High Tech - Low Tech Classrooms

Rewindable Learning & Interactive Notebooks

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Interactive Notebooks

* Organized
* Personalized
* Interactive

“It’s a way of keeping track of our notes and homework, and it makes life easier when it comes to a test.”
Organized

It's not just about organizing papers.

It's about organizing the learning process.
Elements of The Spiral

* Table of Contents
* Right Hand Page
* Left Hand Page
* Rule of the Page
* Rule of the Attachment
* Stamps/Stickers
<table>
<thead>
<tr>
<th>Date</th>
<th>Page Title</th>
<th>LHP</th>
<th>RHP</th>
<th>Page Title</th>
<th>LHP</th>
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</table>
**Discrete**

- Graph is not connected.
- Only those specific points are in the data set.
- Use when given domain.
- Used when counting factors or # of cars.

**Continuous**

- Graph is connected any value between dots.
- Used when not given the domain.
- Used with measurements like height, weight, etc.
Compound Inequalities

When two or more simple inequalities are combined into one statement by the words **AND** or **OR**, the result is called a *compound inequality*.

<table>
<thead>
<tr>
<th>WORDS</th>
<th>ALGEBRA</th>
<th>GRAPH</th>
</tr>
</thead>
<tbody>
<tr>
<td>All real numbers greater than 2 AND less than 6</td>
<td>$x &gt; 2$ AND $x &lt; 6$</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>All real numbers greater than or equal to 2 AND less than or equal to 6</td>
<td>$x \geq 2$ AND $x \leq 6$</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>All real numbers less than 2 OR greater than 6</td>
<td>$x &lt; 2$ OR $x &gt; 6$</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>All real numbers less than or equal to 2 OR greater than or equal to 6</td>
<td>$x \leq 2$ OR $x \geq 6$</td>
<td><img src="image" alt="Graph" /></td>
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</table>

**Intersections**

A water analyst recommends that the pH level of swimming pool water be between 7.2 and 7.6 (inclusive).

Write a compound inequality to show the pH levels that are within the recommended range. Graph the solutions.

Let $p = \text{pH of the pool}$.

Write the smaller number to the left. Put the variable in the center. Write the larger number to the right. Which signs are we using? What word in the problem gives you a hint whether it is "equal to"?
Do you see a pattern in your neighborhood?
On The Same Page

organizing and displaying data

A bad graph displays data with vertical or horizontal bars.
You can figure out many different things with graphs like points, lines, and row other things.
You can also use graphs to compare categories.

An example of a double bar graph:

Airline between two cities:

<table>
<thead>
<tr>
<th>Month</th>
<th>Airline A</th>
<th>Airline B</th>
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<tbody>
<tr>
<td>J</td>
<td>300</td>
<td>400</td>
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<td>A</td>
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</tbody>
</table>

Another example of a line graph:

Airline A and B

Notes

- Bar graphs display data with vertical or horizontal bars.
- Stem and leaf displays show the shape of a data set.

How many more games of 6-3-3-3-3 than C?

- Ex: 6-3-3-3-3 and 6-3-3-3-3

Line graph:

- When was the temperature the warmest?
- During what four-hour time period did the temperature increase the most?
- From 8:00 a.m. to noon.

Circle graphs:

- What two states in the world take up half of the circle?
- Answer: [State A, State B]
Can I really be this organized?

* Do what you can
* Notebook does not need to look exactly like this!
* Glue, tape, hand write
* Enlist student feedback, modify what you're doing
What if they ...

... run out of space on the page?
... are on the wrong page?
... forget their spiral?
... (gasp) lose it?
- Zach -
grade 8
Personalization

Alex L
7-1H
Math

“Not Duh”
10(2) - a
20 - a = 11

14. \( \frac{p}{7} + p \) for \( p = 14 \)

15. \( \frac{n}{5} + n \) for \( n = 20 \)

Similar Figures and Proportions

Similar figures have the same shape but not necessarily the same size.

The symbol \( \sim \) means "similar to."

Corresponding angles and corresponding sides of two or more polygons are in the same relative position.

Tell whether the triangles are similar.
Is this only doodling?
Color tells the brain: “pay attention!”

Creating visual images = Higher order thinking skills

Increase in visual learners in past 10 years
- Evan -
grade 6
Interactive?

AND THEN THE TEACHER SAID

YOU MAY TAKE NOTES
Interactive!
The ratio of the differences in y values to the difference in the x values.

\[ \Delta = \text{change} \]

Rate of change

\[ \frac{\Delta y}{\Delta x} \]

\[ \Delta \text{ Dep} \]

\[ \Delta \text{ indrp.} \]

What we mean when we say "slope".

Units matter!
“Rudderless”
Spirals are...

“handmade textbooks and organizational tools for mathematics.”

“personal lightweight textbooks that you make in your own words.”

“notebooks where everything is in one place and there aren’t any papers that are just stuffed in your backpack or locker.”
How do I get started?

* Spiral notebooks
* Tape or glue
* Scissors
* Storage bins

http://mathmagicians.vanessweb.com/2016/04/05/welcome-to-the-math-magicians/
Rewindable Lessons
or how students can maximize their learning
What is rewindable learning?
also known as “flipped lessons”
Flipped learning - flipped classroom

Jon Bergmann
Aaron Sams
2007
Getting Started ...

* Start small
* Simple concepts
Why did PlayPosit choose a dachshund as their logo?

A. Same reason as everybody else - their adorable dimensions. Correct!
B. Because their team lacks artistic design
Now that is just mean
C. Because their CEO is a dachshund
Close, but not quite
D. Because dachshund is impossible to spell
Nope, we're nicer than that

What animal were dachshunds supposed to chase after?

A. Fox
B. Badger
C. Squirrel

What is the dachshund's most important feature?

A. Nose
B. Legs
C. Paws
D. Courage
How did we do?

<table>
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<th>Q 01</th>
<th>Q 02</th>
<th>Q 03</th>
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at-a-glance results
Setting up the “HOY VUX” flip chart

What does the O stand for in ‘HOY’?
A. origin
B. zero
C. off the graph

What does the ‘V’ stand for in ‘VUX’?
A. vertical
B. vertigo
C. very hard to find

The line for x = 2 will be...
A. horizontal
x = 2 is a VUX rule, and all VUX lines must be vertical (for the V).
B. vertical
Yes, because the V in VUX stands for vertical line.
C. there is no line because this is not linear.
We are working on linear functions!
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**How did we do?**

at-a-glance results
Online!

There is no Internet connection
Your computer is offline.

Try:
- Checking the network cable or router
- Resetting the modem or router
- Reconnecting to Wi-Fi

Now what?
- Kobe -
grade 7
Questions? Observations?

http://mathmagicians.vanessweb.com/2016/04/05/welcome-to-the-math-magicians/