A GOOD SPORTS METAPHOR

Think of coaches of musicians or athletes. They observe their players, comparing what the player did to effective execution of the move.

Then, the coach steps in and suggests (and often demonstrates) specific changes the player can make. The player takes this information and makes those specific adjustments. They then reevaluate and continue.

They don't just sit in the locker room until the game.



AWESOME REVIEW GAMES MAKE AN IMPACT

Quizzes and review games make lessons more interactive and engaging. It's been researched and proven that regular quizzes—not to be graded or evaluated (this is key)—boost memory retention, drive engagement, and make learning fun.

Let's go through a few favorites



GOAL!

BATTLE FOR THE PLANET AKA 'GRUDGEBALL'

In this fun review game students are put in teams and challenged to answer questions [about the topics you've covered during the unit] in a battle for ownership of the planet!

This is a perennial favorite.





CONTINUED

1. Set up two lines with masking tape. One is a two-point line while the other is a three pointer.
2. If they shoot from the two-point line and get it in, they can take four Xs off the board. If they go from the three-point line, and make it in, they can take five off the board. If they don't make it, they still get to take the original two off the board.
3. When a team is knocked off, they still stay active in the game. These teams still take turns. To get back on the board they need to get the question right and make the basket. If they do this, they can earn four or five X's back on the board (depending on from where they shoot). This allows them to stay involved, take part in the review and not shut down. Kids will want to make alliances. With really good natured you can let this process naturally happen. If you have an immature or meaner class, try to stop this due to chances of bullying. Note: You will inevitably get one kid that takes the "attacks" personally. Just try to really reiterate that the object of the game is to knock everyone else off and people are going to get upset but that is okay.
4. The team with the most x's left at the end gets the planet! Will it be the humans or the aliens? ;)

OPTION: If the team whose turn it is gets the answer to the question wrong, give every other team seconds to try to get the correct answer to try to steal points. If any other team gets it correct, they get to shoot the basketball in order to see if they can steal 2 or 3 points from the teams of their choice. If they miss the shot, then they do not get to take away any points. It allows more opportunities for the basketball to get shot and it helps make sure every single team is participating in every problem.

Monopoly Money Madness!

Materials:

- Play money
- 2 dice per group

Math content:

- Addition
- money recognition
- unitizing (grouping into new amounts.)

Game play:

Very simple – roll two dice and take that much money. If you can group your money into a larger bill (for example, five and five ones into a ten-dollar bill). First player to \$100 wins.

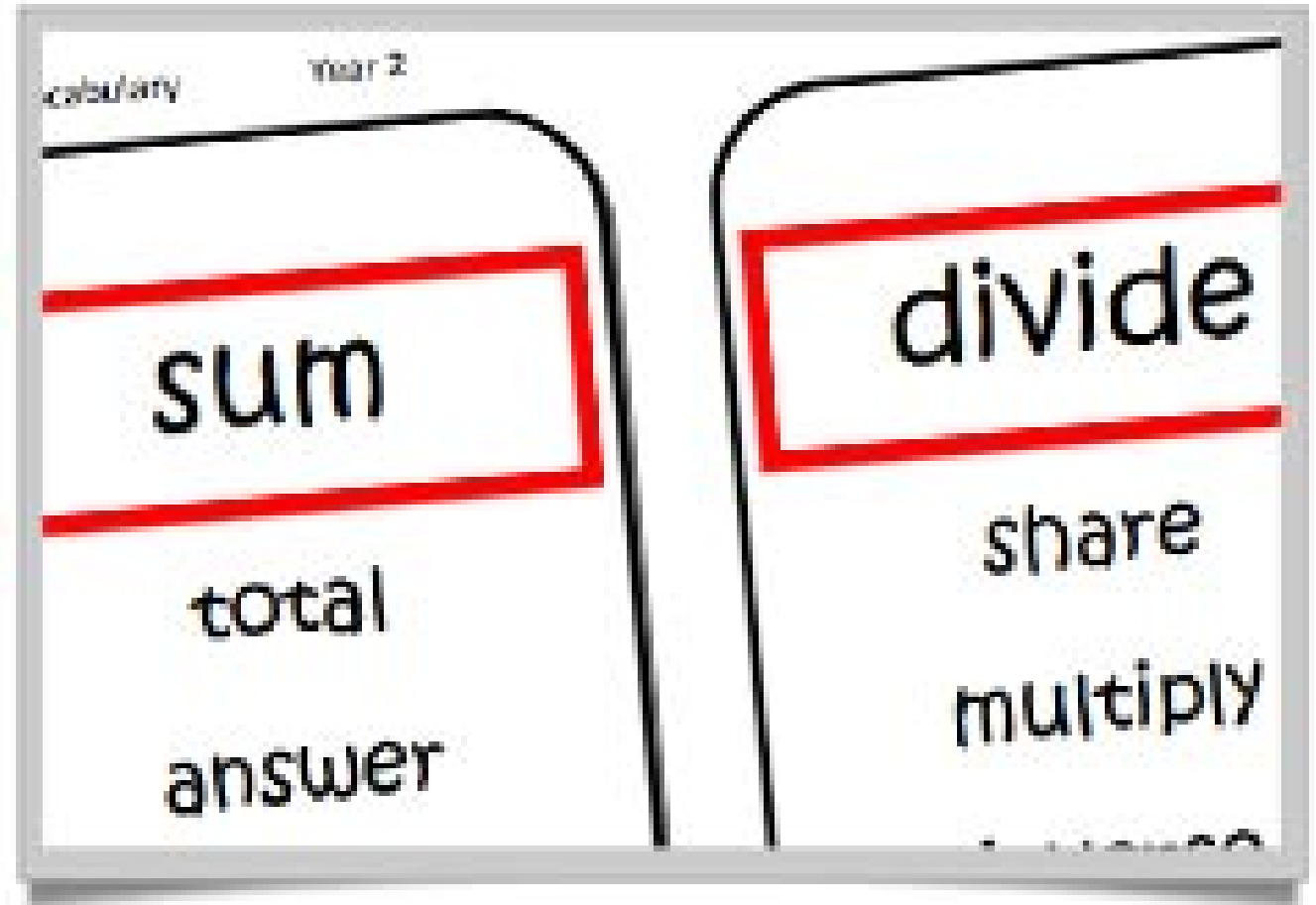


MATH TABOO!

Math Taboo is a fun, fast-paced way for your students to review that pesky content vocab.

Objective: Have your team guess the word on your card(s) without using the word itself or the other five words on the card. This helps students expand “definitions” to actual understandings of concepts.

This Taboo game serves a two-fold purpose: learning for the students (by forcing them to think deeply about a mathematical concept; by having them trade in math jargon for conceptual understanding; and by hearing classmates describe something in more accessible vernacular) and learning for the instructor (by seeing how well students actually understand a concept; and by seeing what language students use to talk math in the hopes that the instructor’s mathematical narrative can better reflect theirs in the future).



GOLD DIGGERS

Gold Digger sets anxious prospectors (teams) on a quest to find their fortunes in gold. Working their claims, by answering review questions over grade level appropriate math review questions, will yield a cornucopia of riches ... but beware of fool's gold! The player/team that outwits all of the others, wins!



REVIEW MATH PROBLEMS & VOCAB TOO!

MATERIALS:

