

Name: _____

sketch it

Draw and identify the bases of rectangular prisms with dimensions of $4m \times 8m \times 2.5m$.

try it

Find the volume of the rectangular prism.

- Area of the base: $20m^2 / 2.5m$
- times h: $80m^3$

How MUCH does it hold?

for prisms & cylinders:

Volume is always measured in **Cubic Units**

Height: 18 in

Volume of a cylinder: $V = \pi r^2 h$

Example: $V = \pi (7.5)^2 (18) = 3178.8$

Don't forget the units!

1 Find AREA of the base

2 Multiply by HEIGHT

3178.8

inequalities

is **LESS** than $<$
is **GREATER** than $>$
is **less than OR equal** to $<=$
is **greater than OR equal** to $>=$
NOT EQUAL to \neq

Name: _____

inequality:

A MATHEMATICAL SENTENCE comparing the values of the symbols

The carnival has more than 30 rides and attractions!

example

Write an inequality to represent: Only children under 5 years old may enter the bounce house.

$a < 5$

try it:

Write an inequality to represent: The steepness of a wooden roller coaster hill cannot exceed 85 degrees.

$r > 30$ where "r" represents: # of rides and attractions. There may be 31, 32, 33... (multiple solutions)

solution: $r > 30$

the power of an exponent

Exponential functions have the ability to **grow** quickly!

As we go **UP** the arches (power) the value **DOUBLES**. So when we decrease from 2^3 to 2^2 , we get cut in **HALF**.

zero power = 1

any 2 to the power = 1

exponential growth

$y = 2^x$

x	y
0	1
1	2
2	4

Graph it!

explain it: here, the total value **DOUBLES!** each time the exponent increases by one. For 2^3 , it would be 8.

SLOPE

Slope represents the **Rate of Change**. Slope should be written as a **FRACTION** in **SIMPLIFIED FORM**.

$m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$

The slope of a line can be determined from a table, by **subtracting** units on a coordinate plane, or by **subtracting** coordinates.

Find the slope between the two points:

- $(3, -2)$ and $(4, 4)$
 $\frac{4 - (-2)}{4 - 3} = \frac{6}{1} = 6$
- $(6, 0)$ and $(-6, -1)$
 $\frac{-1 - 0}{-6 - 6} = \frac{-1}{-12} = \frac{1}{12}$

Plot a line that starts at the origin and has a slope of -3 . Label it "a".

Plot a line that starts at $(0, 4)$ and has a slope of -2 . Label it "b".

Remember: **UP** and **RIGHT** are **POSITIVE** movements.

The slope of a vertical line is **UNDEFINED**.

Remember: **UP** and **RIGHT** are **POSITIVE** movements.

Teacher Guide: Middle School Pre-Algebra

doodle notebook

Triangle Sum Theorem

The **SUM** of all 3 angles in a triangle is **180**.

theorem

$a + b + c = 180$

we can use it to help us **find** missing angles in triangles & quadrilaterals.

works for ALL triangles!

Scattered Plots

Amount of Sugar (teaspoons) vs. Age (years)

ANALYZE IT!

- What type of correlation do you see in the graph above?
- Which would you expect to be most likely for a 30-year old? 0.5 tsp. or 1.1 tsp. of sugar?
- What type of correlation would you expect between these two variables? Explain why.

NEGATIVE CORRELATION

POSITIVE CORRELATION

Units of Capacity

1 gallon = 4 quarts = 8 pints = 16 cups = 128 ounces

1 quart = 2 pints = 4 cups = 32 ounces

1 pint = 2 cups = 16 ounces

1 cup = 8 ounces

1 ounce = 2 tablespoons = 6 teaspoons

Box & Whisker Plots

Median, Quartiles, Whiskers

QUARTILES

1st Quartile (Q1), Median (Q2), 3rd Quartile (Q3)

Minimum, Maximum

Congruence

is **CONGRUENT** to...

