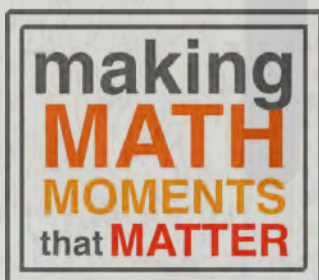
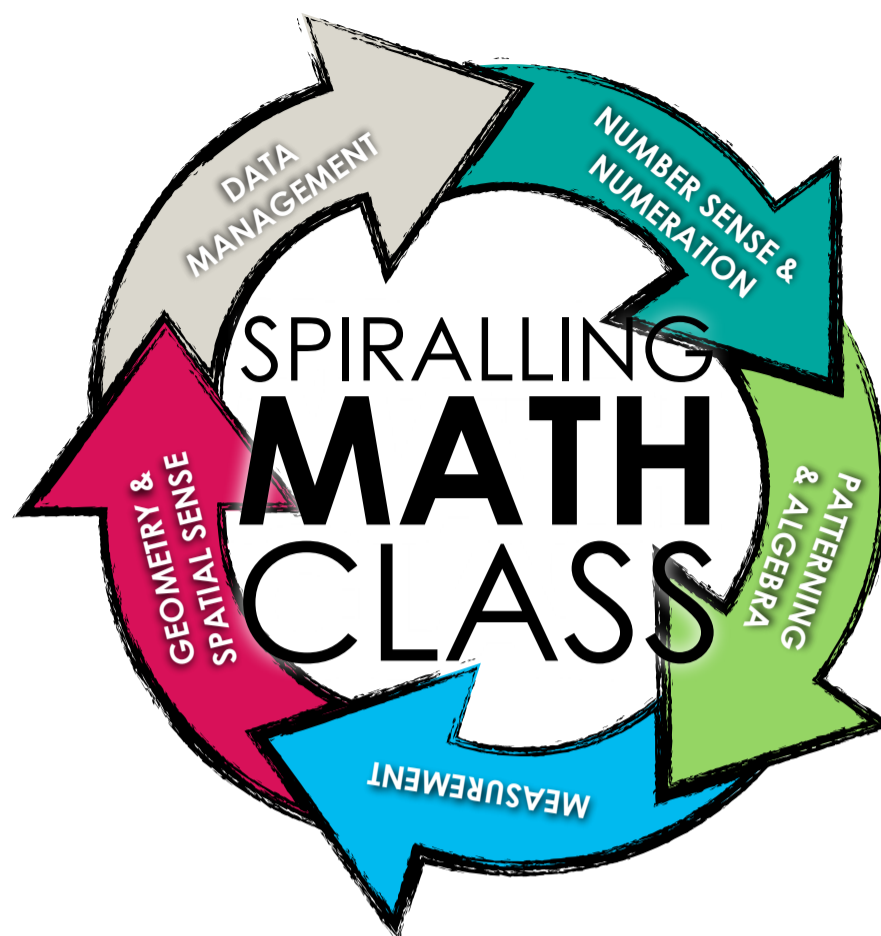


SPIRALLING MATH CLASS

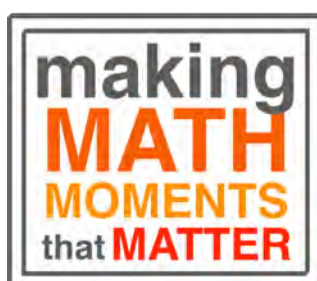
6 STEPS TO SPIRALLING YOUR MATH CLASS





In This Guide, We'll Learn:

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Since you've made it to part 2 in this series, that likely means that you're interested in exploring this approach further and getting started. Awesome!

While many teachers have very different perspectives when it comes to getting started – from dipping your toes to diving in head first – I'd like to propose some steps that will help guide you along the way.

Note: Most of the images and buttons below are clickable, so you can check out these resources in real time. (If the image is not clickable, it means the resource is no longer live.)

Spiralling Step #1 – Know What You Need To Teach

In other words, know your curriculum. If you are brand new to teaching a grade or course, trying to spiral for the first time will be challenging. That said, I'm not suggesting you don't attempt spiralling, but rather be aware that you will have to do some serious digging into the expectations or standards you will be teaching in order to plan and deliver your spiralled curriculum with confidence.




In reality, the work you need to do upfront to learn the curriculum should be done by every teacher regardless of how you intend to structure your long range plan. Unfortunately, teaching math in blocked units as they are in most textbooks can unintentionally make it possible for us to learn new curriculum one unit at a time. When faced with teaching a new grade or new courses, sometimes we can feel so overwhelmed that we tend to plan our year in small blocks or chunks which is not ideal for student learning.



