Grades 1-7
Student Numeracy Assessment and Practice (SNAP)
For Number Operations
Teacher Guide

What is the SNAP?

Each area of the SNAP is connected to a particular BC Curricular Competency in math and is communicated on the SNAP with colour coding. While the SNAP can be used as many times as you'd like throughout the year, it is not recommended that you use it regularly as a practice tool but instead keep it as an assessment tool to guide your instruction.

The Number Operations SNAP format is the same for grades 1-7, but the number range and operations (taken from the BC Math Curriculum) change and are listed on the next pages. Because the goal is that students are proficient at the end of the school year, the beginning of the year SNAP is the SNAP from the previous grade.

The Student Numeracy Assessment and Practice (SNAP) for Number Operations is the Okanagan Skaha School District numeracy assessment for all students in grades 1-7. It is based on the ANIE (Assessment of Numeracy in Education) created by Kevin Bird and Kirk Savage which was adapted by a group of Chilliwack educators and renamed the SNAP. Our district's version was adapted by the SD67 Numeracy Helping Teachers, Kim Robb and Lianna Tucker. The following additional references were used when adapting this assessment:

Parrish, S. (2022). *Number talks: Whole number Computation*. Heinemann.

Novakowski, J. (2021, March). *Collection of Assessment Questions for K-7 Mathematics*. Richmond Math and Science Blogs.

Administering the SNAP

When introducing your students to the SNAP, project the SNAP, and explicitly teach and model each component of the assessment using number operations student should be comfortable with from previous years. As the SNAP is used within a school, students will become more familiar with the tool and will need less instruction.

MATERIALS NEEDED:
SNAP recording sheet for each student. These can be found on 67learns.com under "Assessments". It is recommended that each time you administer the SNAP, you check the website for the most up to date version.

If you have students working below grade level, please provide them with an equation appropriate to their understanding.

PREPARATION OF THE SNAP before printing:

- Put the date and teacher name on the page.
- Decide your equation giving careful thought what skills your students will need to answer the equation.
- You could do two different equations, one on the front and one on the back at each assessment or even four equations for higher grades
- Rubric page – either one for each student (Place date and teacher name on rubric before printing) or just one copy for your marking as the scale is on the bottom of each SNAP'
- Download and Save Class Data Chart (Optional)

Description of Each Section

ESTIMATE:

Students will learn to value the skill of estimating through discussions about real-life situations where a person would typically estimate rather than calculate. In which situations would one prefer a high estimate? A low estimate? Explicit instruction on estimation strategies will allow students to select and use an appropriate strategy for the given operation.

The goal is not to get the right answer but to be able to use mental math to decide what a reasonable answer would be. At the beginning of grade one students will be guided to answer less than or more than 5 and then later in the year, less than 5, less than 10, greater than 10, close to 20 etc.

SOLVING THE EQUATION:

Students are asked to solve the equation two different ways.

A list of grade level appropriate strategies are included in this package. Students might show different ways of solving the equation or different tools they might use (i.e. ten frames, hundred chart, counters, pictures, base ten blocks, number lines)

REAL-LIFE EXAMPLE or MATH STORY or PROBLEM:

Students will provide details on a real-life situation where the given operation would be used to find an amount. Look for evidence that communicates their understanding of the use of the operation. For example, if the operation was 316-141 a student could suggest, "there were 316 blueberries on the bush, and I picked 141 of them." For the teacher to know if they understand what the difference between 316 and 141 represents in this situation, they should add, "How many blueberries were left on the bush?"

Grades 1 and beginning Grade 2: Encourage students to draw pictures to "tell" their story if they do not have the written ability to write a short story. A follow-up conversation will be required to know whether students are able to communicate their understanding.

REFLECTION:

This is to be completed by students in grades 3 and above.

Reflections help increase the value of a learning experience. They allow students to link ideas and construct meaning from their experiences. Students should have opportunities to reflect on their learning at the end of every lesson.