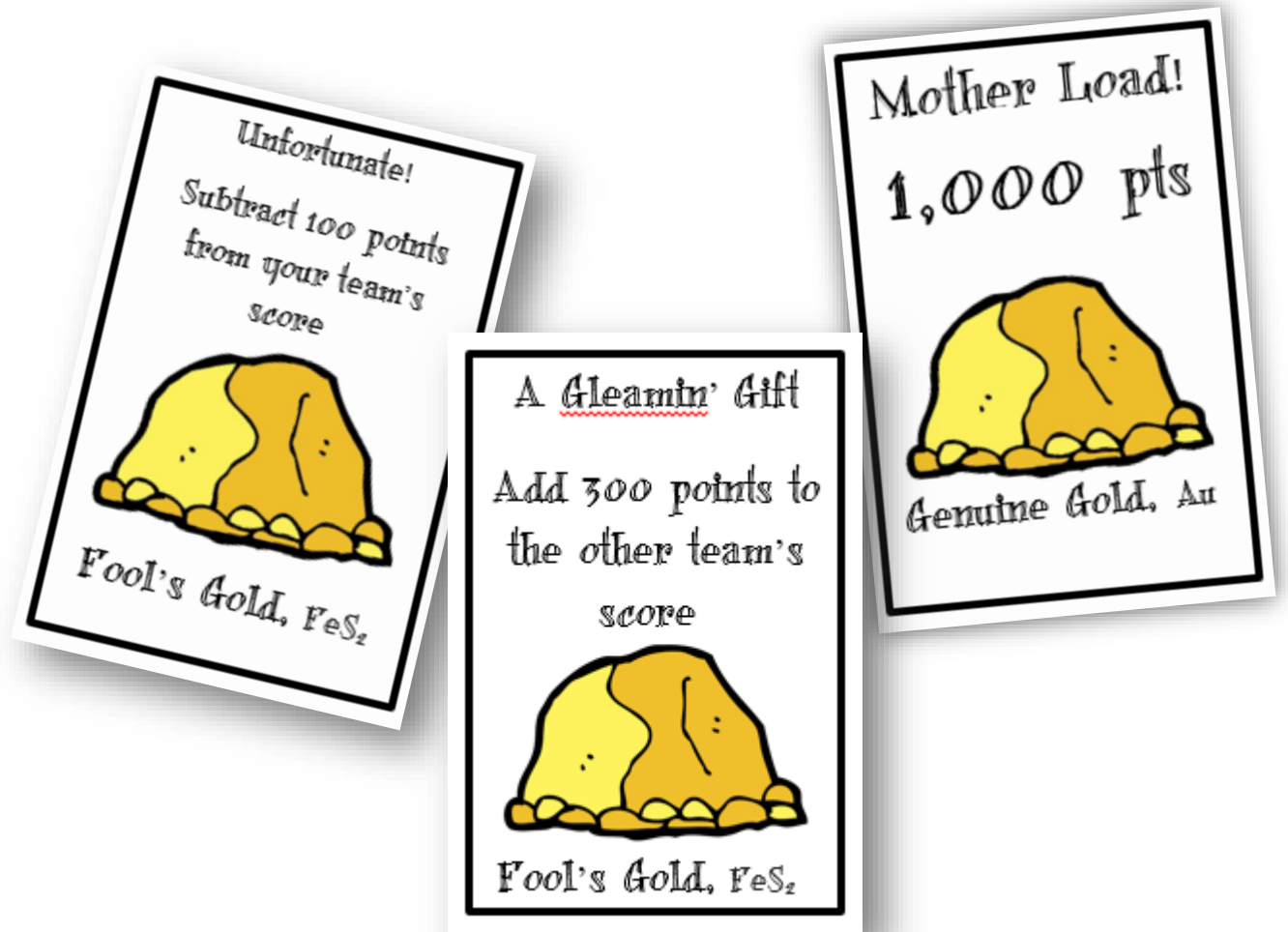
- Point Cards (make your own, use our set, etc.)
- Review Questions: use grade-level appropriate math problem flash cards & vocab words
- 'Fool's Gold' challenge cards (included, but use is optional)

Divide the class into two (or more) teams.

Make 2 (or more, depending on your number of teams) matching sets of point cards with a huge variation in point values, such as 5 pts, 79 pts, 1000 pts, 2 pts, 500 pts, etc. for each team.

Tip: You don't have to get all fancy with printed cards. You could go the old school 3 × 5 index card route and just write-up your own to create a deck that can be added to throughout the series! Or have the point cards be math problems (ex. flash cards would work well) that students must solve correctly in order to add that number of points to their total.

Then scramble each set of cards before starting the game and assign a draw pile/deck to each team. Team One's first correct answer might be worth 79 points, but Team Two's question might be worth 1000 if they run into the 'mother lode.'



FOOL'S GOLD CHALLENGE

Shuffle in a few 'Fool's Gold' Cards to add a bit of unpredictability and excitement to your game. Depending on your class tolerance for torture, you can mix in just a few 'Fools Gold!' cards, or have the majority drawn be some kind of negative result. Most classrooms enjoy about a 70/30 mix.

IDEAS FOR FOOL'S GOLD CARDS (THE FOLLOWING ARE INCLUDED IN OUR SET):

- Unfortunate! Subtract 100 points from your team's score.
- It's ALL Mine,...Nope, All Yours! You found Fool's Gold, but sold it to the other team! (they lose all their points)
- Switcheroo, Lucky You! Switch scores with the other team
- That's Not [Py]Rite! Add [X] points to your team score
- Bad Luck o' the Draw: Both teams found 'Fools Gold!' and lose 250 points
- Down the Shaft: Your team loses all their points
- Slip of the Pick: Subtract 10 points from your team's score
- One Quiet Mine: Both scores stay the same
- A Gleamin' Gift! Add 300 points to the other team
- Uh Oh, Oh NO: Blank cards for you to fill out with the consequences of your choice. Ex. A variety of negative score cards, Minus 50 points, Minus 100, etc.





OPTIONAL BONUS CHALLENGE: STAKE YOUR CLAIM!

- Players or teams compete to win the opportunity to guess a word from a specified number of words in its clue. The instructor tells players the number of words in the clue (ex. 16).
- Players/Teams bid the number of words in which they think they can identify the word. The player or team that bids the lowest number of words wins the opportunity to guess the word. **Only** that player or team may guess.
- The Instructor reads only the number of words in the clue bid by the player or team. If the player or team names the word correctly, they get to work their claim again and draw TWO cards from the deck to add points to their score. They may hit the mother lode but be careful of any Fool's Gold lurking deep in the mine!





HOW WOULD YOU MODIFY?

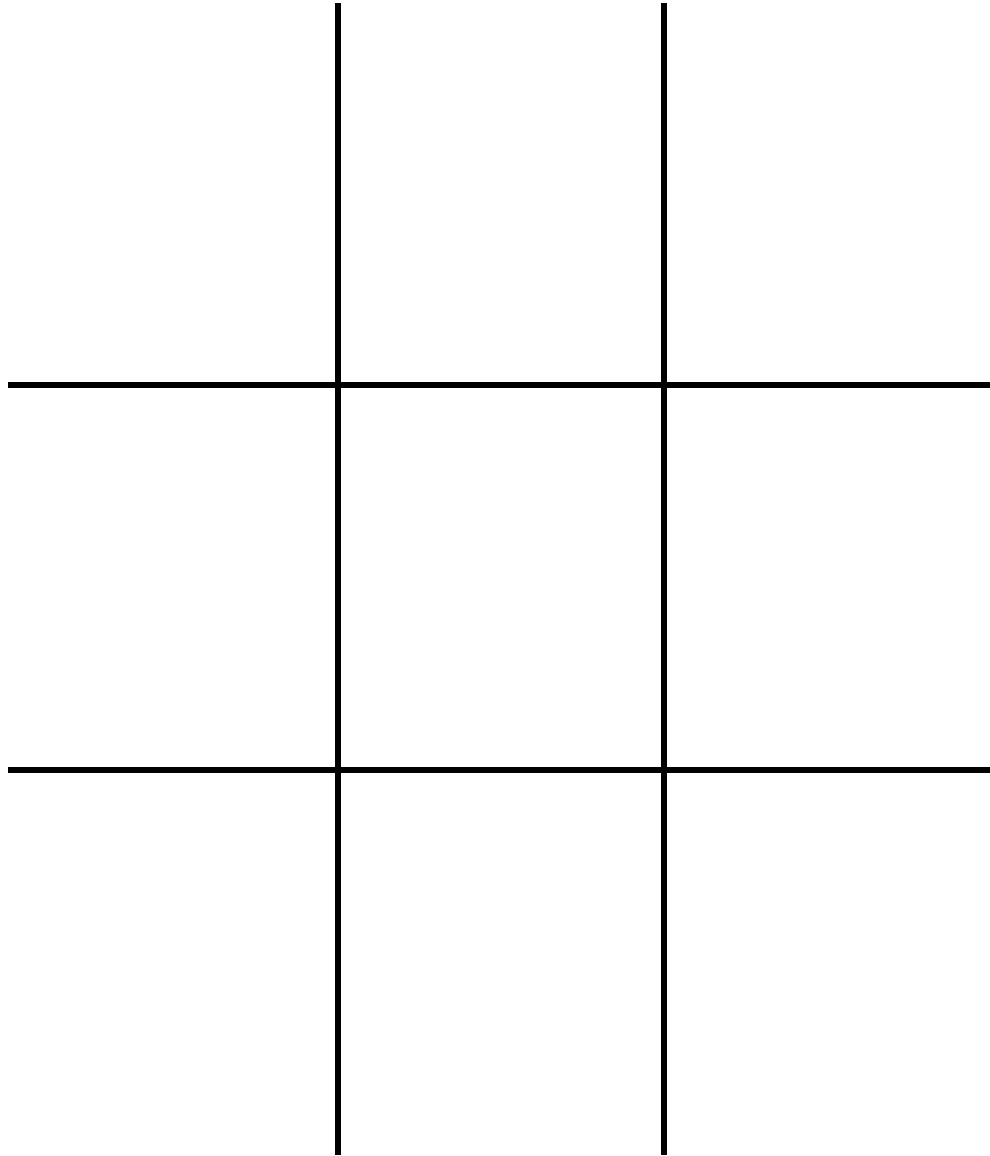
Activity	Grade: Grade-level Skill	How would you bring them together?

WITZZLE!

The name is a combination of "wit" and "puzzle": "wizzle". Wizzle Pro is a card game used to practice basic math facts for all ages and order of operations for older students. And kids of all ages love it! It's fun. It's fast-paced. It's challenging. Anybody can win. It forces you to think fast AND be able to justify your answer. Students are critiquing other students' work and offering constructive feedback. And students are doing a crazy amount of math without even realizing it.

6	2	4	$6+5+3+8+1=23$
5	3	6	
1	8	9	

Witzzle!