Spiralling Step #2 – Assess By Learning Goal or Standards

When I attempted spiralling my MFM1P Grade 9 Applied math course for the first time, it was after I had been assessing students by **learning goal and success criteria** or as some in the united states might call it: standards based grading (SBG). I personally believe that by assessing in this manner, it forced me to really know and understand the curriculum I was teaching. Not only does this step serve as a way to ensure that you can check step #1 off the list, but this has other benefits for your classroom beyond the spiralling of concepts. Assessing by learning goal is a great way to help identify where students are strong and where they need more support so you can offer specific and timely feedback.

By monitoring how students are doing based on the learning goals you have created for your course, this can also help you determine how frequently to come back to concepts based on student understanding. In contrast, assessing a mark on a unit test alone is much less helpful when it comes to trying to determine what concepts we need to spiral back to and can often lead us to attempting to re-teach the entire unit – wasting valuable class time – rather than focusing on the specific topics where students are struggling.

Learning Log						
Sample Student		You've earned 3 badges!				
Current Average	Not Shown	You're a Triangle!				
Next Learning Goal to Re-Address:		#3 - 1.2 - I can solve problems involving the volumes of rectangular and triangular prisms. Current Mark: 68% Current Level: 2		Attempt to perform learning goal again to improve to level 3/4.		It might be worth while to show your understanding first vs. rushing to try to use a formula. Try a similar problem and resubmit.
Note From Mr. Pearce:						
LG #	Learning Goal	Score	Level	★	Next Step or Mastery Badge	Teacher Feedback
2	1.1 - I can find the area and perimeter of simple shapes like rectangles, circles, triangles, and trapezoids.	95	4	★★★★★		Awesome - just careful of your organization as indicated on your work.
3	1.2 - I can solve problems involving the volumes of rectangular and triangular prisms.	68	2	★★★	Attempt to perform learning goal again to improve to level 3/4.	It might be worth while to show your understanding first vs. rushing to try to use a formula. Try a similar problem and resubmit.
4	1.3 - I can solve problems involving the volume of cylindrical prisms.	100	4	★★★★★		Awesome work and full, complete, clear solution!
5	1.4 - I can solve problems involving the volumes of rectangular pyramids, triangular pyramids, and cones.	70	3	★★★	SUBMIT A TASK TO IMPROVE	Good attempt. Be sure to upload your owkr and don't forget to divide by 3 for pyramids/cones!

LEARN MORE

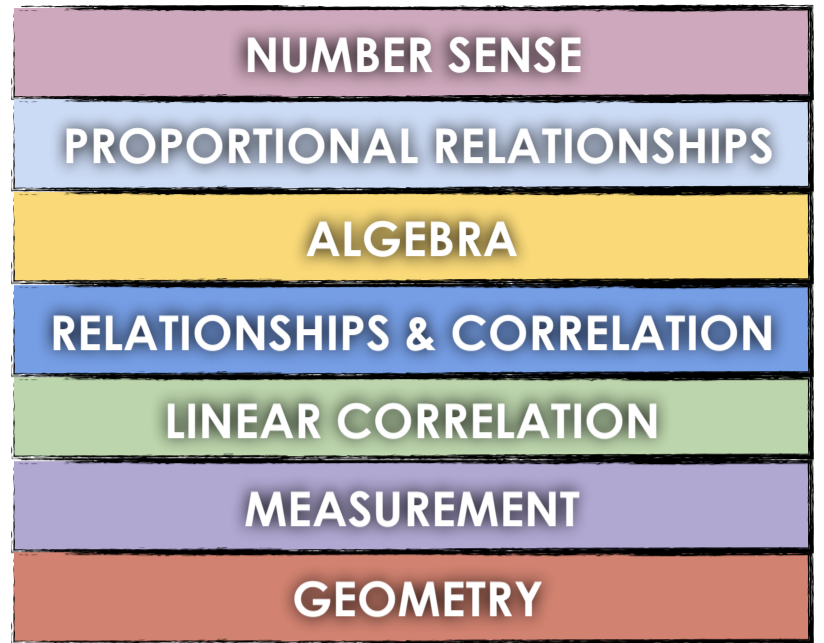
Spiralling Step #3 – Create Topics, Strands or Big Ideas

I don't care what you call them. Some might like calling them "topics" or "big ideas", while others might have their own creative name for them. Regardless of what you want to call them, you definitely want to look at your curriculum, the learning goals you've created and start organizing them. The Ontario Curriculum conveniently organizes our expectations into strands, so that is where I began my first time through spiralling grade 9 applied. I also decided to keep the name "strands" although I had subdivided them into smaller groups.