congruence

figures that are the same **SIZE & SHAPE**

bisect to divide into 2 equal parts

congruent segments

congruent angles

congruent arcs

congruent circles

Coordinate Plane Vocabulary

coordinate plane

X-AXIS

Y-AXIS

ORIGIN

QUADRANTS

LINE

POINT

ANGLE

SEGMENT

BEAM

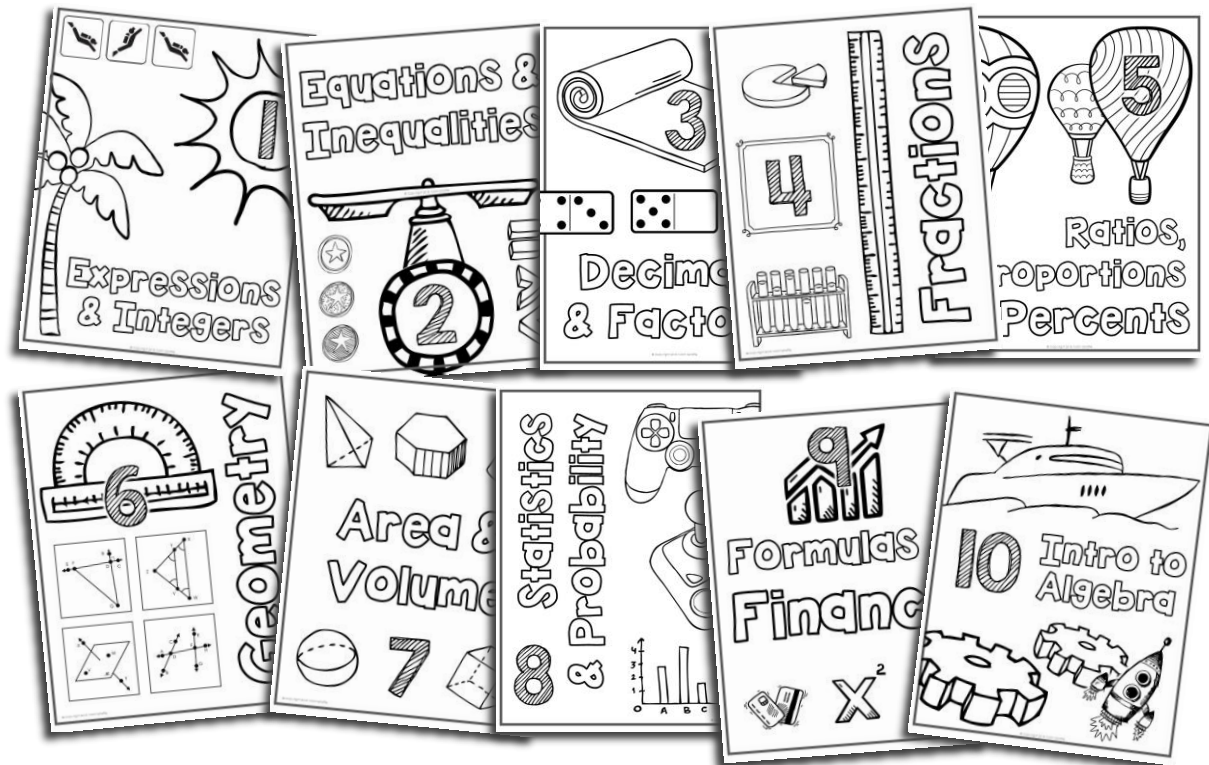
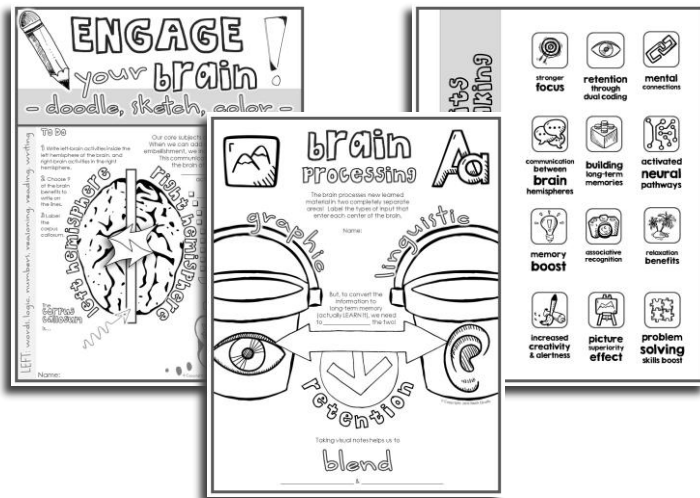
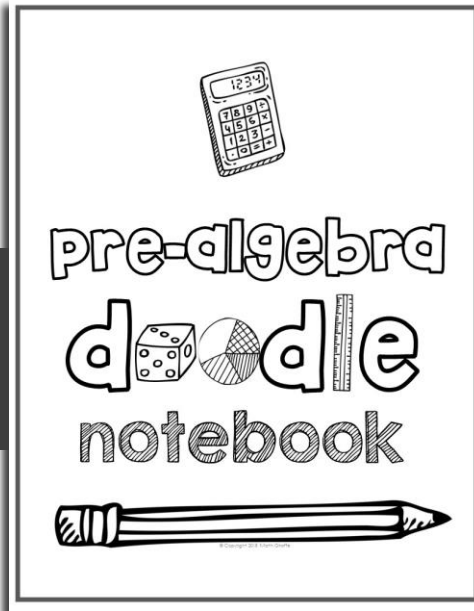
RAY

PLANE

SPACE

doodle notebook

What's Included?



