	Primary		Intermediate		Secondary	
	Content	Competencies	Content	Competencies	Content	Competencies
Estimating	- counting to 5, 10, 20 and beyond using items found in nature - looking at piles of things that other students make and subatizing to determine how many in the pile. - changing the layout of these items and seeing if it helps. - starting with amounts in a row of items such as leaves or rocks or snowmen and asking things like how many more to get to 10? Or how many less to have only 5? Have students physically remove the items and then explain in words what they have done.	- having students explain why they thing a certain amount is 5, 10, or 20 - have students explain how the layout of things changes their ability to subatize amounts. - having students explain in words what they did physically to have more or less of an amount. -You can have students estimate amounts by making a ratio and using proportional reasoning. This can be as simple as having them use landmarks and counting steps to that landmark and then spotting another landmark a similar distance away and predicting how far it will be in steps. Students are using the skill of hypothesizing, testing their hypothesis, and then if they are not as close as they thought, readjusting their hypothesis based on the outcome and trying it again. Distances or amounts get larger as the grade increases. - Using story to explain how they got 10 of something (ie. 10 forest treasure). -Talking about things as having more than or less than and giving reasons for their conclusion such as this tree has more leaves than that tree because….	-Students can count how many leaves are in a 2 by 2 or 4 square step plot of lawn. They can they find the dimensions (area) of the entire space and use that to estimate how many leaves on entire lawn. Discussions around how we could use this for other tasks as well. This is using ratios and proportional reasoning. -First Nations people used this technique to estimate how many moose, elk, etc… were in their area. This helped them to know how many animals they could take each year and how many they needed to leave to be sure they did not decimate that animal in their Keyoh.	-Students can count how many leaves are in a 2 by 2 or 4 square step plot of lawn. *They can they find the dimensions (area) of the entire space and use that to estimate how many leaves on entire lawn. Discussions around how we could use this for other tasks as well. This is using ratios and proportional reasoning*.		- using compasses to go directly E/W then directly N/S counting steps and then using Pythagoras to estimate distance back to starting point. -Using personal referents, estimate distances, heights, area, volume, surface area of larger areas and in daily life situations where it might be useful. - Using similar triangle, personal referents (steps), and the sun to estimate the height of trees.
Geometry	-Having student make shapes by stomping them in the snow. -Have students walk hand in hand to form parallel lines, have them make intersecting lines. - use personal referents to measure things like distances, lengths, circumference, perimeter -for gr 3, have them do the above and then test it using measuring tools. - using snow, build 3D shapes and discuss them using correct terminology -draw 2D shapes in the snow or dirt or build them with sticks.	- have students estimate the perimeter, circumference, etc… - use stories and legends about why there are different shapes and why certain things in nature are the shape they are. Why are sweat lodges and pit house round? Why do we hold gatherings in a circle? - look at shapes in Indigenous Artworks and explore why artists use and choose specific shapes/what they mean. -Looking for and naming different regular polygons in nature. Have students talk about their properties that make them a circle, square, triangle, etc…. Using math terminology	Looking for and identifying different types of Looking for and identifying different types of Looking for and identifying different types of Looking for and identifying different types of Looking for and identifying different types of Looking for and identifying different types of Looking for and identifying different types of angles found in nature. - looking at shadows and describing them in terms of slides, flips etc… - using steps instead of specific measurements, find the area, perimeter, and circumference of different spaces on your playground or neighborhood, trees, etc..	- finding different types of lines in nature (intersecting, parallel, perpendicular…) and explaining why they are they way they are. Could the organism/plant live if it was arranged differently? Why or why not?	- using Pythagorean theory to find distances on the land - use trigonometry on the land to see if it works to find distances as well. -using similar triangles to determine length or height of things such as trees by using the sun to find shadow length and making ratios…	- estimating distances first using Trig and Pyth as well as Indigenous knowledge given by elders (using landmarks etc…) and testing to see if accurate. (using more than one strategy to find distances/lengths).

			when doing this (ie. It has 3 vertices and 3 edges).			
Patterns	- students can find patterns in nature such as petals of a flower, how each leaf is the same as others on its branch, how raspberries and other native to our area fruits look, pinecones, etc… -students can go outside and make patterns with things they find in nature such as rocks, leaves, sticks etc… This can be as simple as a repeating pattern or have them make ones that increase or decrease. - look for patterns in nature where the sun is when in morning line up, afternoon line up and at end of day. Graph this as a class and look for the patterns if they are not evident.	- using stories or legends to explain why some things in nature follow patterns. - look at patterns in the weather to predict what will happen next.	-looking for patterns in nature. Try to find ones that might be able to be described in words, pictures/symbols, and with an expression or equation. - make a simple expression and go out to find where in nature it is represented.	- do net dips in a pond sample and count samples of organisms. Use this to predict amount of organisms in entire pond based on ratios. Check the following season to see if it was an accurate estimate and there is a pattern.	- look for and use patterns in nature to develop expressions or, using simple expressions, find things in nature that represent them - find patterns in the natural world that could be expressed exponentially (reproduction of mosquitos!)	
Number sense	- counting steps, objects - making piles and comparing which is more or less -breaking groups of 5,10, 20 etc.. random things they collect into groups to show decomposing of amounts - having each student collect 1 to 10 of their favorite things and then put them out for others to look at and say how many there are (subatizing) -some basic multiples/fraction talk like half way to the fence, or the tree is twice your size. - how many _____ do you think there are and why? Using personal referents to estimate amounts. -having students collect things and then as a class adding them up by making 10's etc..		- finding things in nature that there might be 100, 1000 of and have reasons to explain thinking. - talk about the amount of things in nature as multiples of ___ (for every student in our class, there are roughly 3 trees, If we find berries, we can divide them between ___ people …..)			
Graphing	-using physical objects to make bar and pictographs (for example students collecting leaves could put them in columns for colors or shapes or… and translate that into a graph with numbers		-using physical objects to make bar and pictographs (for example students collecting leaves could put them in columns for colors or shapes or… and translate that into a graph with numbers - Take this further by then making one leaf represent 10 leaves to show larger quantities. -keep track of weather or cm of precipitation or bear sightings or….in the form of graph – try to have students go out and physically measure the snow each day or take the temperature outside.			