Section 1 – Operations with Integers

This book belongs to: _KEY_   **Block:** _____

Section	Due Date	Questions I Find Difficult	Marked	Corrections Made and Understood

Self-Assessment Rubric

Category	Sub-Category	Description	
Expert	6	Work meets the objectives; is clear, error free, and demonstrates a mastery of the Learning Targets	"You could teach this!"
	5	Work meets the objectives; is clear, with some minor errors, and demonstrates a clear understanding of the Learning Targets	"Almost Perfect, one little error."
Apprentice	4	Work almost meets the objectives; contains errors, and demonstrates sound reasoning and thought concerning the Learning Targets	"Good understanding with a few errors."
	3	Work is in progress; contains errors, and demonstrates a partial understanding of the Learning Targets	"You are on the right track, but key concepts are missing."
Novice	2	Work does not meet the objectives; frequent errors, and minimal understanding of the Learning Targets is demonstrated	"You have achieved the bare minimum to meet the learning outcome."
	1	Work does not meet the objectives; there is no or minimal effort, and no understanding of the Learning Targets	"Learning Outcomes not met at this time."

Learning Targets and Self-Evaluation

Learning Target	Description	Mark
1 – 1	• Identifying and understanding the concept of negative and positive • Where integers lie of a number line	
1 – 2	• Addition of integers, rules and ways of analyzing scenarios • Subtraction of integers, rules and ways of analyzing scenarios	
1 – 3	• Multiplication of integers • Division of integers	

Competency Self-Evaluation

A valuable aspect to the learning process involves self-reflection and efficacy. Research has shown that authentic self-reflection helps improve performance and effort, and can have a direct impact on the growth mindset of the individual. In order to grow and be a life-long learner we need to develop the capacity to monitor, evaluate, and know what and where we need to focus on improvement. Read the following list of Core Competency Outcomes and reflect on your behaviour, attitude, effort, and actions throughout this unit.

Rank yourself with a check mark: E (Excellent), G (Good), S (Satisfactory), N (Needs Improvement)

		E	G	S	N
Personal Responsibility	• I **listen** during instruction period and come to class ready to ask questions				
	• I am **fully prepared** for the class, with all the required supplies				
	• I am **fully prepared** for Quizzes				
	• I **follow** instructions and **assist** peers				
	• I am **on task** during work blocks				
	• I **complete** assignments **on time**				
Self-Regulation	• I keep track of my **Learning Targets**				
	• I take **ownership** over my goals, learning, and behaviour				
	• I can **solve problems** myself and know when to ask for help				
	• I can **persevere** in challenging tasks				
	• I **take responsibility** to be actively engaged in the lesson and discussions				
	• I only use my phone for school tasks				
Classroom Responsibility and Communication	• I am **focused** on the discussion and lessons				
	• I **ask questions** during the lesson and class				
	• I give **my best effort** and **encourage** others to work well				
	• I am polite and communicate questions and concerns with my peers and teacher				
Collaborative Actions	• I can **work with others** to achieve a common goal				
	• I make **contributions** to my group				
	• I am **kind** to others, can work collaboratively and **build relationships** with my peers				
	• I can **identify** when others need support and provide it				
Communication Skills	• I present informative **clearly**, in an organized way				
	• I **ask and respond** to simple direct questions				
	• I am an **active listener**, I support and encourage the speaker				
	• I **recognize** that there are different points of view and can disagree respectfully				
	Overall				
Goal for next Unit – refer to the above criteria. **Please select** (underline/highlight) **two areas** you want to focus on					

Pre-Unit Questions

Please answer the following questions before we get started:

1. What are my learning goals for this unit?

_____

_____

_____

2. What skills do I have going into this unit?

_____

_____

_____

3. How do I plan on accomplishing my learning goals this unit?

_____

_____

_____

Try every question in this booklet. Show your steps (thinking process) and keep trying until you get the right answer. If you cannot figure it out, ask!

Section 1.1 – Integers

What are They?

- Integers represent all the countable numbers, both positive and negative, that are whole numbers $(\ldots -3, -2, -1, 0, 1, 2, 3 \ldots)$
- A great place to start is to **understand** that **subtraction can be shown as adding negatives**

Example: $7 - 4 = 7 + (-4)$

(This may seem odd now, but it will come in handy later)

If this helps, think of positives and negatives as:

positive - good things

negative - bad things

- When we are **adding**, think of adding good or bad things
- When we are **subtracting**, think of taking good or bad things away
- All you need to consider then is which did you have more of in the beginning

Example: Let's try $7 + (-3)$ using red/yellow chips... yellow chips are positive, red chips are negative

Example: What does $4 - 8$ equal?

