

Welcome, please get ready for the session

- ▶ You will need access to Internet on your device to actively participate in this session.
- ▶ If you are using mobile devices, please, download Nearpod APP now and wait for the code to join this session.
- ▶ If you are using computer or Chromebook, please go to nearpod.com and wait for the code to join the session.
- ▶ At the end of the session we will have a contest for a door prize.

Network: LTUGuest
Username: MAVcon2019
Password: Latrobe2019



Formative Assessment with Mobile Devices in Mathematics Classroom

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Workshop plan

- ▶ Student experience in the classroom with Nearpod in 1:1 settings
- ▶ Teacher experience with Nearpod - planning, teaching, reports.
- ▶ Alternative options - real-time data collection with one device (Plickers)
- ▶ More APPs for real-time assessment (brief overview):
 - ▶ Poll everywhere - live audience polling
 - ▶ Socrative - real-time questioning, result aggregation, and visualization
 - ▶ Kahoot - fun learning games made from a series of multiple choice questions.
 - ▶ QR codes - quick access to assessment tasks and activities
- ▶ Premium features of Nearpod
- ▶ Door prize raffle

Data and evidence

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- Learners engage in tasks, which generate data. These *data* become *evidence* when they are used in support of particular claims:
 - “A datum becomes evidence in some analytic problem when its relevance to one or more hypotheses being considered is established” (Schum, 1987 p. 16)
 - “...evidence is relevant on some hypothesis if it either increases or decreases the likeliness of the hypothesis” (ibid)
 - In other words, “Educational assessment is at heart an exercise in evidentiary reasoning.” (Mislevy & Riconscente, 2005 p. iv)

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Unpacking Formative Assessment

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	Where the learner is going	Where the learner is now	How to get the learner there
Teacher	Clarifying, sharing, and understanding learning intentions	Eliciting evidence of learning	Providing feedback that moves learners forward
Peer		Activating students as learning resources for one another	
Student		Activating students as owners of their own learning	

An inclusive definition

8

An assessment functions formatively:

“to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited.” (Black & Wiliam, 2009 p. 9)

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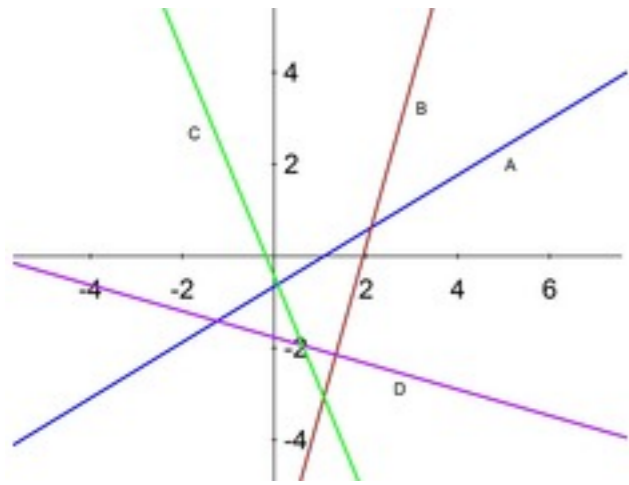
Nearpod - interactive presentations with assessment and immediate feedback

- ▶ Create a free teacher account with basic features. Full account requires paid subscription.
- ▶ The Nearpod platform enables teachers to use their mobile devices or computer to manage content on students' mobile devices or computers.
- ▶ It combines presentation, collaboration, and real-time assessment tools into one integrated solution.