Introductory Pages:
to model the method while
showing students WHY visual
note-taking engages the brain

Chapter Cover Pages
Just for fun & organization!
(Students can color if they want to)

doodle notebook

What's Included?

Special Systems of Equations

$2x + y = 2$
 $y = -2x$
REWRITE:
 $y = -2x + 2$
 $y = -2x$
The lines are **PARALLEL**.
They will never intersect so there are **NO SOLUTIONS**.

$x - y = 3$
 $y = x - 3$
REWRITE:
 $y = x - 3$
 $y = x - 3$
Both lines are the **SAME** line.
Every point on the line is a solution.
There are **INFINITELY MANY SOLUTIONS**.

Types of Solutions for a System of Linear Equations

1. **One Solution**: Two lines intersect at one point. Example: $(x=7, y=-4)$.

2. **No Solution**: Two parallel lines never intersect. Example: $(3=4 \text{ or } -4=4)$.

3. **Infinite Solutions**: Two overlapping lines. Example: $(y=4 \text{ or } 5=5)$.

PRINCIPAL INTEREST

The balance in a bank account grows over time. The principal is the amount of money you put in the bank.

ANNUAL PERCENTAGE RATE (APR)

QUARTERLY

MONTHLY

ANNUALLY

Systems of Equations

PROBLEM

$C + T = 8$
 $C + 2T = 11$

SUBSTITUTION

$C = 8 - T$
 $(8 - T) + 2T = 11$
 $8 - T + 2T = 11$
 $8 + T = 11$
 $T = 3$
 $C = 8 - 3 = 5$
 $C = 5, T = 3$

ROUNDING DECIMALS

7.992

7.8068

Look at the digit to the right of the place you're rounding to. If it's 5 or greater, round up. If it's less than 5, round down.

Box & Whisker Plot

Number of hours Calvin spent playing outside per week.

Winter: 2, 4, 6, 8, 10, 12, 14, 16

Summer: 2, 4, 6, 8, 10, 12, 14, 16

OUTLIER: 18

MEAN: 10

MEDIAN: 10

QUARTILE: 5, 15

evaluating expressions

$(ab + b) + 13 + 6$

10 + 13 + 6 = 29

coordinate plane

vocabulary

origin

axes

quadrants

points

inequalities

$x > 3$

$x < 5$

$x \geq 3$

$x \leq 5$

$x > 3$ and $x < 5$

Solving 1 STEP EQUATIONS

USE

$+$

$-$

\times

\div

THE GOAL

BUT HOW??