Type of Equations by Grade

Grade	Term 1	Term 3
One		• addition equation to 20 • subtraction equation using one or more numbers in the teens
Two	• addition equation to 20 • subtraction equation using one or more numbers in the teens	• addition equation to 100 • subtraction equation to 100
Three	• addition equation to 100 • subtraction equation to 100	• addition equation to 1 000 • subtraction equation to 1 000
Four	• addition equation to 1 000 • subtraction equation to 1 000 • multiplication equation from basic facts • division equation from basic facts	• addition equation to 10 000 • subtraction to 10 000 • multiplication of two- or three-digit numbers by one-digit numbers • division of two- or three-digit numbers by one-digit numbers • addition of decimals to hundredth • subtraction of decimals to hundredth
Five	• addition equation to 10 000 • subtraction to 10 000 • multiplication of two- or three-digit numbers by one-digit numbers • division of two- or three-digit numbers by one-digit numbers	• addition and subtraction of whole numbers to 1 000 000 • addition of decimals to thousandths • subtraction of decimals to thousandths • multiplication to three digits • division to three digits including remainders

Type of Equations by Grade (continued)

Grade	Term 1	Term 3
Six	• addition and subtraction of whole numbers to 1 000 000 • addition of decimals to thousandths • subtraction of decimals to thousandths • multiplication to three digits • division to three digits including remainders	• addition and subtractions of decimals from the thousandths to the billions • multiplication and division of decimals (e.g. 0.125 x 3 or 7.2 ÷ 9) • One step equations with whole number coefficients and solutions(e.g. 3x = 12, x + 5 = 11) *students are expected to begin applying whole number computation strategies to decimals.
Seven	• addition and subtractions of decimals from the thousandths to the billions • multiplication and division of decimals (e.g. 0.125 x 3 or 7.2 ÷ 9) • One step equations with whole number coefficients and solutions(e.g. 3x = 12, x + 5 = 11) *students are expected to begin applying whole number computation strategies to decimals.	• addition, subtraction, multiplication, division, and order of operations with integers (includes use of brackets, but excludes exponents) • All operations with decimals (includes the use of brackets, but excludes exponents) • Two-step equations with whole number coefficients, constants and solutions.

Sample Equations by Grade

Grade	Addition	Subtraction	Multiplication	Division
Grade 1 (after teaching of operations begins) Optional	2+5=	8-4=		
End of Grade 1 **Beginning Grade 2** • to 20	8+6=	15-7=		
End of Grade 2 **Beginning Grade 3** • to 100	77+9= 48+25=	75-15= 71-27=		
End of Grade 3 **Beginning Grade 4** • to 1 000	567+358=	623-375=		
End of Grade 4 **Beginning Grade 5** • to 10 000 • decimals to hundredths	4 877+2 185= 416.2+812.9= 36.67+172.19=	7 456-4 325= 657.5-148.7= 104.50-54.25=	8x23= 5X345=	96÷4= 128÷8=
End of Grade 5 **Beginning Grade 6** • to 1 000 000 • decimals to thousandths	429 977+387 530= 693.294+147.063=	854 973-231 881= 487.951-228.962=	34x26= 234x654=	487÷19= 365÷121=

Suggested Equations from Jnovakowski K-7 Math Assessment Questions

Sample Equations by Grade

Grade	Addition	Subtraction	Multiplication	Division
End of Grade 6 **Beginning Grade 7** • to 1 000 000 • decimals to thousandths	3 984.752 + 279.08	87.34-23.14=	4 x 0.275 =	47.3 ÷ 5 =
End of Grade 7 • Operations with Integers and decimals	3 + (-9) =	(-4) – (-5) =	5.265 x 4.65 =	28.75 ÷ 1.25 =

Name:_____ Teacher: _____ Date:_____

Operations SNAP

Solve the equation in two ways:

Understanding & Solving:
Example 1 1 2 3
Example 2 1 2 3

Connecting & Reflecting:
Real-Life or Math Story or Problem 1 2 3

Adapted from the ANIE, the Chilliwack School District SNAP and Richmond School District Numeracy Foundations Assessment

Student Numeracy Assessment and Practice (SNAP)

Grade 1 and Beginning Grade 2

Name:_____ Teacher: _____ Date:_____

Operations SNAP

Equation:_____

Estimate or Guess

At the beginning of grade one students will be guided to answer less than or more than 5 and then later in the year, less than 5, less than 10, greater than 10, close to 20 etc.