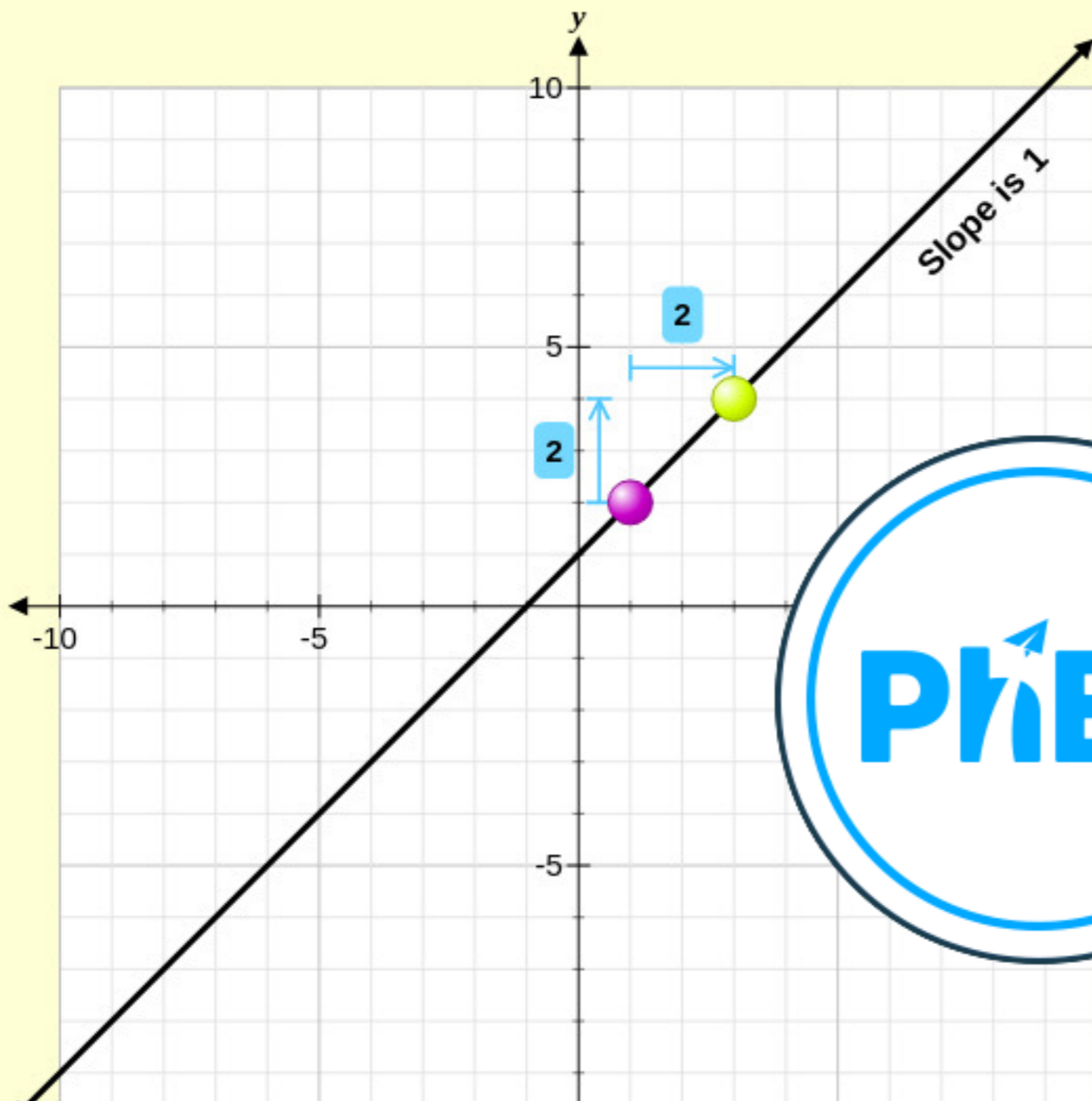
<http://www.nearpod.com/>

Poll



Which line has the smallest slope?

- A (blue)
- B (red)
- C (green)
- D (purple)



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

$$m = \frac{4 - 2}{3 - 1} = \frac{2}{2}$$

Slope

https://phet.colorado.edu/sims/html/graphing-lines/latest/graphing-lines_en.html?screens=1

(?, ?) =





Slope

line

What does slope measure about a line?

Collaborate!

Slope of a line

Slideshow

Representing Data Review

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Histograms

Histogram

A histogram is a type of bar graph that displays continuous data in ordered columns called intervals. Categories are of continuous measure such as time, inches, temperature, etc. Bars have the same width and are drawn next to each other with no gaps.

Advantages

- Visually strong
- Can compare to normal curve
- Usually vertical axis is a frequency count of items falling into each category.

Disadvantages

- Cannot read **exact values from histogram** because data is grouped into categories.
- More difficult to compare two data sets.
- Use only with continuous data (intervals).