Now that might sound confusing, especially if you're not from Ontario like I am, so let's have a close look.

Here's a glimpse of the **Grade 9 Applied Spiralled Course Google Sheet** I was using to organize my course, which I will share in the resources under this video. Luckily for me, Jon Orr was also interested in trying to spiral his grade 9 applied course at the same time which made the process so much easier.

While we were collaborating and helping each other think through how we might teach our courses, we would often go in a different order based on our own student learning needs, but we would often times be using many of the same tasks and lessons.



MFM1P Grade 9 Applied Course Calendar										
School Day	Strand	LG #	Learning Goal	Topic	Notes / Reflection	Minds On	Minds On Links/Resources	Inquiry/Connections	Inquiry/Connections Links/Resources	Cons
1	Number Sense	1	I can find area, perimeter and can chunk multiplication into friendly numbers using area / array / visual models.	First Day Introduction & Procedures + Real world arrays - Perimeter and Area		We didn't get far today with the iPads. Just started the "Packing Mushroom" Area and Perimeter problem. Will continue from there tomorrow.	You Can Learn Anything [VIDEO]		Go to your Individual Skill Evidence Record by going to kylep.ca/YOURSTUD	
2	Number Sense	1	I can find the area and perimeter of simple shapes like rectangles, circles, triangles, and trapezoids.	Continue Area & Perimeter With Arrays, then we will look at Multiplying by Chunking.		Students worked on the whiteboard finding the perimeter and area of a contextual problem (Egg visual model) and shared out.	Task Template	We finished the real world area and perimeter (visual array models) problems.	Diagnostic Assessment	Stude by ch file ar asses
3	Measurement	2	I can find the area and perimeter of simple shapes like rectangles, circles, triangles, and trapezoids.	Area of Circles		Started class by watching a video about learning math and how the brain works (6 minutes). Minds On: The "Next Step" chunking problem from your Skill Evidence Record. Students took a photo of it and submitted through the digital dropbox.	Blank Task Template File	Inquiry - We did the "COOKIE CUTTER" problem and that brought us to the end of class. We are at the last step where we will determine how many cookies we could make with leftover dough (start of class tomorrow).		did not
4	Relationships	3	Create a scatter plot, label and scale the x- and y- axis, describe the meaning of points / coordinates, and make predictions using a line / curve of best fit.	Scatter Plots, Classifying, Predictions		We didn't look at the end of Cookie Cutter. Students did the area and perimeter of rectangle, circle and only perimeter of a triangle (given triangle didn't have height given). NO TRAPEZOID. Did Candle Burning task.	Formative Assessment - Area & Perimeter of Simple Shapes			
5	Proportional Relationships	4	Find equivalent fractions; use equivalent fractions to convert decimals, fractions, and percents; solve proportions using tables/graphs.	Working with equivalent fractions, decimals, percents and introducing rate / Unit Rate.		BABY BEATS TASK - Only made it to find out how many beats per minute and we "Watched" our answer. We were off by a couple beats because we thought maybe the baby's heart beat wasn't consistent OR maybe because we rounded. Continued next day (after assessment)	Baby Beats Template	We found how many beats per minute using EQUIVALENT FRACTIONS. Tristan determined that we could find the "multiplier" by dividing the two denominators. BRAVO!		did not
6	ASSESSMENT DAY	5	ASSESSMENT - Area Models (Chunking Multiplication), Area & Perimeter of Circle & Triangle, Creating a Scatter Plot - Classifying and Making Predictions	ASSESSMENT DAY		Had to cut students off at 9am because a group of VPs came in to observe. We moved on to the remainder of Baby Beats	ASSESSMENT	Continued Baby Beats by Discussing going from different equivalent fractions by finding the "multiplier" using opposite operations. Talked about UNIT RATE, DECIMAL, PERCENT.	Baby Beats Template	did not
7	WRAP UP DAY	N/A	N/A	Finish Assessment & Wrap-Up Baby Beats		Students took until about 8:50 am to finish both the assessment and baby beats. We took up the assessment using Logan's work.		Fuel Consumption task - students worked on the first page of this task independently.	Fuel Consumption	We cr ratio/ any v. 149 x
8	Linear Relation	6	I can find patterns, create tables, graphs and equations that represent them.	Patterning - introducing patterns that are proportional and making a connection that the relationship is linear.		Finish up Fuel Consumption Task, then introduced the beginning of the Patterning Toothpick Task		Finished Fuel Consumption Task. Made connections to proportional relationship.	Fuel Consumption	Began made finish
9	Linear Relation	6	I can find patterns, create tables, graphs and equations that represent them.	MR. PEARCE WAS ABSENT TODAY - WILL CONTINUE PATTERNING		Students were supposed to do all the patterning tasks, but it appears that a few of the practice tasks were not completed.	Number of Toothpicks vs. Figure Number [VIDEO]	Students were supposed to		
10	Assessment	7	ASSESSMENT - Area & Perimeter of Circle & Triangle, Working with Equivalent Fractions, Patterning and Scatter Plots.	ASSESSMENT DAY			Assessment #2			
11	Measurement	8	I can apply the visual and algebraic representation of Pythagorean Theorem to find a side length of a right angle triangle.	Introducing Pythagorean Theorem by using the Taco Cart Task.		This task was probably too advanced to introduce the topic. Consider using it in the 2nd or 3rd spiral in the future.		Taco Cart, then show the visualization of the pythagorean theorem and how it connects to algebraic (animations)	Taco Cart Task Template	Never distar begin
12	Measurement	8	I can apply the visual and algebraic representation of Pythagorean Theorem to find a side length of a right angle triangle.	We consolidated the Taco Cart, then went to the whiteboards and did 2 pythagorean theorem practice problems with a focus on the visual representation. Introduced the algebraic representation when we found the diagonal length of the classroom and checked our answers with a string we cut		Students are grasping the concept, but still need some practice with the algebraic representation.		DIAGONAL OF THE CLASSROOM - Students estimated the length/width of our classroom using imperial measurement (floor tiles were 1ft x 1ft). We ended up finding the class was 31ft x 25ft and they estimated what the diagonal should be. They then estimated the diagonal with a string and compared it to their estimate.		Stude quest Temp