SETTING UP

- Each card (in the game—like this blank one) features the numbers 1-9 arranged in such a way that you can use the numbers in any row, column, or diagonal to make every number between -12 and 36 by adding, subtracting, multiplying, or dividing.
- You can change the order of the numbers in the row, column, or diagonal. For example, you could arrive at 20 by doing $(9-5)*4$ or $8 + 9 + 3$. The card game is out of print (check ebay for old copies), but don't let that stop you from playing!

BASIC DIRECTIONS

1. Draw a card on the board (a 3x3 square board) with the numbers 1-9 randomly distributed. Write them in, use paper, sticky notes—whatever works for you! (Or the teacher will have the blanks filled in on a blank Witzzle-style card.)

2. Get a target number (this can be done by rolling a die, two dice, larger number dice, or just using the date),

3. Solve for the target! Younger students: Students race to see who can reach the target number first by adding the numbers (using each of them only once). For younger students, the numbers wouldn't have to touch. For a challenge, they should touch (diagonal, vertical, or horizontal). For subtraction you can start at the target number and subtract to reach zero.

Older students: Select one row--diagonal, vertical, or horizontal--and using the each of the numbers ONLY one time mixed with basic operations (add, subtract, divide, multiply) as well as the PEMDAS (order of operations) solve for the target number (using a pencil and sheet of paper, they must write their equation)

4. Once a student has solved for the target number they will call out "Witzzle." They must come up to the board and correctly write a numerical expression using a row/column/diagonal of numbers from the card. For older students: Order of operations matters!

5. All other players must then put their pencils down and check that student's equation. After the student writes their solution, the class decides whether the written expression equals the target number as written.

6. If the equation is correct that student gets a point and then chooses another card or the teacher rearranges the numbers (this might not have to be done every time) and the student rolls for a new target number (starting over again).

7. If the equation is not correct, that student is out for the round while the others try to find a correct equation,

8. The winner is the student with the most cards/points at the end of a given time.

- Older students must use three numbers (one time each) and two operations to reach the target number. The three numbers must come from a single row, column, or diagonal on the card. For example, if the target number on this card was 32, you could use the middle row (7 8 3) to achieve the target number. $(7-3)*8 = 32$.

5	6	1
7	8	3
2	9	4



)))



MATAMOSCAS!

A fun and quick way to review math facts [aka. Kill the flies/insect aliens]. In this review game, students race to the board to swat the answers to questions posed by their teacher.

Materials:

- Two Fly Swatters
- White board
- White board markers
- Erasers/cloth/paper towels
- Grade/Age/Skill-appropriate Math Skill Questions or Flash Cards (eg., Decks of addition, subtraction, multiplication, division, fractions, time, and money flash cards, etc.)

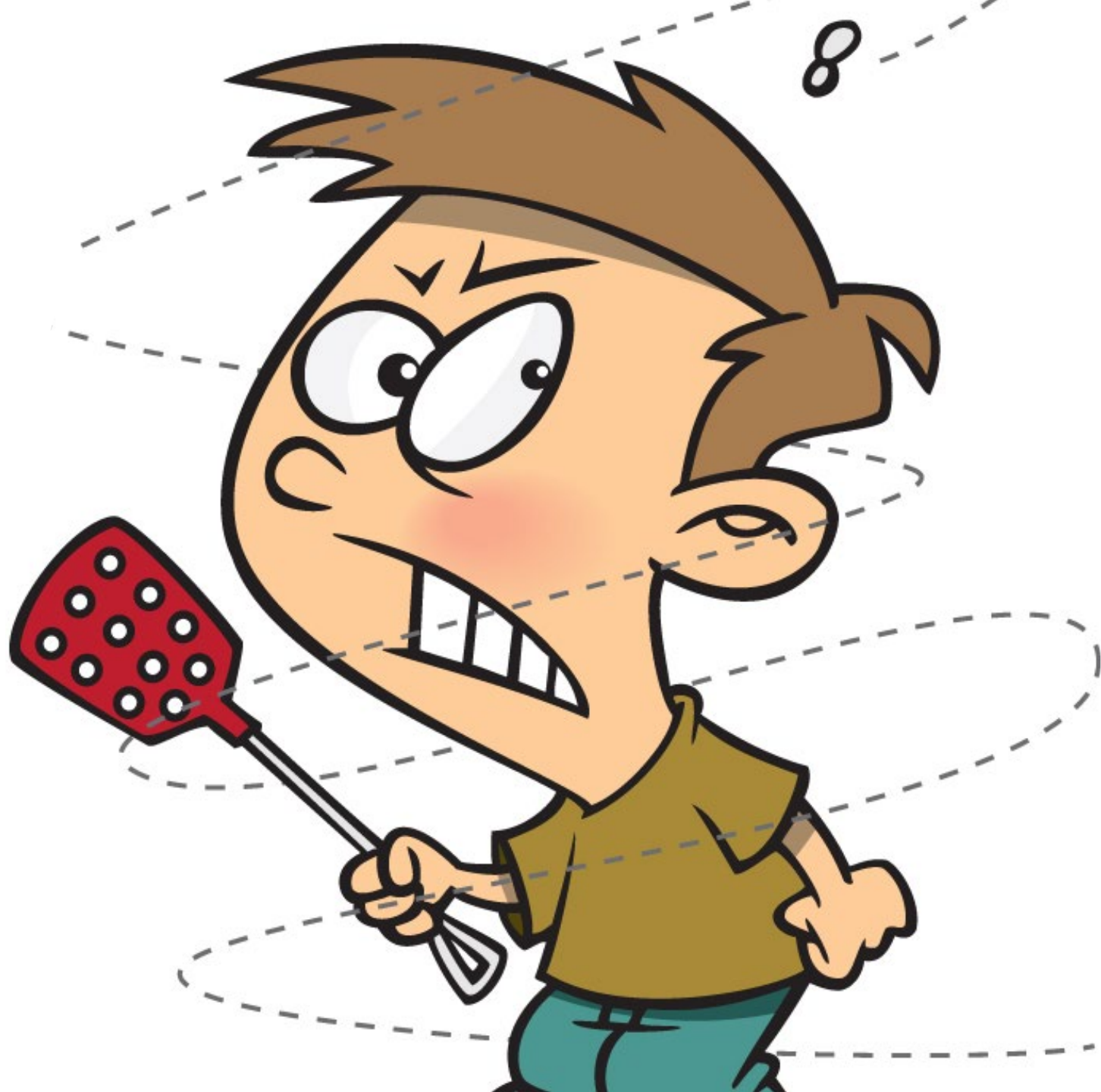
HOW TO PLAY:

1. Divide the group into two teams.
2. Prior to the beginning of the game have all of the answers you are going to use written up on the board [scattered randomly across your board]. The number of questions will vary according to your preferences and the grade level. You might begin with ten questions and answers, use them, and then start over with a new set of ten, and so on. Write the answers in random order on the whiteboard.
3. Choose one student from each team to come up to the front of the room and stand in front of the board with their fly swatters.
4. When you are ready to play, divide the students into two teams in lines. Read a question from your list. At your signal, the two students who are first in their lines run to the chalkboard and swat what they believe is the answer to the question. Each player must swat only one answer, and the first player to swat the correct answer earns a point for his team and erases the answer off the board.
5. If neither student chooses the correct answer, read the question again for the next students in line.
6. The students go back to their group and choose a new player to go up to the front.
7. The team with the most points at the completion of the game is the winner.



VARIATIONS

- **Won't stop buzzin':** Add to the challenge of this game by reusing some answers!
- **Mo Mo Mosquito!** When a student is the first to find a correct answer, you may require him or her to explain why it is the appropriate response before a point is awarded, or you could award a second point for an accurate explanation of the proper answer.
- **Swappin' Swatters!** Pose difficult questions that the students can discuss as a team, with one member of each team in turn racing to "swat" the correct answer.



MAKE IT, TAKE IT!