COMPOSITE numbers

PRIME numbers

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50

proportion

$\frac{5}{15} = \frac{10}{30}$

Cross multiply

$5 \times 30 = 15 \times 10$

congruency

sketch it

marking congruent parts

writing congruency statements

angles

segments

arcs

writing an equation

$ax + b = c$

Solve for x

$x = \frac{c - b}{a}$

SLOPE

$m = \frac{\text{rise}}{\text{run}}$

$m = \frac{y_2 - y_1}{x_2 - x_1}$

parallel lines have the same slope

perpendicular lines have slopes that are negative reciprocals

metric units of measure

length

capacity

mass

angles

Identify special pairs

acute

right

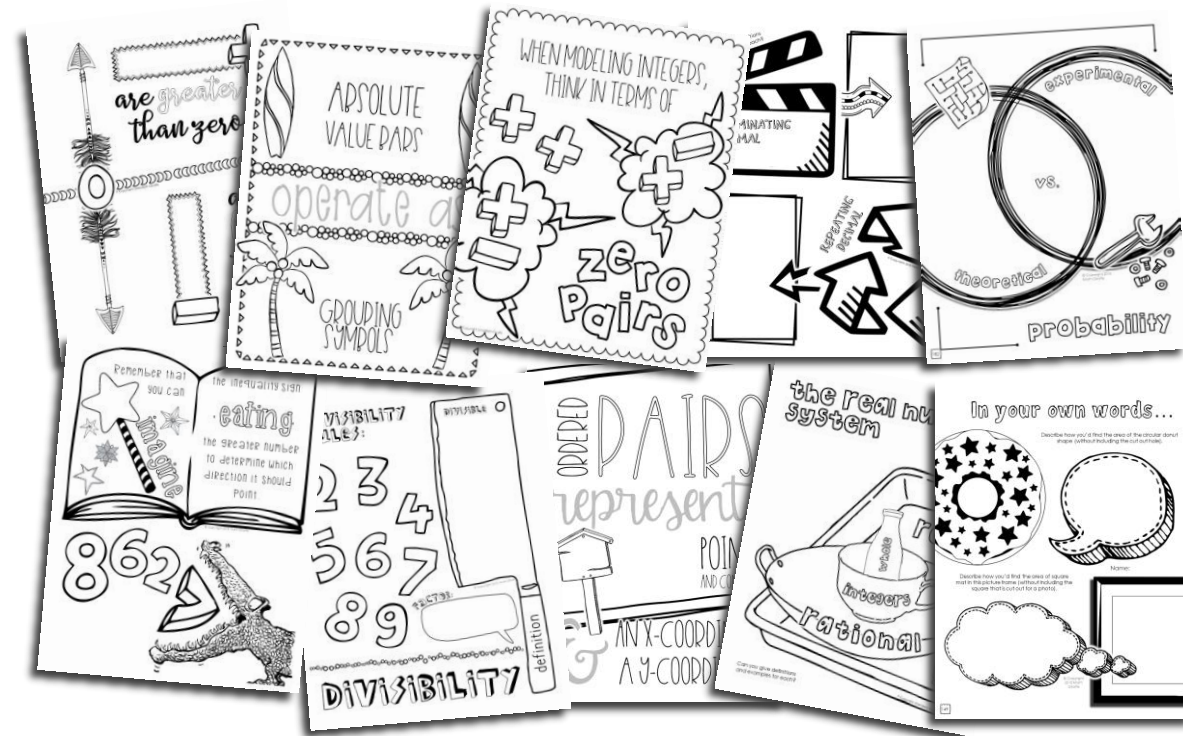
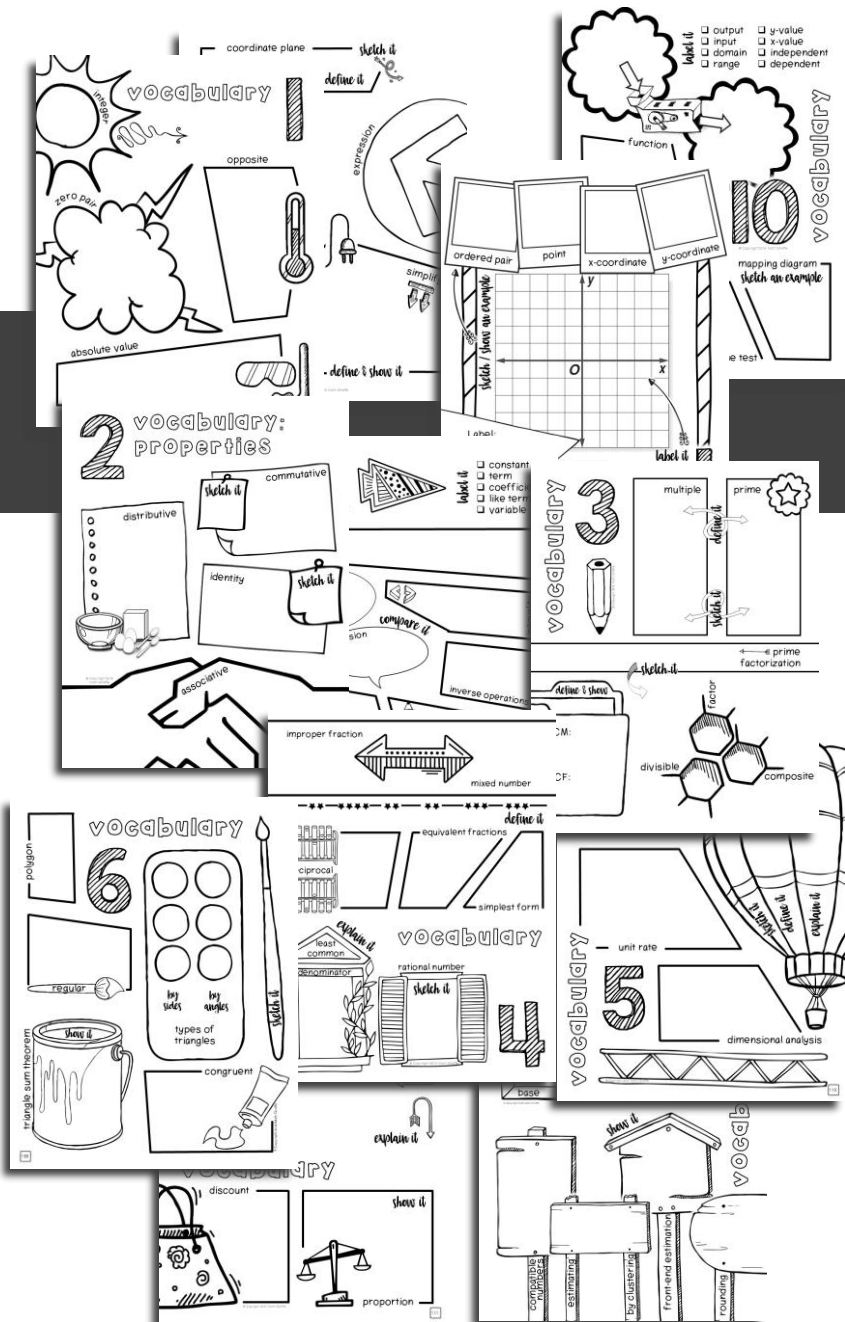
obtuse