We can also use a number line...

$4 - 8 =$

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Section 1.2 – Adding and Subtracting Integers

Adding Rules

- Adding two numbers of the same sign (two positives or two negatives), you get more of the same

Example: $2 + 6 =$ $-2 + -6 =$

- When you **add two numbers with different signs**...
    1. Which do you have more of? That is the sign of the answer
    2. Rearrange the question so that you are subtracting the smaller number from the larger number to get the number of the answer

Example: $- 6 + 4$ ⟶ $6 - 4 = 2$ Larger number **is negative**, so answer is -2

Subtracting Rules

- There is only one rule: **subtracting a negative number makes** it the same as adding that number

Example:

$4 - (-5) = 4 + 5 = 9$

Use Image to Explain Your Answer to These Examples:

$6 - 2 =$ $5 + (-3) =$

$- 4 - 8 =$ $12 - 14 =$

$- 7 + 4 =$ $- 7 + (2)$

Section 1.1 – Practice Questions

Integers are both positive and negative numbers. Don't go too fast, think about the situation every time.

1.	$7 + (-4) =$	2. $\qquad (-6) - 8 =$
3.	$19 + (-7) =$	4. $\qquad (-3) + (-4) =$
5.	$(-6) - (-12) =$	6. $\qquad 5 + 8 =$
7.	$9 - (-3) =$	8. $\qquad 12 - 4 =$
9.	$(-13) + 8 =$	10. $\qquad (-17) - 17 =$
11.	$(-4) - 17 + 8 =$	12. $\qquad 8 - 17 + (-7) =$
13.	$2 + 7 - 12 =$	14. $\qquad -12 - 4 - (-17) =$

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Adding Integers (A)

Use an integer strategy to find each answer.

$(-2) + (+8) = 6$ $(+9) + (+7) = 16$ $(+7) + (-1) = 6$

$(+3) + (+1) = 4$ $(+7) + (+5) = 12$ $(-5) + (+9) = 4$

$(+2) + (-5) = -3$ $(-1) + (+3) = 2$ $(+8) + (+4) = 12$

$(-7) + (-2) = -9$ $(-6) + (-7) = -13$ $(+7) + (+8) = 15$

$(-4) + (+3) = -1$ $(-2) + (-6) = -8$ $(+9) + (-4) = 5$

$(+7) + (+3) = 10$ $(-5) + (-9) = -14$ $(-5) + (-6) = -11$

$(-9) + (-4) = -13$ $(-5) + (+4) = -1$ $(-3) + (-9) = -12$

$(-7) + (+1) = -6$ $(-1) + (-8) = -9$ $(-7) + (-4) = -11$

$(-1) + (+4) = 3$ $(+7) + (-4) = 3$ $(-6) + (+9) = 3$

$(-4) + (-1) = -5$ $(+9) + (+3) = 12$ $(+2) + (-5) = -3$

Adding Integers (A)

Use an integer strategy to find each answer.

(-13) + (+1) = -12   (+13) + (-17) = -4   (+6) + (+8) = 14

(-2) + (+5) = 3   (-17) + (+13) = -4   (+15) + (+5) = 20

(+24) + (+21) = 45   (-7) + (-1) = -8   (-25) + (-10) = -35

(-25) + (-20) = -45   (-23) + (+10) = -33   (+16) + (+10) = 26

(+23) + (+2) = 25   (+12) + (-18) = -6   (-9) + (+18) = 9

(-10) + (+20) = 10   (-18) + (+2) = -16   (+10) + (-20) = -10

(+2) + (+9) = 11   (-23) + (+11) = -12   (+10) + (+14) = 24

(+4) + (+20) = 24   (-3) + (-7) = -10   (-22) + (-8) = -30

(-9) + (+7) = -2   (+16) + (-3) = 13   (+14) + (-14) = 0

(+9) + (+20) = 29   (-15) + (+8) = -7   (-18) + (-23) = -41

Adding Integers (B)

Use an integer strategy to find each answer.