A dwindling resources money game for 2 players or teams created by [mathombre](#)

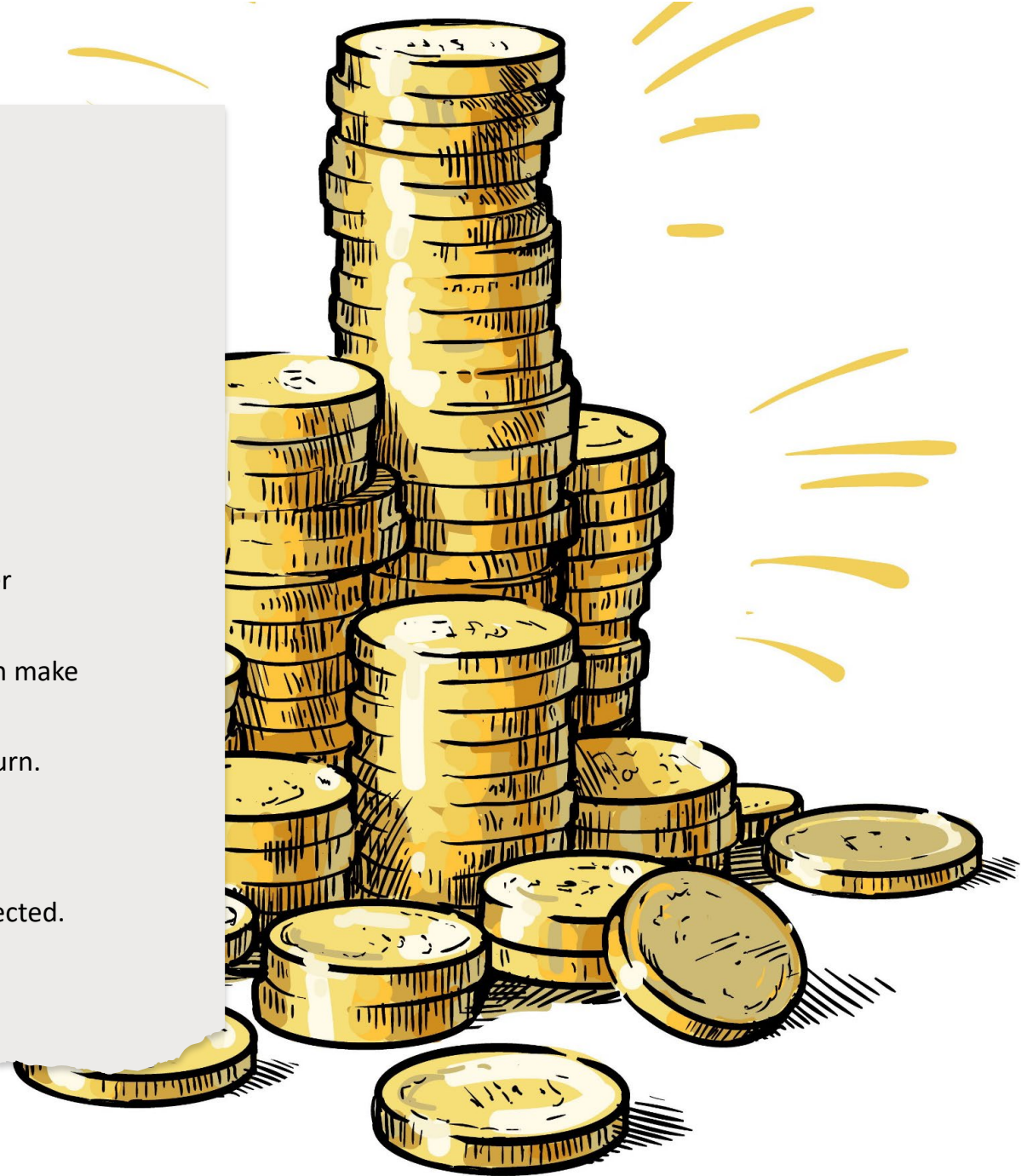
MATERIALS:

- Play coins or coin pictures or cards
- Amount cards.
- [Record sheet](#) if desired.



HOW TO PLAY:

1. Put the coins in the center.
2. Shuffle the amount cards and make a stack.
3. Players each turn over an amount card, and the player with the smaller amount goes first.
4. During each turn players turn over an amount card and see if they can make that amount with the coins.
5. If they can, they take the coins. If they cannot, it's the other player's turn.
6. Play until all coins are gone, or both players in a row can't make their amounts.
7. The winner is the player with the biggest total value of coins they collected.



VARIATIONS:

Recommended starting amounts – 4 quarters, 6 dimes, 8 nickels, 10 pennies. Other amounts can be used. Teachers can add amount cards for more complicated amounts.

Players can roll two dice to determine the amount. (Note the dice variation requires more pennies.) Advanced play allows people to make change with the coins they've collected. For example, trading a dime from the center with two nickels they have taken before.

Players can use dollar value charts to keep a running total.

SAMPLE GAME PLAY:

Bill and Keenya have been playing for a few turns.

Bill turns over 12 cents and takes two nickels and two pennies.

Keenya turns over 25 cents, but there are no quarters left. She takes five nickels.

Bill turns over 50 cents and cannot make it.

Keenya turns over 6 cents and takes a nickel and a penny.

Bill turns over ...

	75 cents	10 cents	5 cents	1 cent
50 cents		35 cents	30 cents	26 cents
20 cents		15 cents	11 cents	10 cents
6 cents		2 cents	27 cents	12 cents
5 cents		25 cents	10 cents	45 cents

TIPS FOR INSTRUCTORS

As with most games, it is recommended to play a sample game with teacher vs. the whole class to launch the game.

- Emphasize the variation in ways to make an amount by soliciting other possibilities from the students.
- Ask questions like “what card would be good to turn over next?” or “what card would leave me with no possibilities?”
- If someone is stuck, encourage good sportsmanship in helping them figure out a way to make the total. If that doesn’t seem to be working, or you are worried about their ability to make the amounts, students can play in a team of two vs. another team of two.

Many students will try a place value approach first, taking dimes and pennies. This will rapidly run them out of one or the other, forcing them to find other amounts. The amount cards concentrate on values that can be made with one, two or three coins, though several can be made with many more coins.

Post-Game Discussion:

The teacher may wish to have students share their strategy for figuring their total at the end of the game. It is important to summarize by having students describe how they knew if they could make an amount or not. Another interesting discussion to start is if there is a strategy for better ways to play the game – is there an advantage to using fewer or more coins to make your moves?



HOW WOULD YOU MODIFY GAMES FOR THESE SITUATIONS?

- Parent night
- After-school program
- In-home tutoring
- Virtual program
- Adult Ed



GET EVERYONE INVOLVED! FAMILY MATH NIGHTS



Give students and their families chances to gain understanding of just what the kids have accomplished and what they still need to practice.

Most important of all: give them fun ways to practice and learn...together! And at home!



ASTEROIDS!

Version 1 [Play in Pairs]: Have players get in pairs, each with a sheet. Players must race to destroy their moon first by rolling the dice and using the total amount to cross out a number. Ex: the player rolls a 6. They can erase a 6, or a 5 and a 1, or a 4 and a 2, or a 1, a 3, and a 2. Anything that adds up to the number rolled.

Version 2 [Group Play]: Draw two “moons” up on the board by writing the following for each team: Then have students form two teams, each team having a pair of dice. The teams must race to destroy their moon first by rolling the dice and using the total amount to erase a number. Ex: the team rolls a 6. They can erase a 6, or a 5 and a 1, or a 4 and a 2, or a 1, a 3, and a 2. Anything that adds up to the number rolled.



Asteroids!



1 2 3 4 5 6
7 8 9 10 11 12
1 2 3 4 5 6
7 8 9 10 11 12
1 2 3 4 5 6
7 8 9 10 11 12



BLURT!

- Great for building vocabulary, Blurt! is a riotous game of rapid word recall! Sounds simple, right? But as the race for the right word heats up, and the blurting gets boisterous, it's easy to get tongue-tied!
- Object: Be the first team to spell the word B-L-U-R-T-! (with the exclamation point at the end) first. Being the first player in the hot seat to name three Blurt words from the math vocabulary definitions provided gains your team a letter (or the final exclamation point for the win!).
- Option: For a shorter game, players in the hot seats can score a letter by being the first to name one Blurt word from a single definition provided.

HOW TO PLAY

The teacher (game host) reads aloud a grade level appropriate math vocabulary definition so that each of the team's current player can hear. The first to blurt out the word defined correctly, games a point. The first of the players in the hot seat to identify three Blurt words correctly (score three points) earns a letter (or the final exclamation point for the win) for his or her team. The first team to spell out B-L-U-R-T-! on the black board wins the game. (Another scoring option: Just roll a die and whoever gets the word correct gets that many points. Set a point goal and whoever reaches it wins.)

If neither of the players in the hot seats can correctly identify the word, then any player in the room may answer, once they are called on by the teacher. Players not in the hot seats raise their hands when they think they know the word. If they are correct, they earn a letter for their team BUT, if they are incorrect, their team has a letter deducted. Teachers decide whose hand was raised first to determine which classmate may attempt to answer.

Penalty! Only players in the hot seats may blurt out the answer. If a player not in the hot seat blurts out a word, a letter is deducted for his or her team.



VARIATIONS

GAME #2: Group Play Version Two

You can play in teams just the same way you would as individuals. When it's one team's turn to play, the other team answers, but can help the Reader decide who on the other team(s) blurted first.

GAME #3: Individual Play!

In small groups, all players blurt word guesses. The first player to blurt the correct words moves ahead in points letter to spell BLURT!

Additional Challenge: Bid to Blurt!

This variation allows players (or teams) to bid on the number of words out of the definition in which they think correct answer. In this way, a fairly easy clue can become extremely difficult.

Example: If you get to blurt, start bidding against other players on how many words of the definition you think you order to guess the correct word. You only get one guess!

- It might go something like this, "I can blurt it in 6 words!"
- "Oh yeah, well I can blurt it in 5 words."
- "I can blurt it in 4."
- "Then blurt that word!"

If you're the low bidder, you get a chance to blurt all by yourself.

Even the Score! If one team is way ahead of their competition let the trailing challenger have a chance through several more challenges.



THE UNFAIR GAME

In this review and reinforcement game, negative scoring and a fun 'unfair' twist means that even the winners could lose!