straight

Visual, Interactive "Doodle Note" Lesson Pages for all the key ideas in middle school math / Pre-Algebra coursework

doodle notebook

What's Included?

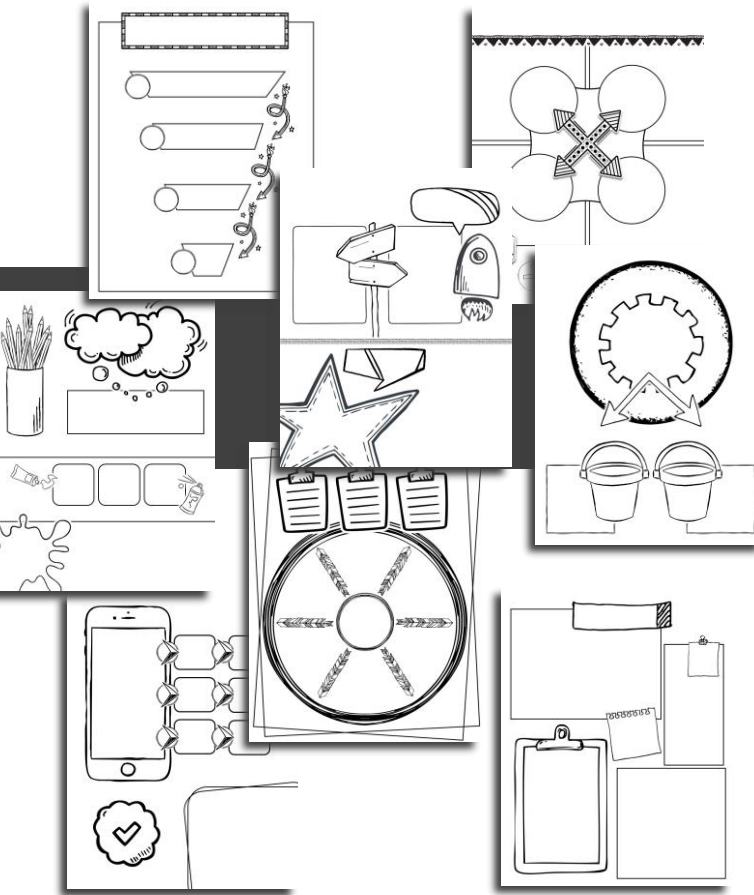


Vocabulary Reviews
doodle-friendly sheets for students to review key terms after each chapter (26 total pages of vocab review included)

BONUS coloring / fill-in pages
a few extras here and there for students to review key ideas

doodle notebook

What's Included?