Show one way to solve the equation:

This could be with an equation or a sketch.

Show another way to solve the equation:

This could be with an equation or a sketch.

Draw or write a real-life example or a math story or problem using the equation above:

Reasoning & Analyzing:
Estimate 1 2 3

Understanding & Solving:
Example 1 1 2 3
Example 2 1 2 3

Connecting & Reflecting:
Real-Life or Math Story or Problem 1 2 3

Adapted from the ANIE, the Chilliwack School District SNAP and Richmond School District Numeracy Foundations Assessment

Student Numeracy Assessment and Practice (SNAP)

Name:_____ Teacher: _____ Date:_____

Operations SNAP

Equation:_____

Estimate or Guess

Encourage students to make estimates that are with a friendly number – multiples of 10 or 25.

Show one way to solve the equation:

This could be with an equation or a sketch.

Show another way to solve the equation:

This could be with an equation or a sketch.

End Grade 2 and Beginning Grade 3

Write a real-life example or a math story or problem using the equation above:

_____

_____

Reasoning & Analyzing:
Estimate and Justification 1 2 3

Understanding & Solving:
Example 1 1 2 3
Example 2 1 2 3

Connecting & Reflecting:
Real-Life or Math Story or Problem 1 2 3

Adapted from the ANIE, the Chilliwack School District SNAP and Richmond School District Numeracy Foundations Assessment

Student Numeracy Assessment and Practice (SNAP)

Name:_____ Teacher: _____ Date:_____

Operations SNAP

Equation:_____

Use a strategy to estimate or guess

Encourage students to make estimates that are with a friendly number.

Show one way to solve the equation:

This could be with an equation or a sketch.

Show another way to solve the equation:

This could be with an equation or a sketch.

End Grade 3 and Up

Write a real-life example or a math story or problem:

_____

_____

_____

Reflection:

_____

_____

_____

Reasoning & Analyzing:
Estimate and Justification 1 2 3

Understanding & Solving:
Example 1 1 2 3
Example 2 1 2 3

Connecting & Reflecting:
Real-Life or Math Story or Problem 1 2 3

Adapted from the ANIE, the Chilliwack School District SNAP and Richmond School District Numeracy Foundations Assessment

Student Numeracy Assessment and Practice (SNAP)

Name:_____Teacher:_____ Date: _____

Number Operations SNAP Rubric

Competency	1 **Student understanding and application of number operation is not yet evident.** **EMERGING**	2 **Student demonstrates some understanding and application of number operation.** **DEVELOPING**	3 **Student demonstrates proficient understanding and application of number operation.** **PROFICIENT**
Reasoning & Analyzing: Estimate and Justify	- Estimation/mental math strategies and justification are not evident	- Estimation/mental math strategies and justifications are simple or only partially accurate	- Estimation/mental math strategies and justification are reasonable
Understanding & Solving:	- Strategies to solve the problem and show understanding are not evident	- Strategies to correctly solve the problem and show understanding are simple or limited - Or only one strategy is accurately used	- Uses **grade appropriate** strategies to correctly solve the problem and show understanding **See chart for examples**
Connecting & Reflecting: Real-Life Example or Math Story or Problem	- Real life example and connections to mathematical concepts are not evident	- Real life example and connections to mathematical concepts are limited or not reasonable	- Real life example and connections to mathematical concepts are evident and reasonable
Reflection Grade 3 and up	- Simple reflections on mathematical thinking are not evident	- Simple reflections on mathematical thinking are evident - May only reflect on if they found it "easy" or "difficult"	- Some insight on mathematical thinking is evident - Student might refer specifically to strategies they chose to use to solve their equation, find their estimate or create a real-life example.
Teacher Notes:			