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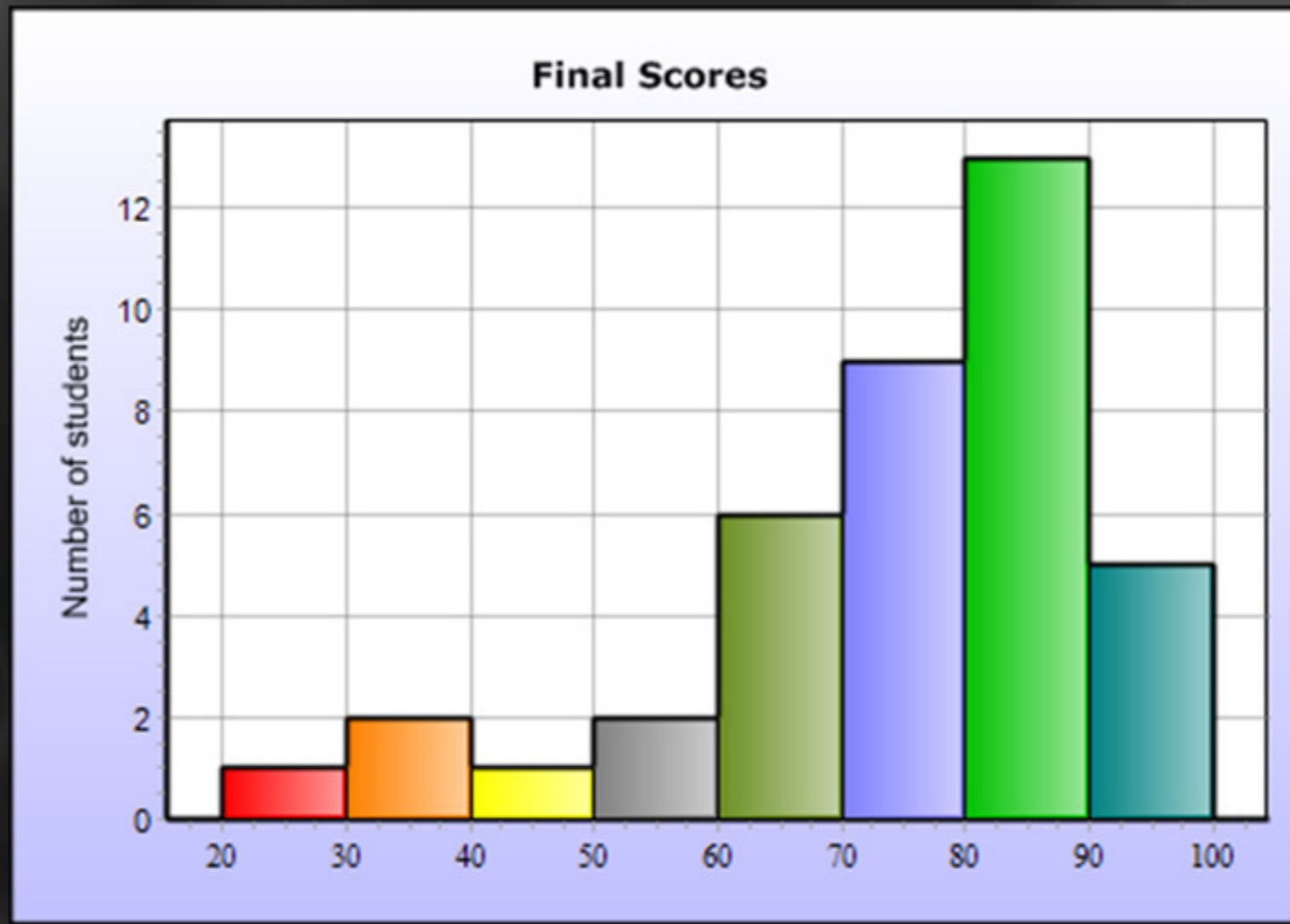
9

Histograms

In a histogram, data are grouped into intervals of EQUAL width. The number of data values in each interval is the frequency of the interval. To draw, begin by using a frequency chart (tally chart) and making a frequency distribution (intervals). Histogram typically contain 5-10 intervals.