The Unfair Game is designed to be played with two teams. You can use as few or as many questions as you want, and teams try to answer the questions correctly in order to earn points for their

What's so unfair about that?

Making it a little less fair:

Well, the twist is that each question will get a random point value, and the point value can be positive OR negative. No one except for the teacher knows the value of the question until after an answer is given. The team must decide *before seeing the value of the question* whether they want to keep the points or give them to the other team. Then they have to just cross their fingers and hope that their choice worked out in their favor!

Materials Needed:

- Scoring Cards
- Flashcards or prepared cards (or a prepared list) with questions for review and reinforcement



<p>The Unfair Game!</p> <p>Add</p> <p>100</p> <p>Points to your score!</p>	<p>The Unfair Game!</p> <p>Subtract</p> <p>10</p> <p>Points from your score!</p>
<p>The Unfair Game!</p> <p>Take an extra turn!</p>	<p>The Unfair Game!</p> <p>Subtract</p> <p>1000</p> <p>Points from your score!</p>
<p>The Unfair Game!</p> <p>Your score is now equal to double (2x) your opponent's score.</p>	<p>The Unfair Game!</p>
<p>The Unfair Game!</p>	<p>The Unfair Game!</p>

PREP FOR THE GAME

Before the Activity

Prepare two sets of cards in advance of the game:

What's the Score? Prepare a set of 25 "scoring cards." On each of those cards, write a score value or instruction. Be as silly with the points as is appropriate for your grade levels and their abilities to add, subtract, multiply, and divide. You could even assign crazy point values to each question. For example, as 5 pts, 79 pts, 1000 pts, 2 pts, 500 pts, etc. for each team. Team #1 's first correct answer might be worth 79 pts, team #2's question might be worth -1000. Have a score keeper write the points earned on the board.

What's the Skill?

On the other set of cards, write 25 questions related to the topic, words, or skill(s) you want to review and reinforce or gather appropriate flash cards. (Note: Questions might be created in list form rather than on cards.)

- Introduce the stack of scoring cards to students. Shuffle the cards. Put the stack face down on a desk.



HOW TO PLAY!

You might post the 25 scoring cards in random order on a bulletin board or chalkboard. Post the cards *with the blank side facing students and the scoring instructions hidden from view.*

Arrange students into two or more teams. Decide which team goes first, and then pose the first question to a member of that team. If the student answers correctly, he or she draws a scoring card from the stack (or removes one from the bulletin board or chalkboard). The score on the card determines the score the student earns for his or her team.

- If the team has 0 (zero) points and the card selected reads "Earn 50 points," the team has a total of 50 points.
- If the card reads, "Double your present score," the team doubles its score of 0, for a total of 0 points.
- If the card reads, "Deduct 50 points from your score," the team subtracts 50 from 0, for a score of -50.
- If the student answer incorrectly, the first student on another team to raise his or her hand earns the right to "steal" the question. A correct answer earns that student the opportunity to choose a scoring card...
- Of course, the scoring card could carry a negative message, so answering a question correctly is no guarantee that a team will earn points; as a matter of fact, the team could lose points! A team could conceivably answer all the questions correctly and lose the game. That's why the game is called "Will the Winners Lose?"



VERSION 2.0

In order to increase the strategy required to play the game, you can try this variation. It will also allow you to inject novelty by playing the same game in a slightly different way.

1. Once the value of the question is revealed, the team can choose to keep the points or give them to the other team.
2. Instead of determining the winner by whoever has the most points, the winning team is the one that has the positive score closest to zero. (For example, a team with a final score of +2 would beat a team with a final score of -1 because the winning score must be positive—even though -1 is closer to 0 than is +2.)
3. Of course, if both scores are negative, then the winning score is whichever is closer to zero. The game is still unfair because you aren't in control of your own score: another team can interfere with your strategy!

• A Couple More Twists

- You might have each student track the score for each team. Students track the team scores on their own. At the end of the game, each student who correctly calculated each team's final score might earn 50 bonus points for his or her team.
- You might introduce another rule. Since no team member knows whether the scoring card he or she selects will earn or lose points, you might allow students the option of *not* selecting a card when they answer correctly. If the student thinks the next card in the stack might carry a negative scoring instruction, he or she is free to pass and earn (or lose) no points for the team. Students only learn whether that was a good move or not if the next student to choose a card reveals the scoring instruction on the card.



HOW WOULD YOU MODIFY?

Activity	Grade: Grade-level Skill	How would you bring them together?

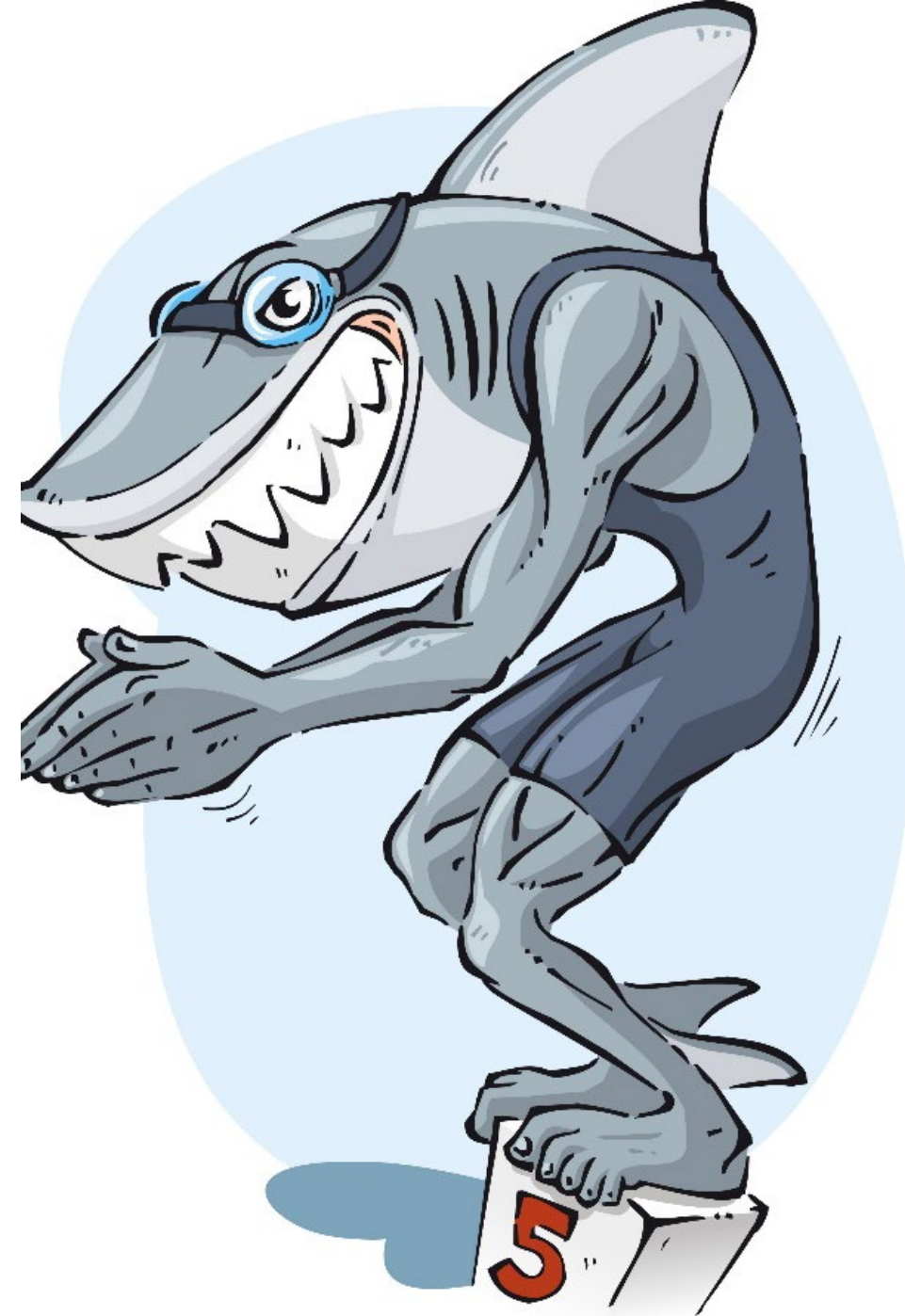
SINK OR SWIM?


Have students form two teams and line up in two lines across the room facing each other. Ask someone on team 1 a question, if they get it right, they may "sink" someone on team 2.

Then go to someone on team 2, if they answer their question right, they may either sink someone on team 1 or rescue their "sunken" team member.

Option: To make it so students don't feel bad, assign each student on the team a number and have students sink a student's number instead of saying their name. Then, ask team number two a question and if they get it correct, they can either sink a person, or save one of their own. This continues until one team has no players left.

The winning team is the team with the most people still standing!





AUCTIONEER! GOING ONCE! GOING TWICE?

Develop a list of math problems based on your students' grades, standards, and skill levels. Questions might involve addition, subtraction, greater than/less than, division, multiplication, word problems, identifying a missing number in a number sequence, and so on. This game can be used to practice any math skill that your students need to hone up on and they'll have fun doing it.