Appropriate Strategies by Grade

See Strategy Posters for illustrations/descriptions

	End of Grade 1	Grade 2 to 5

Addition	• counting (all)
	• counting on
	• counting on/back **from a known fact**
	• doubles
	• doubles plus one
	• making 10
	
	Visual models and Tools:
	• pictures
	• ten frames
	• counters
	• number paths
		• **making friendly numbers** - adjusting numbers to make an easier problem
		• **compensation**
		  • moving an amount from one addend to give to the other
		  • 8+6 becomes 10+4 by taking 2 from the 6 and adding to 8
		• **decomposing by place value**
		  • break each number into place values
		  • 48 + 37 becomes 40 + 30 = 70 and 8 +7 = 15, and then 70+15 = 85
		• **adding up in chunks**
		Visual models & Tools:
		• hundred chart
		• base 10 blocks/ten frames
		• number lines/open number lines
		• finding **related doubles** e.g. 2+2=4 so 20+20= 40 **OR** 6+6=12 so 6+7=13)
		• **making ten** e.g. 8+6 becomes 10+4 by taking 2 from the 6 and adding to 8
		• using **known facts** e.g. 60+40=100 is like 6=4=10 because 6 tens+4 tens=10 tens

Subtraction	• counting or adding up
	• counting back
	• removal
	
	Visual models and Tools:
	• pictures
	• ten frames
	• counters
	• number paths
		• **decomposing**
		  • break each number into place values
		  • 348-72= 34 tens-7 tens=27tens and 8-2=6 ones = 270+6=276
		• **decomposing using negative numbers**
		  • 123-59 = (100+20+3)-(50 +9)
		  • 100 | 20 | 3
		  - | 50 | 9
		  100 – 30 – 6 = 100-30=70 and 70-6=64
		• **compensating**
		  • adjusting one number to make an easier problem
		  • 50-24 becomes 49-24 by subtracting 1 from 50 and then adding it back to the answer
		Visual models & tools
		• hundred chart
		• base 10 blocks,
		• place-value mats
		• grid paper
		• number lines/open number lines

Check 67learns.com for Number Operations Strategies posters.

Appropriate Number Operation Strategies by Grade

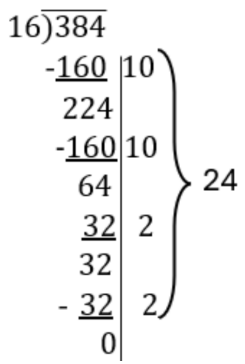
	End of Grade 4	End of Grade 5-7

Multiplication	• repeated addition, skip counting, counting by multiples:
	  • number line
	  • open number line
	  • hundred chart
	  • base ten blocks
	• making a **friendly number**
	  • counting on or back from a known fact
	  • 6x7 I know 6x5=30 so 6x6=36 and 6x7=42
	• **distributive property**
	  • decomposing two-digit numbers into a tens and ones and three-digit numbers into hundreds, tens and ones
	  • 14x 3=(10x3)+(4x3)=30+12=42
	  • 37x4=(30x4)+(7x4)=120+28=148
		• using **known facts** to solve unknown facts
		  • 7x7=49 so 70x70 would be 4900
		• making **friendly numbers**
		  • 9x15 =10x15 -15=135
		• **doubling and halving**
		  • when you halve one number and double the other the product remains the same
		  • 8x5=40►4x10=40
		• **distributive property/decomposing**
		  • 7 x 83 equals (7x80) + (7x3)=560+21=581
		• **associative property**
		  • 15x9=(10+5)x9 =(10x9)+(5x9)=90+45=135
		  • 12x25=(4x25)+(4x25)+(4x25)=100+100+100=300
		• **annexing**
		  • 250 000 x 200 becomes 2500x2

Check 67learns.com for Number Operations Strategies posters.

