1 Integers

Objectives:

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| Review addition and subtraction of integers |
| Understand and apply the properties of addition/subtraction for integers |
| Learn to multiply integers |
| Understand and apply the properties of multiplication for integers |
| Learn to divide integers |
| Understand and apply the properties of division for integers |
| Understand the use of integers in real-world scenarios |

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| Content | Teacher's Activity  | Student's Activity | Assignments |
| 1.1 Introduction | * + Briefly revisit evolution of number systems, moving from Natural/counting numbers (N) to Whole numbers (W) and then Integers/directed numbers (Z)
	+ Explain the subset/superset relationship between these number types
	+ Provide scenarios from life where Integers are useful to compute values
 | * + Identify and differentiate between N, W and Z
	+ Learn how to list the values in N, W, Z using set notation {x, y, z, …}
	+ Explain why we need negative numbers
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| 1.2 Addition and Subtraction of Integers | * + Explain three methods by which students can add or subtract Integers, with worked out examples for each:
		- Number line
		- Black and white coins
		- Number rules
	+ Explain how they can choose any method they're comfortable with - an intuitive pattern of computation will evolve as they practice
 | * + Add and subtract Integers using any preferred method
	+ Complete number patterns using addition and subtraction of Integers

  | * + Ex 1.1

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| 1.3 Properties of Addition/Subtraction of Integers | * + Through examples, explain the following properties for addition/subtraction of Integers:
		- Closure
		- Commutative
		- Associative
		- Additive Identity
		- Additive Inverse
	+ Provide examples where use of commutative and associative properties can help simplify calculations
 | * + Understand the various properties associated with addition/subtraction Integers
	+ Use the various properties to simplify calculations
 | * + Ex 1.2
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| 1.4 Multiplication of Integers | * + Write out examples where Integers are multiplied through a process of repeated addition. Let the students deduce the relationship between the numbers being multiplied and the answer
	+ Explain multiplication of Integers through patterns as well as number rules

  | * + Multiply Integers using any preferred method
	+ Understand the relationship between the numbers being multiplied and the answer
 | Classroom problems |
| 1.5 Properties of Multiplication of Integers | * + Through examples, explain the following properties for multiplication of Integers:
		- Closure
		- Commutative
		- Associative
		- Multiplicative Identity
		- Multiplicative Inverse (reciprocal)
		- Multiplication with zero
	+ Provide examples where use of these properties can help simplify calculations
 | * + Understand the various properties associated with multiplication of Integers
	+ Use the various properties to simplify calculations
 | Ex 1.3 |
| 1.6 Division of Integers | * + Introduce division as a reverse operation of multiplication
	+ Using the multiplication process for Integers, deduce the relationship between Integers being divided and the answer
 | * + Divide two Integers
	+ Understand the relationship between the numbers being divided and the answer

  | Classroom problems |
| 1.7 Properties of Division of Integers | * + Explain the following properties for division of Integers (point out how most properties are not valid for division):
		- Closure
		- Commutative
		- Associative
		- Division by 1 and -1
		- Dividing a number by 0 and 0 divided by a number

  | * + Understand and use the relevant properties associated with division of Integers
 | Ex 1.4 |
| Test |   |   |   |