



Secondary Math

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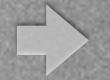


Agenda

Assessment for vs. as vs of learning

What we value

What/how we assess



First . . .

- There is assessment for learning.
- You are doing this for YOU to help students.
- You are listening to see what their needs are and ADAPTING your plans based on what you see.



First ...

- It certainly could impact your conversations with them, but it might well also impact what your next lesson is.



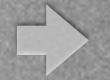
What are you listening for?

- It is not just about doing things correctly or incorrectly.
- It might be about:



What are you listening for?

- misconceptions,
- connections they might not see,
- good thinking,



It might be...

- how formulaic they are (and to get them away from it)
- how they handle “wrinkles”
- their risk taking stance



It might be...

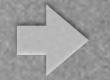
- whether your challenges are insufficient for them
- whether they need to work on communication or organization



There is also

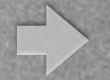
assessment as learning

- I think I said last time that for this to happen, kids have to self-assess; you can't keep telling them if they are right and wrong



That means

- They have to really understand what the goal of the learning activity is.
- (That means you need to really understand it too.)



It also means

- that you need to give feedback more than marks to make this happen



What implications?

- It might mean that you “mark” things twice— once to give feedback to which they are required to respond and once for the mark.



But when you get to

assessment of learning, there is lots to think about.

- There is the what.
- There is the when/how many tries.
- There is the issue of levels vs marks.



Let's talk about what

- Let's use linear relations as an example.



So what matters?

- To build an assessment, you have to decide what parts of the topic you think matter most.



For example

- What about recognizing linearity do you care about?



Maybe

- When I graph, it looks like a line.
- When I create a table of values, it looks like a constant difference.
- When I look at a situation, there is a constant rate.
- When I look at an equation, it is first power.



So what do I ask?

- I could give a table or graph or equation or situation and ask why it's linear.
- I could give partial info and ask kids to make it linear and why they do what they do.
- I could just ask kids to start from scratch.
- Should I do all of them or not?



But maybe...

- It's how the different ways you can use are related.



So I might ask

- What situation might be described by this table of values? This equation? This graph?
- Etc. OR



So I might ask

- Here is a table of values for the line $y = mx + b$ (maybe only use x values from 10 to 15).
- Do you or where do you see the m value in the table?
- Do you or where do you see the b value in the table?



What about line of best fit?

- Do you care that they get the right line? or
- Do you care that they could look at some choices and eliminate some? or
- Do you care that they can estimate one and how? Or
- Do you care that they know why and when it's iffy?



Create

- A different question for each scenario



What about line of best fit?

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- Do you care that they could look at some choices and eliminate some? or
- Do you care that they can estimate one and how? Or
- Do you care that they know why and when it's iffy?



Partial vs direct variation

- What do you want kids to know?
- Maybe that the b value is not 0 in partial.
- Maybe the number of quadrants the graph goes through.
- Maybe the idea of whether multiplying x by n also multiplies y by n .



Create

- A question for each scenario



Partial vs direct variation

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- Maybe that the b value is not 0 in partial.
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What about effect of initial value?

- Is it just how the table, graph and equation change?
- Is it about how the percent change affects things vs the actual change?



So I might ask

- Which graph will change the most?
- Changing $y = x + 3$ to $y = 6x + 3$ OR
- Changing $y = 100x + 3$ to $y = 105x + 3$



What about the standard form vs slope/ intercept form?

- Is it how to move from one to the other?
- Is it when or why each might be more useful?



What is slope?

- Is it just about rise/run?
- Is it that it doesn't matter which two points you pick and why?
- Is it that it is related to steepness in a picture, but only sort of?



Create

- Questions for each scenario



What is slope?

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What about graphing a line from info?

- Is it just how to do it given two points or given slope and a point? OR
- Is it why it's always two pieces of info and not 1 or 3 or more?



So far

- I have been focusing on what content I actually care that students have mastered.



I might

- relate this, too, to thinking about an appropriate skills/concept/application/thinking balance



Looking at the categories

- What would each category of question sound like?



Skills

- What is the slope of the line $2x + 3y = 4$?



Understanding

- Do you need to know the value of [] to decide on the slope of the line

$$2x + 3y + [] = 0.$$

- Why or why not?



Application

15. Clarise has \$50 in her piggy bank. She takes \$2.50 from it each week to buy a hot chocolate and a banana from the cafeteria. Create a table of values, a graph, and an equation to describe the amount of money in the piggy bank each week.



Thinking

- A teacher bought some books that cost \$4 and some books that cost \$7.
- Altogether she spent \$280.
- What do you know about how many of each she might have bought?
- What can't you be sure of?



What would be your balance for

- Knowledge/ understanding /application/
thinking?
- Why?



What kind of
performance
assessment?



Choosing a Car

Atul is buying a new car. He is deciding between a four-cylinder car and a hybrid crossover car. He wants to choose the car with the better fuel economy.

The four-cylinder car holds 75 L and uses 14 L for every 100 km travelled.

The fuel consumption for the hybrid car is given by $y = 80 - 0.20x$, where y is the amount of fuel in the tank after x kilometres have been driven.



Then you ask

- Which car would you buy and why?
- Use as many concepts about linear relations as you can when you explain your decision.



Look at this summative

- What is your reaction?



My reaction

Page 1-

- Learning goal #1-
- What they call Level 4, I would call Level 3.

My level 4 would involve relating the various forms and being comfortable using all those forms in a broad variety of situations.



My reaction

Page 1-

- Learning goal #2-
- Is their level 4 really level 4
- Is what they listed really about that goal?



My reaction

Page 1 -

- Learning goal #3-
- Is this a critical learning goal?
- Are learning goals 1 and 2 enough? Are the right things included on them based on our earlier discussion?



Page 2

- Only skill



Page 3

- Questions 7 and 8– should we tell them it's linear?
- Question 8 bugs me. Should the kid have to assume it's linear.
- Question 9– finally understanding



Page 4

- Pretty much skill



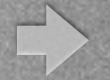
Pages 5 -7

- Pretty much skill



Page 9

- Understanding/application



So...

- Is there thinking? Shouldn't there be?
- Is there a good balance of skill/concept/application/thinking?
- Is it a reasonable length or is it overkill?
- Is there any opportunity for kids to “lead” the discussion?



Can you

- Improve this?



The when/how often

- Suppose we give a summative for linear relations on Nov 29 and a kid doesn't do great.
- Do you encourage him/her to do it again in December or not?
- If you do, is there a penalty for the first low mark?



The scheme

- Observation/conversation/product



As we are watching

- What are we looking for?
- How do we balance what we see with “product”?
- What is “product”?



I think

- What we are listening for and looking for in terms of content ties directly to what I did when deciding what the important ideas were in consolidating a lesson, but...



What about numbers/ levels?

- Can there be a 1% difference in student performance if the performance is not about smaller issues?



My challenge to you

- Can you make a list of what you think is **REALLY** important before you make up a summative?
- Can you ask questions that focus less on skill and more on understanding?
- Can you use less paper product?



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