Appropriate Number Operation Strategies by Grade

	End of Grade 4	End of Grade 5-7

Division	• **repeated subtraction or sharing/dealing out**
	  • number line
	  • open number line
	  • hundred chart
	  • manipulatives
	  • drawing
	• **multiplying up**
	• **using related facts**
	  • 10 x 4 = 40 so 40 ÷ 10 = 4 and 40 ÷ 4 = 10
		• **partial quotients**
		 
		• **proportional reasoning**
		  • 384÷16= (384÷2) ÷ (16÷2)
		  = 192 ÷ 8 = (192 ÷ 2) ÷ (8÷2)
		  = 96 ÷ 4 = (96 ÷ 2) ÷ (4÷2)
		  = 48 ÷ 2 =2

Number Operations Assessment Date: Teacher:

21										Notes
20										
19										
18										
17										
16										
15										
14										
13										
12										
11										
10										
9										
8										
7										
6										
5										
4										
3										
2										
1										
	1 Emerging	2 Developing	3 Proficient	1 Emerging	2 Developing	3 Proficient	1 Emerging	2 Developing	3 Proficient	

Reasoning and Analyzing:
Estimate

Understanding and Solving:
Sketches or Equations

Connecting and Reflecting:
Real Life or
Math Story or Problem

An editable Word document is available for download on 67learns.com

Name:_____ Teacher: _____ Date:_____

Operations SNAP

Solve the equation in two ways:

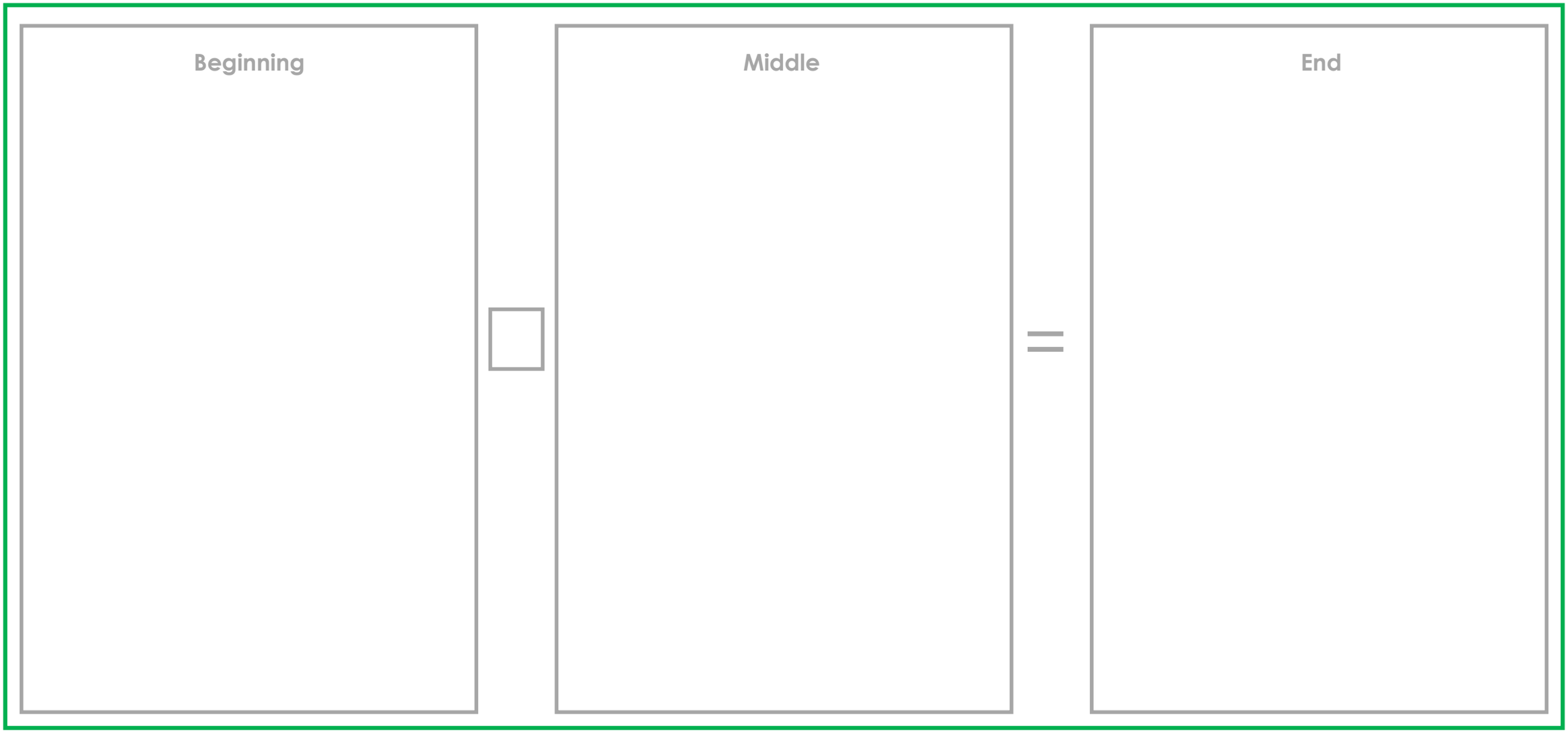
Understanding & Solving:

