Section 3 – Exponents, Squares and Square Roots

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
$3-1$	• Identify and understand how multiplication relates to exponents • Work through exponent (power 2) questions	
$3-2$	• Understand the inverse operations of squaring and square rooting • Incorporating multiplication and factor principles in square rooting	

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

1. Do you struggle with multiplication? Why or why not?

_____

_____

_____

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 3.1 – Exponents

What are they?

- The **base** is the number that you are multiplying
- The **exponent** of a number is telling you how many times you should multiply the number **by itself**

Exponent

$$3^2 = \underbrace{3 \times 3}_{\text{2 threes}} = 9$$

Base

Example: $5^2 = 5 \times 5 = 25$

Let's practice!

1. $2^2 =$ 4
2. $6^2 =$ 36
3. $9^2 =$ 81
4. $12^2 =$ 144
5. $3^2 =$ 9
6. $x^2 =$ $x \cdot x$
7. $r^2 =$ $r \cdot r$

Student Name: _____ Score:

Blank Square Chart 1 – 10

$1^2 = \boxed{1}$

$2^2 = \boxed{4}$

$3^2 = \boxed{9}$

$4^2 = \boxed{16}$

$5^2 = \boxed{25}$

$6^2 = \boxed{36}$

$7^2 = \boxed{49}$

$8^2 = \boxed{64}$

$9^2 = \boxed{81}$

$10^2 = \boxed{100}$

Student Name: _____ Score:

Find the Squares

E

$4^2 =$ 16

$6^2 =$ 36

$9^2 =$ 81

$14^2 =$ 196

$5^2 =$ 25

$12^2 =$ 144

$8^2 =$ 64

$13^2 =$ 169

$10^2 =$ 100

$3^2 =$ 9

$11^2 =$ 121

$2^2 =$ 4

Section 3.2 – Square Roots

What are they?

- They are asking you to find the number that was squared originally

$$\sqrt{25}$$
$$\downarrow$$
$$5^2 = 5 \times 5 = 25$$
$$\downarrow$$
$$\sqrt{25} = 5$$

Example: $\sqrt{25} = \sqrt{5x5} = \sqrt{5^2}$ so the square root is 5

Let's practice!

1. $\sqrt{4} = 2$

2. $\sqrt{36} =$ 6

3. $\sqrt{100} = 10$

4. $\sqrt{144} = 12$

5. $\sqrt{196} = 14$

6. $\sqrt{225} = 15$

Name: _____ Date: _____

Square Roots Worksheet

Solve.

1 a. $\sqrt{81} = 9$

1 b. $\sqrt{289} = 17$

2 a. $\sqrt{16} = 4$

2 b. $\sqrt{36} = 6$

3 a. $\sqrt{1} = 1$

3 b. $\sqrt{144} = 12$

4 a. $\sqrt{4} = 2$

4 b. $\sqrt{0} = 0$

5 a. $\sqrt{9} = 3$

5 b. $\sqrt{121} = 11$

6 a. $\sqrt{64} = 8$

6 b. $\sqrt{225} = 15$

7 a. $\sqrt{169} = 13$

7 b. $\sqrt{256} = 16$

8 a. $\sqrt{100} = 10$

8 b. $\sqrt{49} = 7$

Section Reflection

How did this section on squares and square roots go? Please circle the number that you think best describes how this section went:

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?

_____

_____

_____

_____