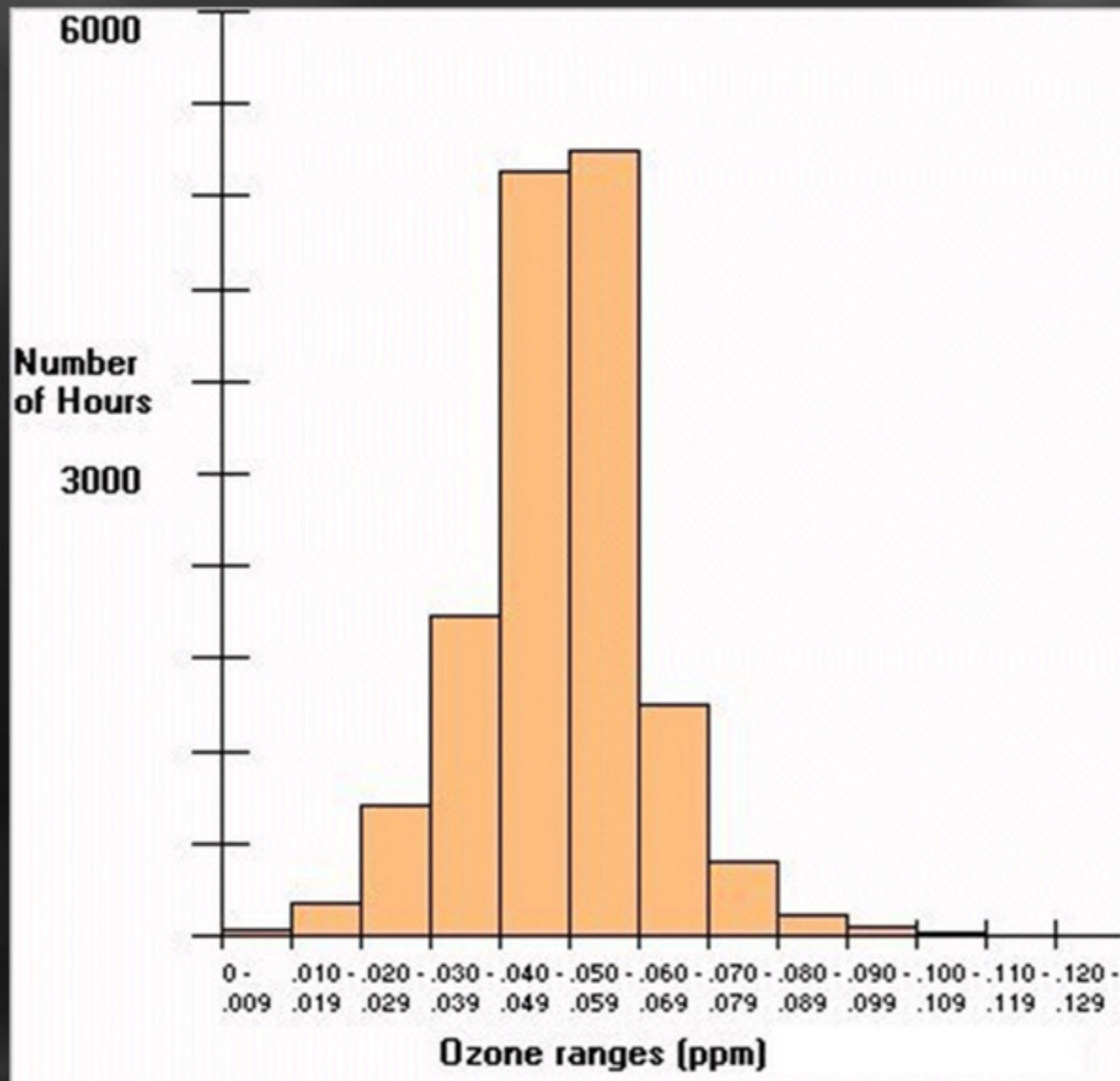
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Histogram



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Box and Whisker Plot

Box plot

A box plot is a concise graph showing the five point summary. Multiple box plots can be drawn side by side to compare more than one data set.

Advantages

- Shows 5-point summary and outliers
- Easily compares two or more data sets
- Handles extremely large data sets easily.

Disadvantages

- Not as visually appealing as other graphs
- Exact values other than min, max and median can not be determined from box plot.