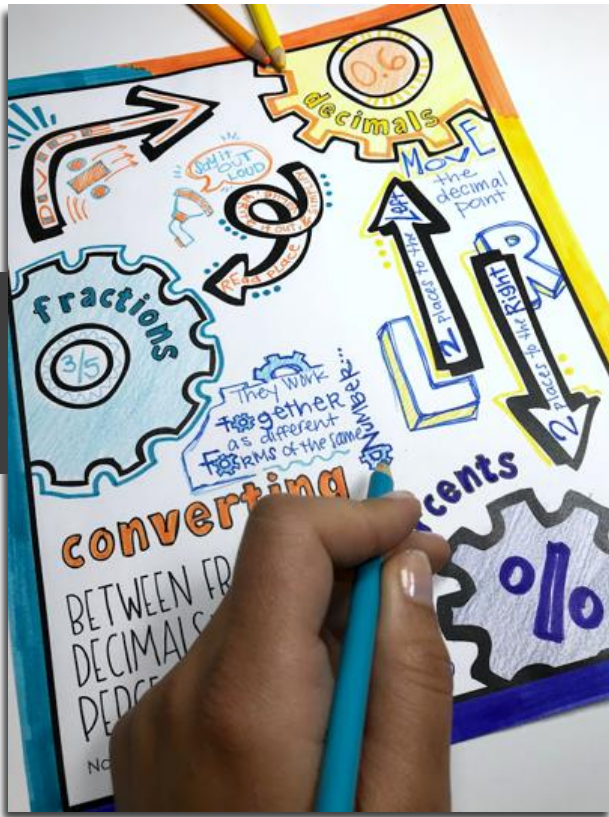


10 Blank Templates
for adding any extra lesson
topics you'd like students to
have included

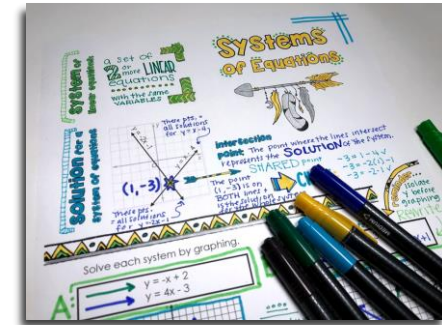
**This way everything will be in
one place instead of
additional notes being on
loose paper (and still with the
brain-based benefits of the
visual note format!)**

**Answer Keys & Photo Samples
for guided note-taking**

doodle notebook



What Topics Are Included?



doodle notebook contents

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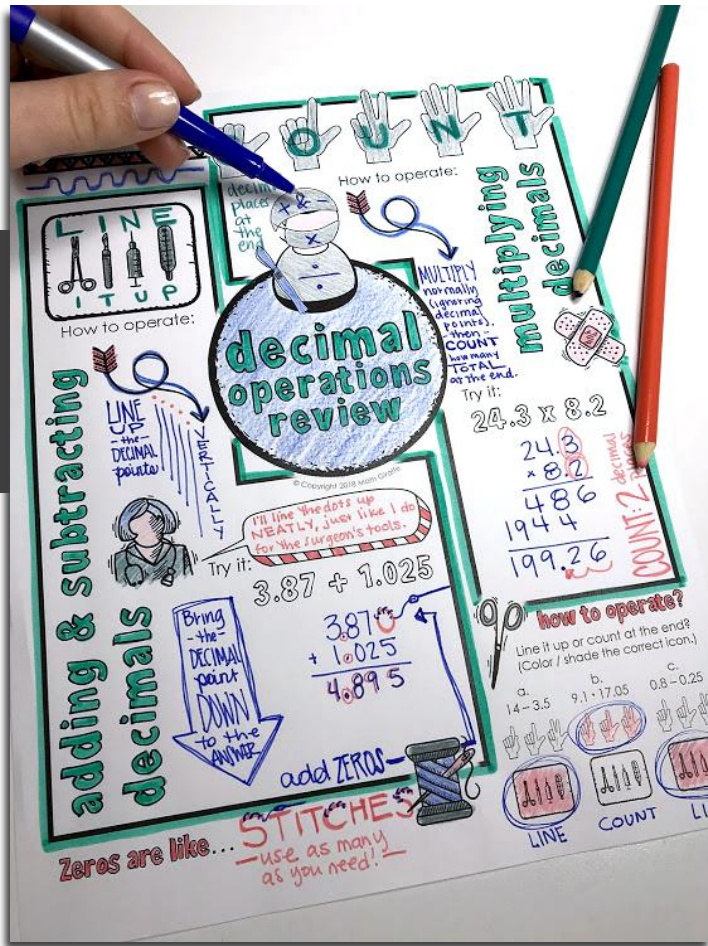
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This book includes 10 full chapters of notes to cover your middle school math lesson topics.

doodle notebook

What makes the “doodle note” method effective?

