Graphing on the Move

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The Plan...

* Motion & graphing in the standards
* High-tech & low-tech means of producing graphs
* Using graphs to tell a story

Disclaimer: I am going to use some motion sensors. I do not work for Pasco or Apple. They're just a resource (that I signed away my life for in order to share with you today).

CA & AZ State Standards

* California (8th Grade)
  * 8.1.f. - Interpret Graphs of Motion
  * 8.9.d. - Slope of a Linear Graphs
  * 8.9.e - Construct Graphs
* Arizona (8th Grade - Concept 2)
  * "Demonstrate velocity as rate of change of position over time"
  * "Create a graph devised from measurements..."

Common Core & Next Gen

* Common Core:
  * RST 3 - Follow multistep procedures
  * RST 7 - Integrate information expressed in words with a version expressed visually
* Next Gen (From May 2012 Draft):
  * MS.PS-FM.b - Communicate observations and information graphically and mathematically

Graphs Tell Stories

freedigitalphotos.net

Intro to Motion Graphs

1. Still @ Reference Point
2. Still away from reference point
3. Moving away slowly @ constant speed
4. Moving away quickly @ constant speed
5. Moving towards slowly @ constant speed
6. Moving towards quickly @ constant speed

Low-Tech

* "Number" Line!
* One student walks the line and counts out loud
* Others stand at different points on the line and note the "count" as the walker goes by
* Graph distance vs. time

Try It!

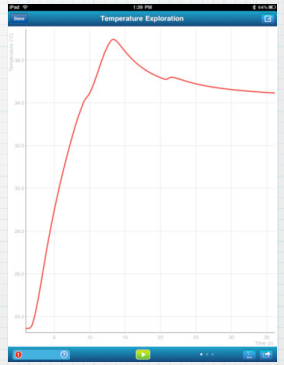
* Work in teams of 4-5
* Make a tape "number line" on floor
* Record Data
* Graph Data

High-Tech

* Motion sensors collect data
* Data is displayed in real-time on screen
* Fast, but finicky

Try It!

* Equipment for 8 groups:
  * Need: iPad, Motion Sensor & AirLink
  * AirLink allows sensor to talk to iPad
  * SparkVue app displays data
* Repeat your previous graph with sensors



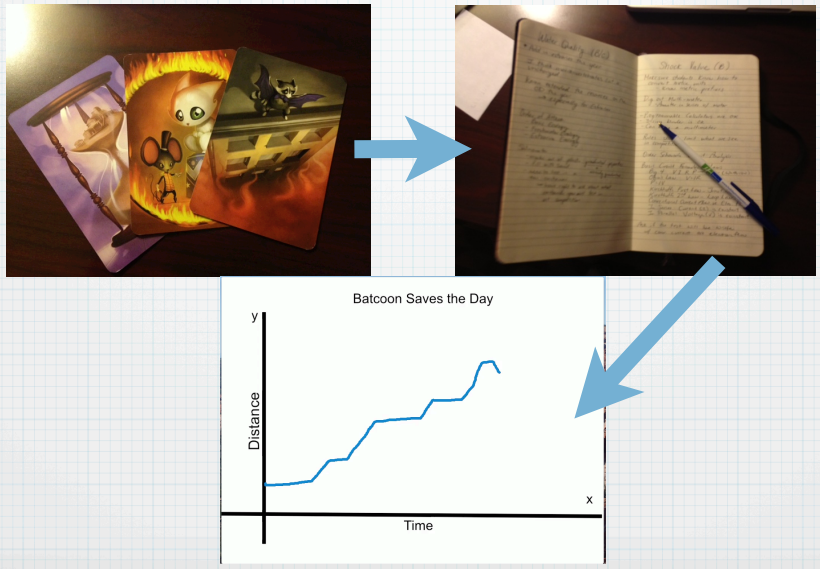
Low- vs. High-Tech?

Intro Takeaway

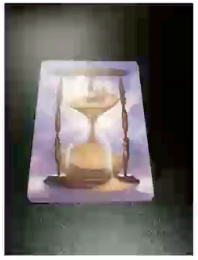
* X-Axis = Time (Independent Variable)
  * Time is continuous, so you have constant motion horizontally
* Y-Axis = Distance from Ref Pt (Dep. Var.)
  * Motion vertically describes movement toward and away from the reference point
* Slope = speed

"Once Upon a Graph"

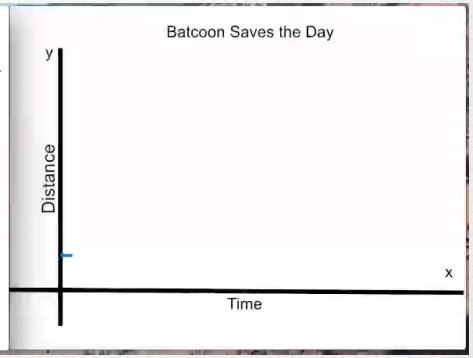
Process



One Student Sample



Mr.Cat goes to the fortune teller. He shows him a hourglass that has a crack. The fortune teller says that he sees the town. The sand that is in motion is flowing out of the crack. He tells Mr.Cat that the town is going to be in trouble in their near future. Mr.Cat is scared and runs away with the hourglass.



Questions?