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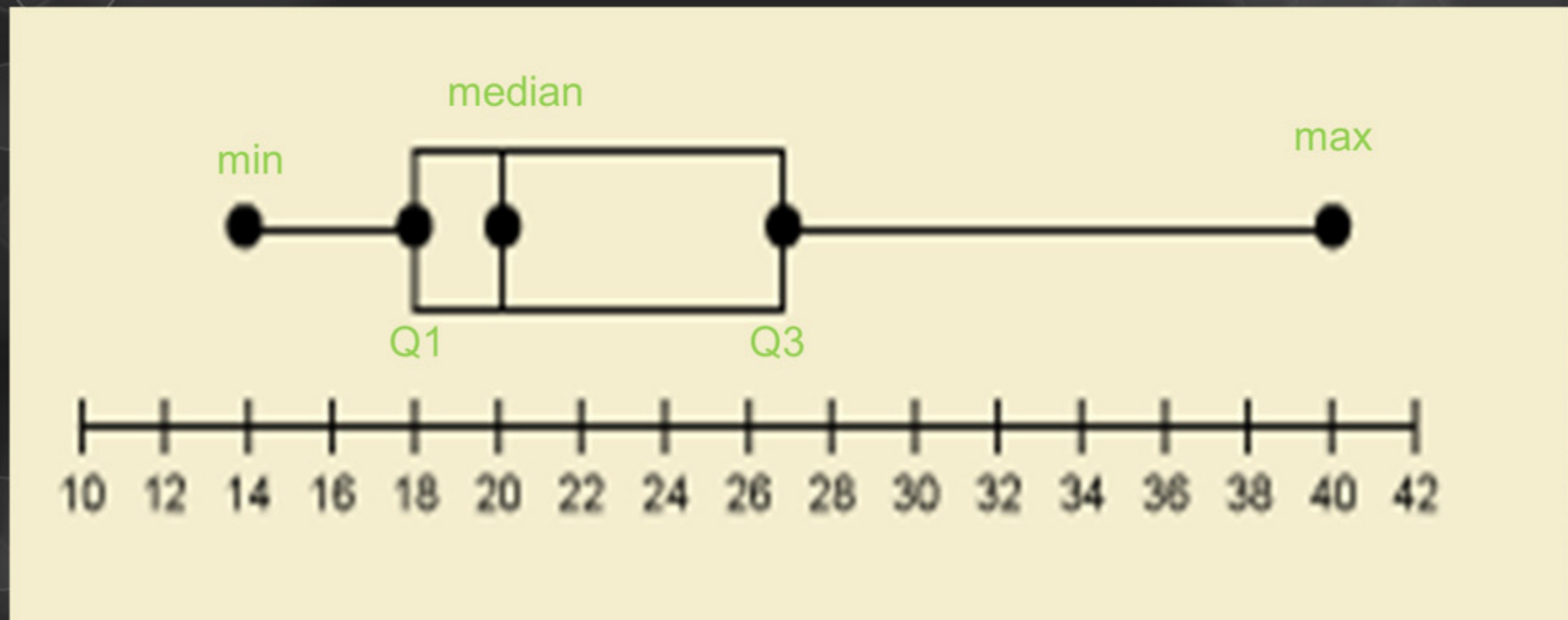
Steps

1. Order the data from least to greatest.
2. Find the minimum and maximum values.
3. Find the median.
4. Find the lower and upper quartiles (medians of the lower and upper half).
5. Plot these five numbers below a number line.
6. Draw the box, whiskers, and a line segment through the median.

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Box Plot

A box encloses the middle half of the data and whiskers extend to the minimum and maximum data values



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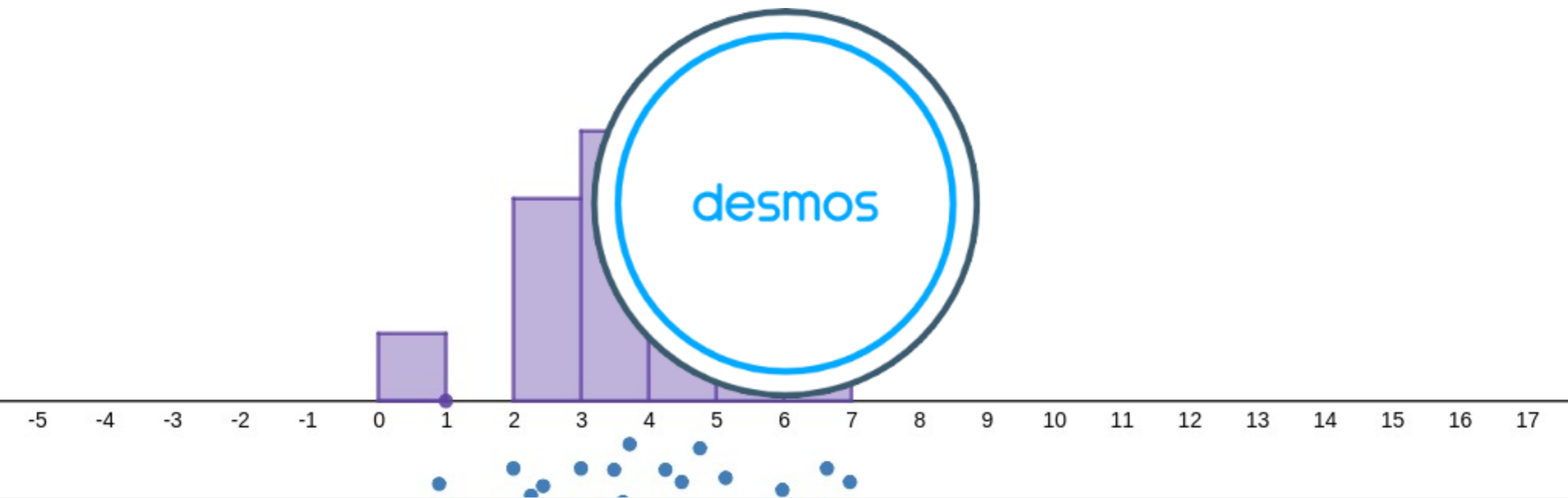
Box Plot