Example 1	1 2 3
Example 2	1 2 3

Connecting & Reflecting:

Real-Life or Math Story or Problem	1 2 3

Draw or write a real-life example or a math story or problem using the equation above:



Name:_____ Teacher: _____ Date:_____

Operations SNAP

Equation:_____

Estimate or Guess	Show one way to solve the equation:	Show another way to solve the equation:

Draw or write a real-life example or a math story or problem using the equation above:

Reasoning & Analyzing:		Understanding & Solving:		Connecting & Reflecting:	
Estimate	1 2 3	Example 1	1 2 3	Real-Life or	1 2 3
		Example 2	1 2 3	Math Story or Problem	

Name:_____ Teacher: _____ Date:_____

Operations SNAP

Equation:_____

Estimate or Guess	Show one way to solve the equation:	Show another way to solve the equation:

Draw or write a real-life example or a math story or problem using the equation above:

Beginning		Middle	=	End
	□			

Reasoning & Analyzing:
Estimate 1 2 3

Understanding & Solving:
Example 1 1 2 3
Example 2 1 2 3

Connecting & Reflecting:
Real-Life or Math Story or Problem 1 2 3

Name:_____ Teacher: _____ Date:_____

Operations SNAP

Equation:_____

Estimate or Guess	Show one way to solve the equation:	Show another way to solve the equation:

Draw or write a real-life example or a math story or problem using the equation above:

Reasoning & Analyzing:		Understanding & Solving:		Connecting & Reflecting:	
Estimate	1 2 3	Example 1	1 2 3	Real-Life or	1 2 3
		Example 2	1 2 3	Math Story or Problem	

Name:_____ Teacher: _____ Date:_____

Operations SNAP

Equation:_____

Estimate or Guess	Show one way to solve the equation:	Show another way to solve the equation:

Draw or write a real-life example or a math story or problem using the equation above:

_____

_____

Reasoning & Analyzing:		**Understanding & Solving:**		**Connecting & Reflecting:**	
Estimate	1 2 3	Example 1	1 2 3	Real-Life or Math Story or Problem	1 2 3
		Example 2	1 2 3		

Name:_____ Teacher: _____ Date:_____

Operations SNAP

Equation:_____

Use a strategy to estimate the answer:

Show one way to solve the equation:

Show another way to solve the equation:

Write a real-life example or a math story or problem:

_____

_____

_____

_____

Reflection:

_____

_____

_____

_____

Reasoning & Analyzing:
Estimate 1 2 3

Understanding & Solving:
Example 1 1 2 3
Example 2 1 2 3

Connecting & Reflecting:
Real-Life or Math Story or Problem 1 2 3
Reflection 1 2 3