ACCESS THE PLANNING SHEET

On the other hand, maybe you prefer planning with physical paper like my colleague **Jana LePage Kljajic** who prints out the curriculum and cuts them up into individual expectations. Then, after grouping them, she glues them to colour paper to help her see the big picture.



Regardless of how you want to do it, I'd recommend coming up with a plan to organize your topics in a way you think would be easiest for your own personal organizational style.

Spiralling Step #4 – Plan Your Cycles, Spirals or Chunks

After you organize your topics, strands or big ideas, you're going to want to think about how many times you'll come back to these concepts. Again, naming is not really important. **Alex Overwijk**, **Mary Bourassa** and many others like to call them "**cycles**", while I often refer to them as "spirals". Heck, you might decide you want to keep all your colleagues on staff confused for a cheap laugh and call them "units".

By planning out your spirals including how long each one will be and how many spirals you'd like to have in your course, you will ultimately be planning out a long range plan for your math class. It should be noted that you don't need each spiral to be the same length of time and you definitely don't need to commit the same number of days to each topic. This is really up to you based on what you anticipate and, will need to change to suit the needs of your future students.

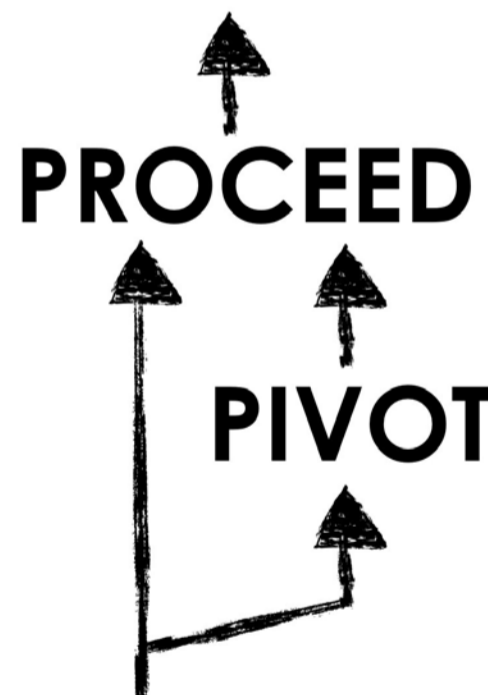


Spiralling Step #5 – Be Comfortable Changing Your Plan

That last line from step 4 is really important. If you're planning out your spiralled math course before the class has even begun, you haven't even met your students yet. The topics you anticipate students breezing through and some of the topics you anticipate students will struggle through might not play out as planned.

*"Expect to be confronted with making the decision between **proceeding as planned** or **pivoting your plan** based on the needs of your students."*

 [CLICK TO TWEET](#)



Expect to be confronted with making the decision between **proceeding as planned** or **pivoting your plan** based on the needs of your students. This means you should prepare yourself for the highly likely chance that you'll need to modify your spirals to suit the needs of the learners in front of you.