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Desmos Activity

Investigate the effect of individual data values, including outliers, on the mean and median.



<https://np1.nearpod.com/redirection/desmos?pickId=HistogramAndBoxAndWhiskerPlot>

Open Ended Question

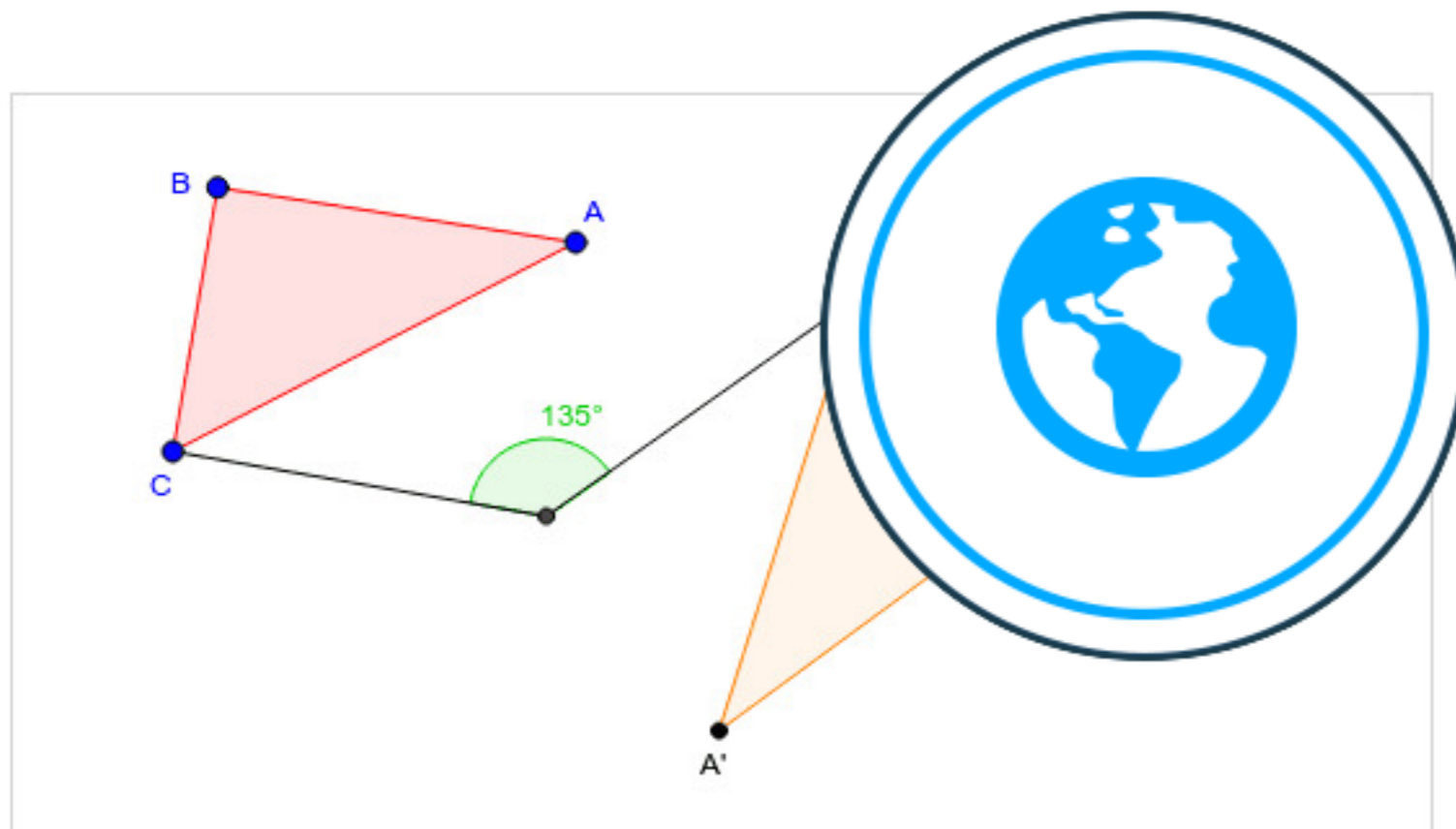
What is the effect of data variation on the shape of histogram and box and whiskers plot?