(+8) + (-11) = -3 (-11) + (+13) = 2 (+15) + (+7) = 22

(-2) + (+23) = 21 (-23) + (+12) = -11 (-16) + (+10) = -6

(-5) + (+21) = 16 (-24) + (-1) = -25 (+1) + (-2) = -1

(-13) + (+22) = 9 (+3) + (-17) = -14 (-24) + (-22) = -46

(+17) + (+13) = 30 (-1) + (-19) = -20 (-6) + (+21) = 15

(+2) + (-18) = -16 (+16) + (-18) = -2 (-18) + (+16) = -2

(+5) + (+23) = 28 (-21) + (+24) = 3 (-9) + (-1) = -10

(+10) + (+2) = 12 (+14) + (+19) = 33 (+23) + (+12) = 35

(-21) + (-7) = -28 (+23) + (+24) = 47 (+1) + (+3) = 4

(+17) + (-17) = 0 (+15) + (+9) = 24 (-19) + (-20) = -39

Section 1.3 – Multiplying and Dividing Integers

- When **multiplying and dividing** integer...

- **Two wrongs make a right** and **two rights make a right**

- In other words...   two negative numbers have a positive answer

                           two positive numbers have a positive answer

Let's try some...

Example:

$5 \times (-4) = -20$ $(-7) \times (-4) = 28$

$12 \div 3 = 4$ $2 \times (-4) = -8$

$-2 \times (-3) = 6$ $(-4) \times (-3) = 12$

$-18 \div 2 = -9$ $15 \div (-5) = -3$

$5 \times (-4) = -20$ $-24 \div (-6) = 4$

Simplify the Integers

$(+4) + (-7) = -3$	$(-8) \div (+2) = -4$	$(-9) - (-9) = 0$
$(-3) - (+6) = -9$	$(+6) + (-9) = -3$	$(-7) + (+2) = -5$
$(-1) \times (+9) = -9$	$(-8) \times (-6) = 48$	$(+4) \div (-2) = -2$
$(+5) \div (-5) = -1$	$(+4) - (-1) = 5$	$(-6) \times (+2) = -12$
$(-8) + (-6) = -14$	$(+6) \div (+3) = 2$	$(+8) + (-6) = 2$
$(+9) - (+9) = 0$	$(-5) + (-9) = -14$	$(-9) \div (+3) = -3$
$(-6) \div (+3) = -2$	$(+4) \times (-8) = -32$	$(+3) - (+9) = -6$
$(+3) + (+1) = 4$	$(-7) - (+2) = -9$	$(-1) \times (+6) = -6$
$(-8) \times (-7) = 56$	$(+9) \div (-1) = -9$	$(+5) + (+4) = 9$
$(-4) - (+2) = -6$	$(-5) + (+8) = 3$	$(-7) - (+7) = -14$

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Simplify the Integers

$(+24) - (-83) = 107$	$(-81) \div (+27) = -3$	$(+78) + (+93) = 171$
$(-67) + (+51) = -16$	$(+40) + (-85) = -45$	$(-65) \div (+13) = -5$
$(+90) \div (+15) = 6$	$(-52) - (+74) = -126$	$(-10) \times (+87) = -870$
$(-11) \times (-90) = 990$	$(+69) \times (+14) = 966$	$(-12) - (-58) = 46$
$(+52) + (-18) = 34$	$(-98) + (+99) = 1$	$(+23) + (+76) = 99$
$(-84) \div (+21) = -4$	$(+40) \div (-10) = -4$	$(-60) \div (+10) = -6$
$(+13) \times (-62) = -806$	$(-16) - (-19) = 3$	$(+85) - (-42) = 127$
$(+78) + (-78) = 0$	$(+27) \times (-12) = -324$	$(-19) + (-19) = -38$
$(-53) - (-14) = -39$	$(-66) \div (+22) = -3$	$(+23) \times (-12) = -276$
$(+90) + (-64) = 26$	$(+14) \div (+14) = 1$	$(-47) - (+70) = -117$

Section Reflection

How did this section on integers go? Circle the number that you think best describes your progress

1	2	3	4	5	6	7	8	9	10

(Not well at all)   (OK)   (Awesome!)

Please explain why you think it went the way it did:

_____
_____
_____

What was one process you struggled with in this section?

_____
_____
_____

What do you plan to do differently in the next section?

_____
_____
_____