This might sound scary at first, but it really does help you dedicate the limited class time you have with your students to the concepts students need to work on the most.

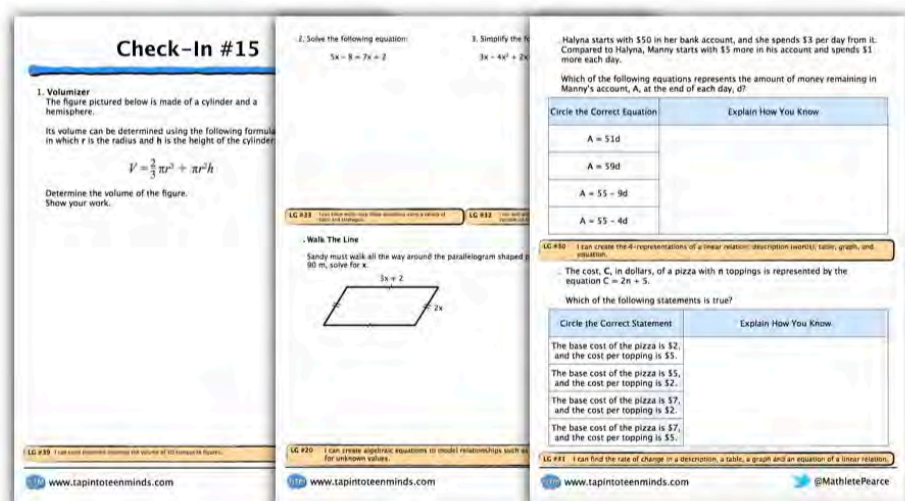
Spiralling Step #6 – Interleave Your Assessments

We are all assessing students through conversations and observations on a daily basis. However, if you're spiralling your course, it might seem hard to determine when you will assess students with a written test or quiz and what questions you should be asking.

Since we are spiralling the content of the course, it would make sense that the assessments are spiralled or interleaved as well. For me, I would give students an assessment on "Mastery Day" which was every Tuesday and the assessment was called a "check-in". For the first half of class, students would work on 4 to 6 questions; approximately half from ideas we worked with the previous week and the other half would be from anything covered previously in the course. The intention here was to give me and the student a true understanding of where their understanding was related to those learning goals at the current time. There was no review day and there was no list of concepts they were to cram the night before. Just questions to give students the opportunity to strengthen their retrieval strength and highlight areas that they should be focusing on over the next week.

MASTERY DAY

Do you
UNDERSTAND
the content?



not yet
getting there
got it!

After submitting their check-in, the second half of the class would be used to work towards mastering a concept based on the feedback given on previous check-ins. Here's a post [explaining how I shared that feedback](#), but save that reading for later as it will send you down a whole new rabbit hole for exploring separately.

I would try my best to have feedback for students done by the next day not only for the feedback to be timely for them, but also to help me determine whether I should continue the next week of my spiral as planned or whether I need to come back to an idea like Pythagorean Theorem because so many students crashed hard on it. There are also some positives that come from this like realizing that my students really understand linear relations and maybe I can cut a day out of this spiral to commit to something else.

*“Give **timely feedback** not only to inform your students, but also to **inform your next steps.**”*



CLICK TO TWEET

1. Solve the following equations. Show all of your work.

$$2(c + 2) = 5c - 2$$

$$2c + 4 = 5c - 2$$

$$2c + 4 - 4 = 5c - 2 - 4$$

$$2c = 5c - 6$$

$$10c = -6 \div 2$$

$$\frac{-3}{5}$$

Excellent job balancing the equation in the first 4 lines.

It would appear that you may have multiplied the coefficient of c on the left with the coefficient on the right to get $10c$.

It should be noted that you must subtract $5c$ from both sides to isolate the variable term.

Have a look and let's work on one together tomorrow.

Now, although I have interleaving your assessments as the 6th step, I'll mention that you might also consider doing this step after step 3, if you feel that you aren't ready to spiral your lessons, but could see yourself interleaving the content on each assessment. This is also a step that may be easier to put into practice during a school year, whereas spiralling the content in your lessons could be thought of as more challenging if you've already begun teaching in blocks or units.

If that seems overwhelming, then maybe you might want to consider just easing into the idea of spiralling, interleaving, spacing and mixing portions of your math class?

Well, you're in luck! The next lesson on spiralling will share 9 Spiralling Starter Strategies to Begin NOW!

Read About Spiralling On Tap Into Teen Minds



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