Preparation:

- Make simple auction 'paddles' (rulers or paint or stir sticks with pieces of paper work great) for groups
- Make up a worksheet with 2 columns. The left column will have 10 equations to solve. The right column will have 10 answers. 50% of the answers should be correct. 50% should be incorrect.



HOW TO PLAY

Depending on the class size, break the class into pairs, groups of 3 or 4, or have kids work individually. Announce that we are going to have an auction.

Each pair will be given a list of auction items, which are lists of math problems that use the needed math skill and an imaginary amount of money, represented on paper or by play money.

Present each group with their own paddle to bid with. Each group gets \$1,000.

Give the students time to solve each equation and decide whether the answers are correct or incorrect.

The auction list should include a 50/50 ratio of correct and incorrect problems.

In their group, the students need to compare their answers. What questions have the correct answers given? Which answers were incorrect?

The goal of the review game is to be the team that purchases the most correct questions. Purchasing an incorrect question will cause you to lose an additional \$500 at the end of the game!

If there is a tie, the team with the most money left over wins.

- After the students review the auction list, begin the auction. Students will bid on each problem based on whether or not they think it is correct.
- The auction starts. Each group decides how much they want question one. Debates ensue over whether the answer given was correct or not. Students disagree. Decisions must be made. This is a fast-paced auction, after all!

HOW TO PLAY CONTINUED...

- After all the questions have been auctioned off, work out each problem on the board.
- Count up how many correct questions were purchased by each team. Yes, there will be the teams that spend almost all of their money on one question. Then, there will be the teams that are too frugal with their money and end up with lots of money and only a single question in their possession.
- A correct problem means you get your money back; an incorrect problem means you lose your money.
- Students must keep track of their remaining funds [subtracting as they go]. Have students check answers and count up the money after all the math problems are auctioned off.
- The pair/team with the most money at the finish wins the game.



GUESS TWO? WHAT'S YOUR NUMBER?

Create this game by using the famous "Guess Who?" Game (or a printable board).

GAME ONE: Students must find the hidden number. Kids ask questions like Is the number greater than/less than....? Is the number between ___ and ___? Is the number in the tens place ___? etc. No two questions in a row can make the same comparison. Or students may ask in number sentences- - Is the number $5+1$?

GAME TWO: This time, the students must ask about specific numbers, e.g. 6. And in order to ask a question they have to state a number sentence. E.g., Is the hidden number $5 + 1$, $7-1$ or $3 + 3$...? Etc. Or, by multiplication: 2×3



What Number?

CHANGE FOR THE BETTER!*



Materials:

- Each player needs 1 quarter, 2 dimes, 3 nickels, and 4 pennies.

Rules: Play in groups of 2 to 6. Each player takes a turn. On their turn they put in one coin. They can take out a combination of coins that is less than the value of what they put in. For example, if you put in a dime (10¢) you can take back up to 9¢ – if it is there. Play continues until only one person has money left.

Instruction:

- Beginning players should just concentrate on the moves of the game. After students have gained some experience with the game, they can try recording their games to translate to symbolic representation. The data collected can then be examined for patterns.

*This game forces students to find non-standard combinations of coins, instead of always taking 27 pennies, for example.



BACK 2 BACK

There are two different versions of this game.

Supplies needed are minimal: a writing surface, writing utensils, and someone who is quick with their math facts for a “caller.”

The object of the game is to guess the other player’s number before they guess yours. To play, two students come up to the board and stand back-to-back (hence the name). This allows for the students to write on the board but blocks their view of the other person’s number.

The “Caller” states, “Numbers Up”. This signals the two students write a number of their choice on the board. Tip: Play with numbers 2-9 to keep kiddos from dwelling in the 0’s and 1’s easy train, but you can play with numbers as high or as low as needed for your group of kids.

The caller then states the sum (for younger students) or product (3rd+) of the two numbers. The students use their understanding of math facts to figure out what they other person’s number is when added or multiplied by their number. The first player to say the other person’s number wins the round. The “loser” gets to choose the next person to come to the board.

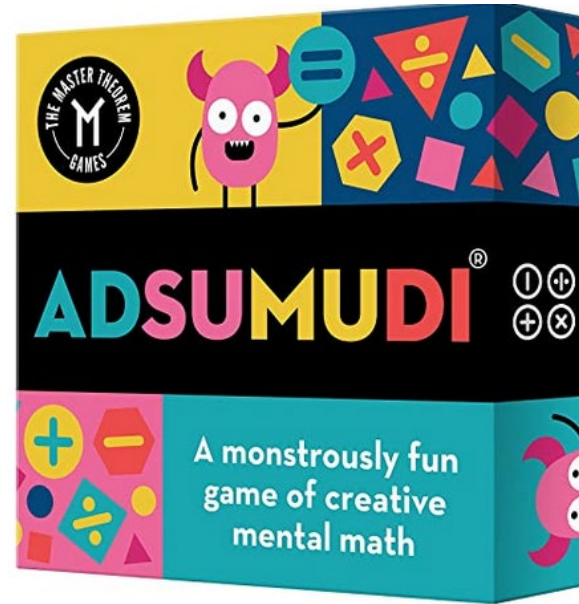
Please be warned... this game can get a little rowdy as students win and lose rounds and somehow the teacher always gets pulled up to “clear out” a player who’s been up a little too long... But it’s a lot of fun and well worth the 10-20 minutes!

HOW WOULD YOU MODIFY GAMES FOR THESE SITUATIONS?

- Summer camp
- Summer camp with multiple grade levels & no tech available
- OSY
- Single student
- Take home packets



MORE ONLINE & OFFLINE OPTIONS



HOW TO PLAY

PROOF!®

THE FAST PACED GAME OF MENTAL MATH MAGIC!



MAKE AN EQUATION!

Quick! Find an equation among the nine number cards on the table.



SHOUT THE RESULT!

Once you've got one, shout the result before anyone else!



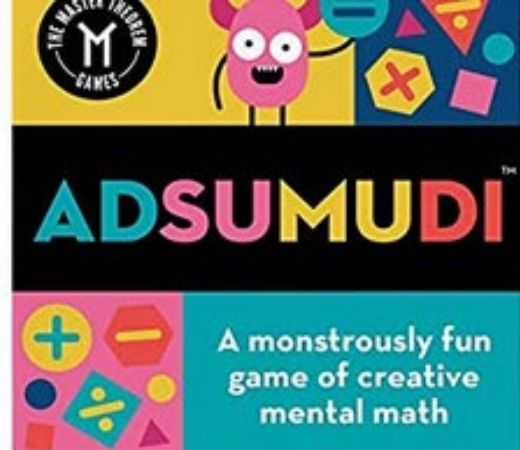
SHOW YOUR PROOF!

Tell everyone the proof! If your math adds up, keep the cards you used.



KEEP THE CARDS!

Deal more and keep going! When the deck runs out, most cards wins!



ADSUMUDI
A monstrously fun game
of creative mental math

Ages 9+
2 - 8 Players
15 minutes
53 cards
416 unique challenges

OVERVIEW

Find the secret math path to Adsumudi's answer on each card by adding, subtracting, multiplying, and dividing the five other

Get started by placing the entire stack of cards in the center of the table.



GAME PLAY

At the same time, all players focus on the top card and try to create Adsumudi's answer (the number in the center) using the five other numbers on that card. Numbers can only be used once each in a given equation, but players can use any combination of addition, subtraction, multiplication, and division they need.



MAKE
ADSUMUDI'S
ANSWER
①

USING
AND + - × ÷

Once any player finds an equation that works for their difficulty level, they should shout "Adsumudi!". Doing so pauses the game and gives that player a chance to prove that the math works. If it checks out, the player takes the card and keeps it. Everyone then continues playing with the next card on the top of the deck.

If a player's math doesn't check out, there's no penalty. Play continues until someone gets it right. Or if all players agree that a given card is too hard, simply put it at the bottom of the deck and move on to the next card on top.

XING

Enjoy as your kids use math concepts, factors, multiples and strategy to become the masters of their chosen element. See them improve their cognitive ability, decision making and problem solving skills right before your eyes!



ABOUT THE GAME

Win this monster pizza-eating contest by accumulating the highest bill. And get better at fractions, decimals and percentages while you're at it!

COMPLETE PIZZAS TO EAT PIZZAS!

Build whole pizzas of the same type out of pizza fraction cards.