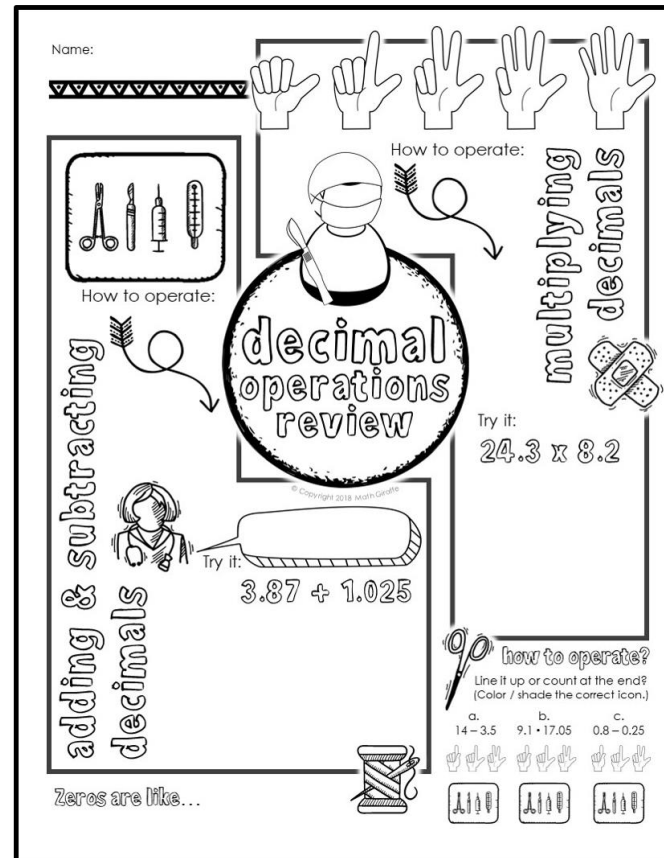


visual memory trigger



a blend of teacher input and plenty of space for student input

graphic analogy



visual memory trigger

interactive task



opportunities to color, doodle, embellish, and do hand-lettering

A unique blend of...

- ✓ visual memory triggers / graphic analogies
- ✓ interactive tasks
- ✓ student input



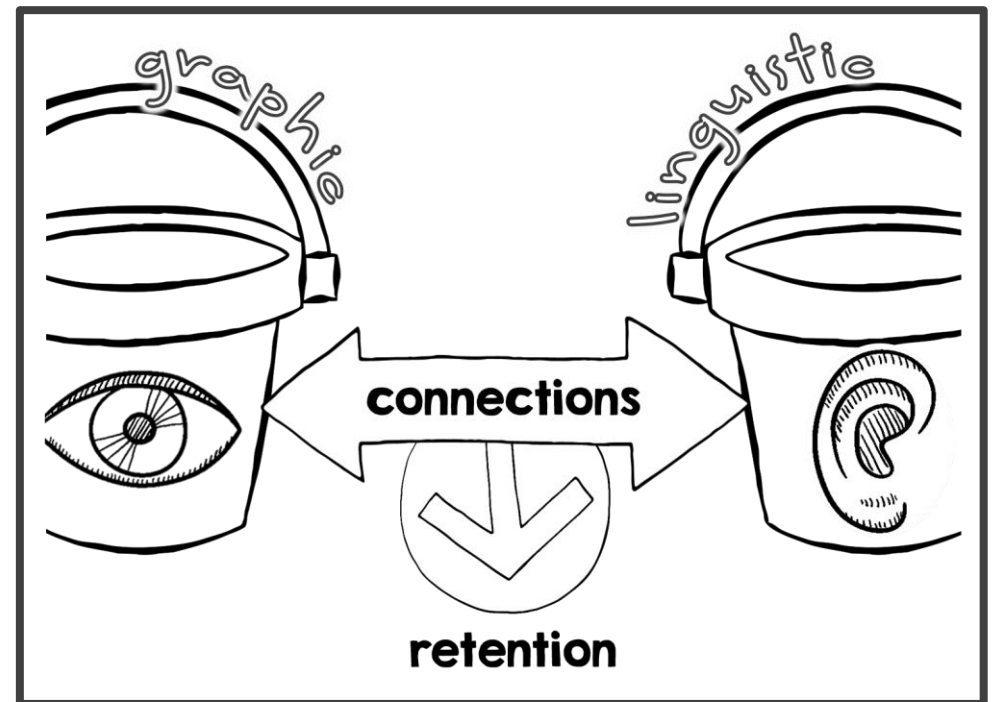
doodle notes

learning benefits of visual note-taking

The brain processes linguistic input (teacher voice, written text, words) in a completely different area from all graphic input. But when visual or graphic input is **BLENDED** with the words, the two regions of the brain connect.