Rotations

Author: Mr Hardin

Topic: Rotation

Rotations



<https://www.geogebra.org/m/W2Z2nS8v>

Related Topics

Dilation

Discover Resources

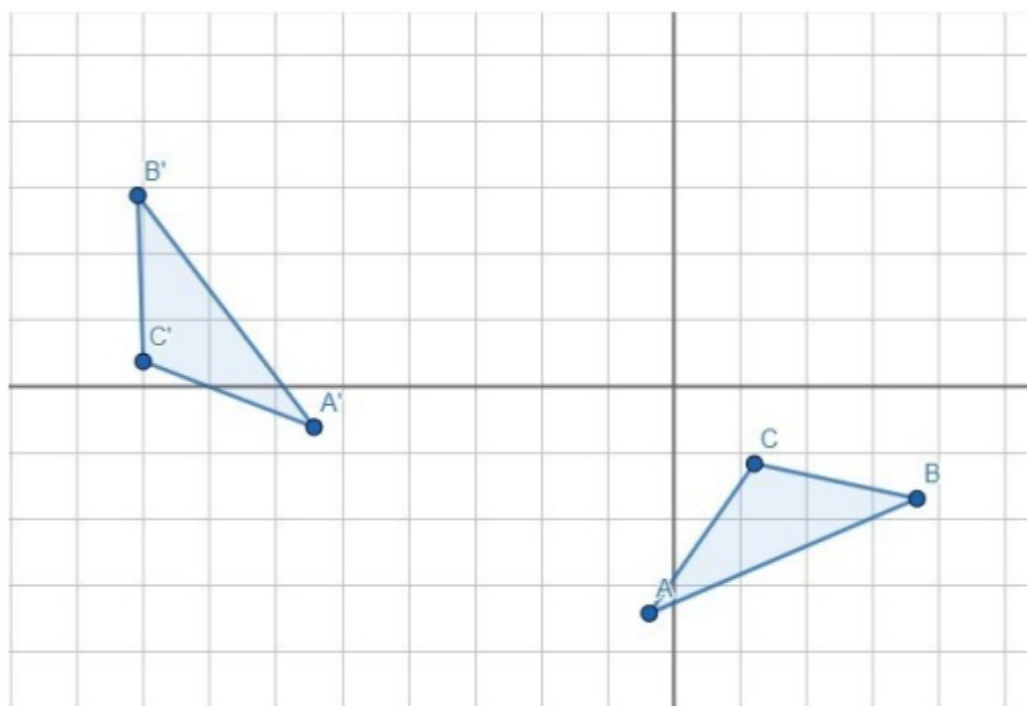
Difference of two squares

Discover Topics

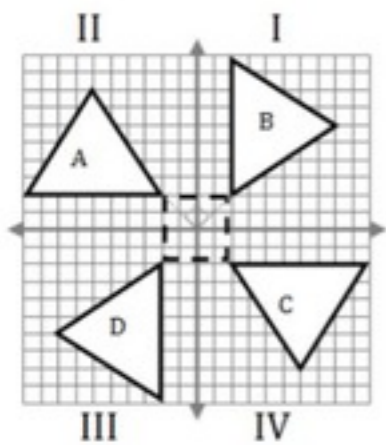
Difference and Slope

Draw It

Draw a sketch of how to find the center of rotation by construction.

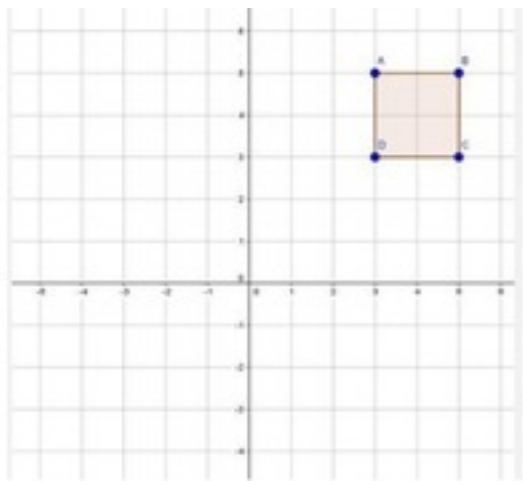


Quiz



Triangle A is rotated 90° clockwise with the origin as the center of rotation to create a new figure. Which rule describes this transformation?