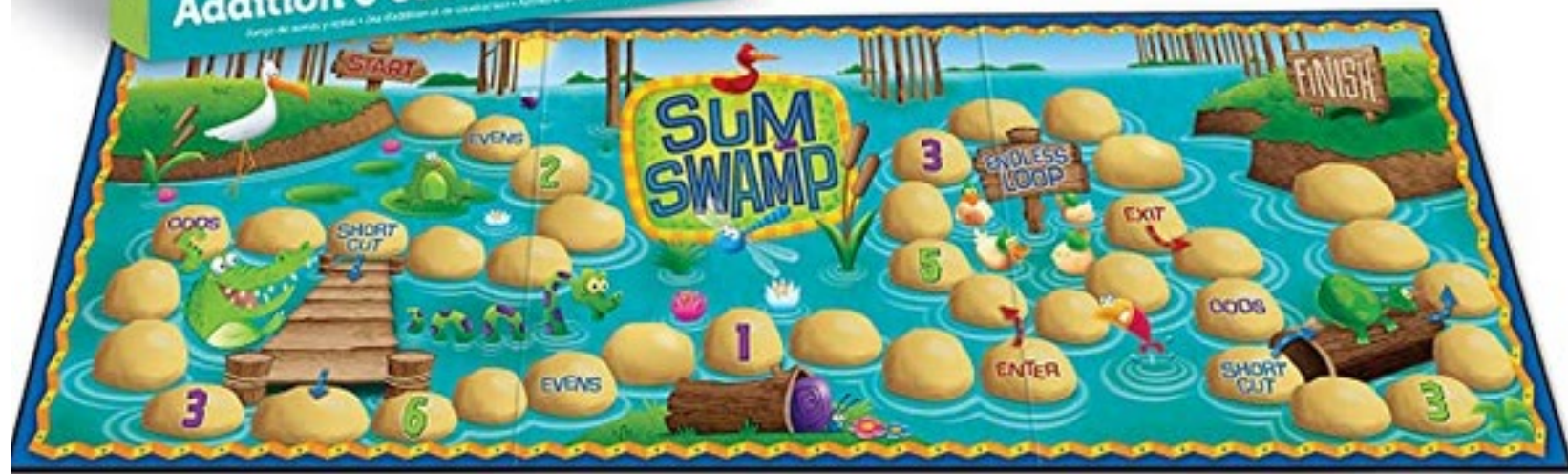
31 Pizza-Eating Monster Cards

(NOTE: Only one of each card shown)



88 Pizza Slice Fraction Cards of four pizza types

(NOTE: Only one of each card shown)





HOW WOULD YOU MODIFY?

Activity	Grade: Grade-level Skill	How would you bring them together?

MATH GAMES

Math Games are free online games that help students practice math and learn new skills at the same time. They can dive into an engaging game experience tailored to their individual skill level.

Other features include:

- Downloading games as apps on cellphones or tablets.
- Teachers and parents can track and analyze player's progress to see where students need more support.
- The games are designed to test and improve Common Core skills
- Games are free to play and work on all browsers and devices. Students can log in and have their progress saved no matter where they're playing.
- They also offer a digital textbook where students can practice questions & skills at their own pace.



NUMBERS LEAGUE

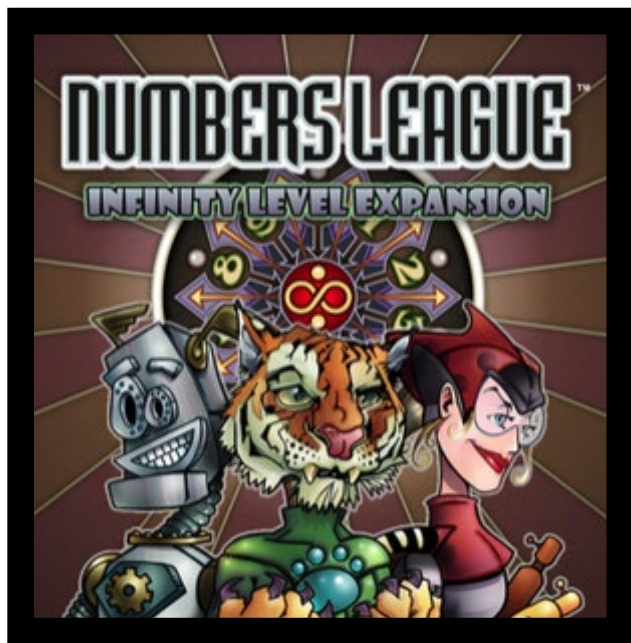


Villains lurk in the streets of Infinity City and the only hope is the Numbers League. Assemble your team of Superheroes, use the sum of their incredible powers and ingenious devices to capture as many villains as you can.

Numbers League - Adventures in Addiplication is a stand-alone superhero themed card game (and/or app) where your basic math skills can save the day. The more you play the sharper these skills will become until no villain is safe from your numerical onslaught.

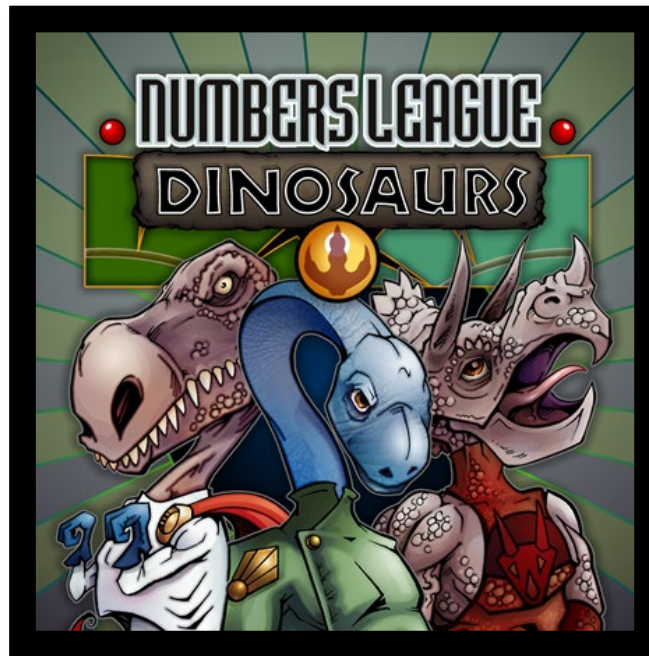
[-Bent Castle Games](#)

EXPANSIONS



A 60-card deck of advanced level superhero parts, villains, and devices that enables much more challenging play and more players. Introduces simple decimals, multiplying by negative numbers and more.

* Not a stand-alone game



A 30-card deck of hero level dinosaur parts and devices that enables more players at all levels of play.

* Not a stand-alone game



A 30-card deck of hero-level animal parts and devices that enables more players at all levels of play.

* Not a stand-alone game

FROM THE DESIGNERS

“Our top priority while designing Numbers League was fun, even though it is a bit more sophisticated than most current game-oriented education offerings. It is designed to be engaging for a very wide range of students, and for a very long time.

While the easier levels are solved using relatively simple arithmetic, competence in the higher levels develops algebraic skills, working memory, strategic planning, and concentration. To see Numbers League's full potential, please play a Superhero Level game to completion with a colleague or the #3 (hardest) robot opponent, who is a worthy adversary.

Numbers League establishes several Common Core standards directly. Numbers League also indirectly supports acquisition of many other Common Core standards.”



THEY JUST ADDED A FREE PRINT & PLAY VERSION!



NUMBERS LEAGUE DOOMSDAY DEVICE

IF JUST THE VILLAIN IS CAPTURED THE DOOMSDAY DEVICE ALWAYS MOVES TO THE REMAINING VILLAIN WITH THE LOWEST NUMERICAL WEIRDNESS.

PLUS or MINUS
IF A VILLAIN WEIRDNESS IS POSITIVE THEN YOU ADD THE VALUE OF THE DOOMSDAY DEVICE. IF A VILLAIN'S WEIRDNESS IS NEGATIVE THEN YOU SUBTRACT THE VALUE OF THE DOOMSDAY DEVICE.

DEARMED
IF ALL THE VILLAINS ARE CAPTURED INTO THE DOOMSDAY DEVICE HAS NO PLACE TO GO THE GAME IS OVER AND NO PLAYER GETS TO CLAIM THE DOOMSDAY DEVICE FOR THEIR VICTORY FILE.

RULES
At the start of a game pick one Doomsday Device card and place it on the villain in the Rogue's Gallery with the highest numerical value.

Players can capture just the villain with the Doomsday Device by capturing its weirdness or they can capture their boss by capturing the villain's weirdness.

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DOOMSDAY DEVICE CARDS

GET PDF

Bent Castle NL Print&Play Card Game

Watch later Share

NUMBERS LEAGUE

PRINT & PLAY

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NUMBERS LEAGUE RULES

THE STORY
A plague of Villain League, you are rid the streets of sum of your team

Prepare your D
Use a highlighter what level each d Villain cards from use the hero level cards.

SET UP
Shuffle the hero cards the three d cards face do out the 24 cards arrange them in villains.

SIDEKICK



ENGLISH

GET PDF



**ADVANCED PAST
NUMBERS
LEAGUE?
TRY DRAGONBOX**

When math teacher Jean-Baptiste Huynh noticed that many of his young and enthusiastic students, although otherwise intelligent, struggled with algebra, he figured there was a problem with the way the subject was taught, and not with the students themselves. Because of this, he decided to found his own educational software company, WeWantToKnow, together with Patrick Marchal, Ph.d in cognitive science.

The idea - to create a learning tool that makes it fast, and easy, to learn algebra. Coined as the game that “secretly teaches algebra”, the innovative app gained international recognition as one of the best serious games ever, and a game changer for how math is being taught.



BiG NUMBERS

Learn big numbers, long addition and subtraction in DragonBox's newest game! Players do 4000 operations to gather, trade and to unlock new worlds.