The referential connections between the two zones allow the information to actually be stored and become long-term memory!

This is called Dual Coding Theory.



doodling
takes just enough

attention to keep the brain from daydreaming without allowing it to become distracted.



doodlenotes.org

It has been proven that students can retain more information when they connect the linguistic and visual centers of the brain.

Doodling while listening has also been proven to improve focus! Visual note methods have numerous benefits for student learning.

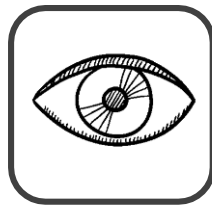


doodle notes

learning benefits of visual note-taking



stronger
focus



retention
through
dual coding



mental
connections



memory
boost



associative
recognition



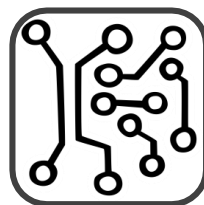
relaxation
benefits



communication
between
brain
hemispheres



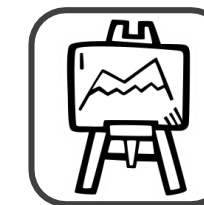
building
long-term
memories



activated
neural
pathways



increased
creativity
& alertness



picture
superiority
effect



problem
solving
skills boost



doodle notes®

what teachers are noticing

"I could not believe the **increase in engagement and understanding** my students demonstrated! WE love these!"

"This is my favorite math product! This truly is my favorite math product! :)"

"This works great for my students who can't just sit still while I'm lecturing and need to doodle. I've noticed **quiz and test grades have been going up** since doing doodle notes!"

"Perfect for students with Dyslexia, ADHD, or other learning disabilities."

"my students all begged to use these notes for the whole year! They even told each other to each pitch in \$2 so that they can help me purchase them!"

"My students absolutely love the doodle notes, and they feel like they **retain more information.**"

"My students and I are loving the doodle notes. They can't believe that I am telling them that they have to doodle. And they love watching me doodle too. Not only that but I have already seen a **major increase in their math scores.**"

"Excellent quality! My students LOVED these! in their quarter reviews, they all said these were one of their favorite activities!"

"I love your doodle note pages. They keep my students engaged as not staring off into space while I am trying to teach them lessons from the book. I have noticed too that most of my students are **retaining information and skills** taught because of these doodle notes! Thank you!"



doodle notes[®]

what teachers are noticing

“No notes left behind... Students value these reference pages enough to keep up with them!”

“Doodles DO IT FOR MY CLASSES>>>BEST RESULTS FOR NOTES!!!LOVE THEM!!!”

“My Pre Algebra class LOVED this! They keep asking for more and more and I love seeing them pull the notes out for reference when they get stuck!”

“I'm hooked on this concept of using doodling to increase the brain's ability to soak up details. It's been very successful in class and most of my students seemed to like how colorful they could be.”

“Keeps them extremely focused!”

“My students don't complain about taking notes when they are in a Doodle Notes format. Many of them will line all of their colors up on their desk, and they are ready to learn. Thank you for making these.”

“What a great resource to use with my students. It seemed like no matter what I had them write with their pencils it wasn't sticking...give them a doodle and some color-BAM! more kids are relating back to it. Thank you so much for this resource.”

“mildly (okay majorly) addicted to the doodle notes that math giraffe has produced”

“Thank you, my kids love to do the Doodle Notes and they refer back to them in their journal when they need it. To me that is the biggest compliment possible.”

“My 8th grade summer school who are mostly boys loved coloring the notes. I'm pleasantly surprised!”



doodle notes[®]

what teachers are noticing

“One of my students interrupted me to yell, “I finally get it!!!” He then went on to say that he wished I had started using them earlier in the year”

“I teach 6th grade and have bought all these products that are covered in this grade. I want to use these for various strategies. As intro to lesson, additional support, focus tool, review. Just so great.”

“I love teaching with Doodle Notes! My students are always actively engaged the entire time!”

“MY special education students love these. Color coding and decorating the notes gives them more time to interact with the notes without just reading them 10 times or extracting information. This makes it much more interesting for them, and my spatially-inclined students LOVE the chance to draw and doodle.”

“My students loved this! The coloring helped relax the students while they took notes.”

“The color coding helps them to make connections.”

“The best purchase I've made so far! You helped my students comprehend a very difficult concept. Wow! Thank you”

“Doodling helps my daughter's stress level during math lessons!”

“I just did this with my kids the first time and they LOVED it! I am also discovering that they are remembering the material much better than me just lecturing!”