- $(x,y) \rightarrow (y, -x)$
- $(x,y) \rightarrow (-y,x)$
- $(x,y) \rightarrow (-x,-y)$
- $(x,y) \rightarrow (x,y)$



If you were to rotate ABCD 180° about the origin, what would the coordinate of A' be?

- (-5, 5)
- (-5, 3)
- (-3, -5)
- (-3, 3)



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Plickers - real-time formative assessment with one device

- ▶ Collect real-time data with your own device.
- ▶ Use Plickers for quick checks for understanding - multiple-choice questions with up to 4 answer choices.
- ▶ Standard set of 40 Plicker cards are available free as PDF. A durable, matte-laminated version of standard set is also available for sale on amazon



<https://plickers.com/>

Class Roster

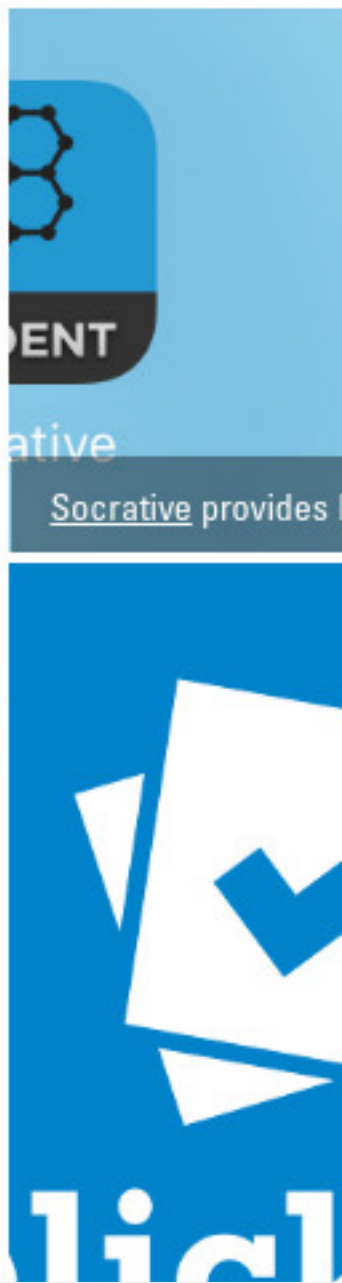
- | | | |
|-----------|------------|-------------|
| 1 Amin | 15 Ikrah | 29 Brodie |
| 2 Hajra | 16 Dora | 30 Kallum |
| 3 Shanae | 17 Arlene | 31 Miles |
| 4 Raheel | 18 Alys | 32 Corban |
| 5 Joely | 19 Lili | 33 Kaylan |
| 6 Kory | 20 Jaxson | 34 Aida |
| 7 Freddy | 21 Gerrard | 35 Dylon |
| 8 Emaan | 22 Romeo | 36 Nafeesa |
| 9 Earl | 23 Darcey | 37 Louis |
| 10 Elsie | 24 Romy | 38 Kadie |
| 11 Dionne | 25 Stephan | 39 Mccauley |
| 12 Grady | 26 Sana | 40 Skylah |
| 13 Ryan | 27 Darlene | |
| 14 Moesha | 28 Velma | |



More Free Assessment Apps



game of Kahoot! is typically initiated by...



<https://sway.office.com/0lwKD5h8Y9FD1Yb0?ref=Link&loc=mysways>

Poll Everywhere by scrolling or swiping, or by using the buttons below.



QR Codes - quick access to assessment tasks and activities

- ▶ Create your own QR codes to have students quickly access APPs, documents, online resources, etc.
- ▶ Use QR codes to provide hints, answers, and solutions on worksheets
- ▶ Use QR codes to differentiate assessment tasks and provide additional support.



<http://qrstuff.com/>

Q&A

- ▶ My contact: il2369@tc.columbia.edu
- ▶ Additional resources (presentation and handout, articles, quick start guides for the APPs) can be downloaded from





<https://kahoot.it/>

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Evaluation survey

Thursday, December 5, 2019

Friday, December 6, 2019



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<https://sway.office.com/pokqVgPRZAKp4A3T?ref=Link>