BUY NOW

\$7.99



algebra 5+

An intuitive and engaging game that teaches children as young as 5 the process needed to solve basic linear equations.

BUY NOW

\$4.99



NUMBERS

Easily learn what numbers are, how they work and what you can do with them. With four innovative activities, learning fluidity and flexibility with numbers has never been easier!

BUY NOW

\$7.99



As the years have passed, the games have also evolved. The DragonBox Algebra series and DragonBox Elements were created to be fast, effective games that would make learning less painful for students, teachers and parents. The newer games, DragonBox Numbers and DragonBox BIG Numbers, are longer games created to engage students and create a deeper understanding of concepts beyond popular memorization techniques. While there is an end to the game, play time is significantly longer than the earlier apps.

As parents, the team recognizes how important it is that a child's limited screen time be filled with quality content. One driving factor when developing the DragonBox games is to combine the fun a child is looking for from tablet time with the education they need to succeed.



MAGNUS
Kingdom
of CHESS

Join World Chess Champion Magnus Carlsen on an epic learning adventure to learn basic chess.

BUY NOW \$7.99

algebra 12+

Building on the teachings of Algebra 5+, this app takes it to the next level with more advanced algebra and mathematic topics.

BUY NOW \$7.99

ELEMENTS

Challenge yourself to save Euclid's Island while learning the properties, definitions and relations of geometric shapes through Euclidian proofs.

BUY NOW \$4.99

The DragonBox difference is that all the games are designed with teachers, parents and children in mind. Every app is created to address specific challenges that children have in math learning and is meant to take the pain out of the process. WeWantToKnow is passionate about learning and wants all kids to reach their full potential.

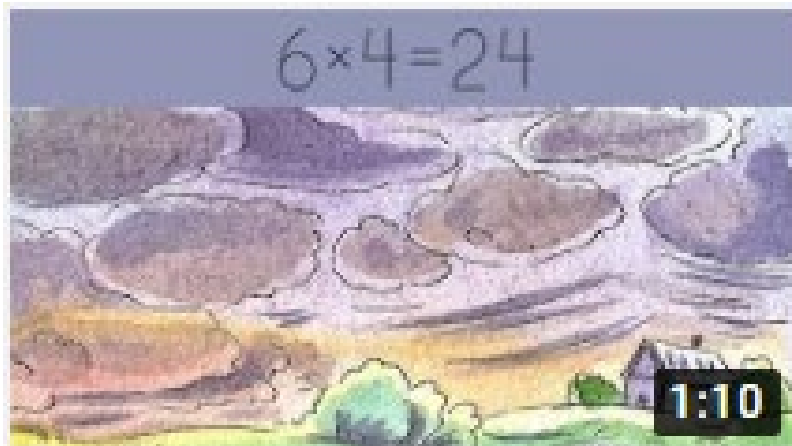
MUSICAL MATH FOR MEMORY

Think about this: which would be easier, more effective, and faster—teaching a child to memorize the order of the letters in the alphabet without music or with music? I

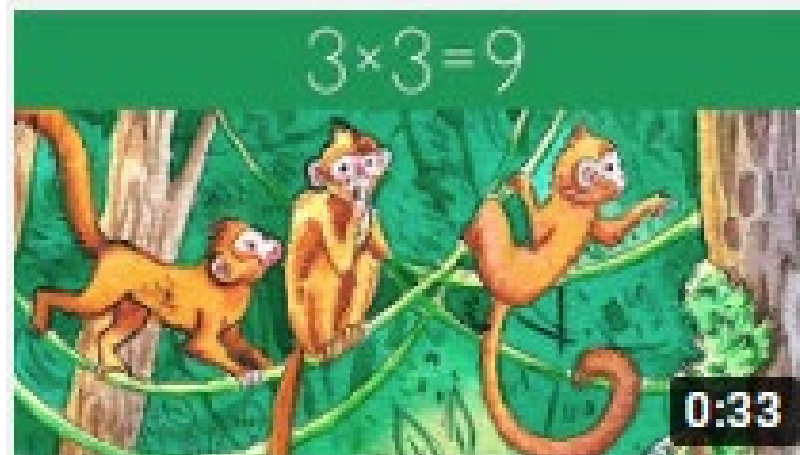
It would seem crazy to teach the order of letters in the alphabet without a song. It would take so much longer to memorize the order of letters. Music is powerful, not only for speed of memorization but also for retention. Music is easily ingrained into memory.



How to Spell Numbers 1, 2, 3 | The Good and the Beautiful...



Multiplication Songs 6x4 | Musical Multiplication | The...



Multiplication Songs 3x3 | Musical Multiplication | The...



Multiplication Songs 5x5 | Musical Multiplication | The...

ARITHMETIC

FRACTIONS

GEOMETRY

MEASUREMENT



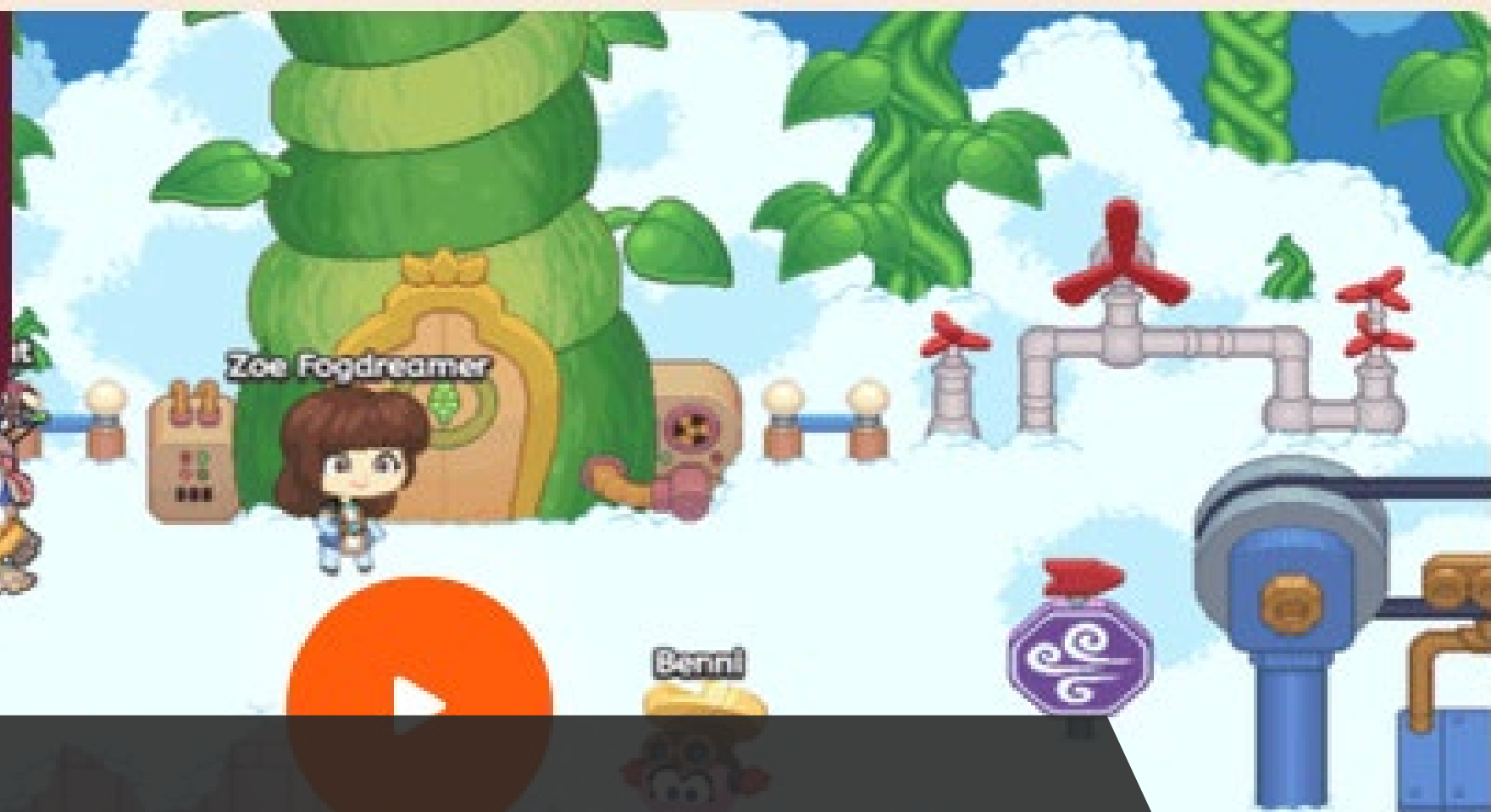
MUSIC MAKES MATH MEMORABLE



Math music videos animated by an Emmy nominated studio. The music videos approach math from both conceptual and procedural angles. They also offer downloadable lesson plans, worksheets, games, and anchor charts. On their site & YouTube.



About *The Game*



GAMIFY MATH

One helpful tool can be Prodigy. Prodigy connects in-class learning to at-home math practice. Students explore the Prodigy Math Game world, where they answer math questions to complete epic quests and earn in-game rewards. Visualize student progress, align in-game questions and motivate math learning with powerful tools for educators and parents.



QUESTIONS? IDEAS

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