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This Practice Workbook is yours! Use it to see what you know and think about what you might need to work on.

Getting Started

Everything you learn builds on something you have experienced or learned before.

Take Your Time

- Don't rush. Not all math tasks take the same amount of time to complete.

What Might This Look Like?

- Use tools and materials to help you complete the tasks.
- Try “seeing the problem in your mind” to help you reason your way to a solution.

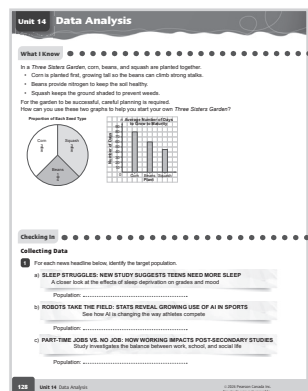
Try Your Best!

- Read over the tasks and think about questions you might have that would help you better understand them.
- Reflect on what you already know and use this information to help you complete the tasks.

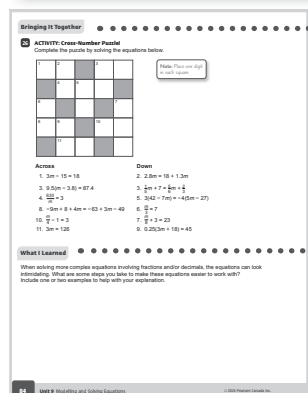
Reflect On and Share Your Learning

- Share your thinking and findings—talk about strategies with your friends and family.
- Look back in the Practice Workbook to get ideas to help you solve new problems!

How Is the Practice Workbook Organized?



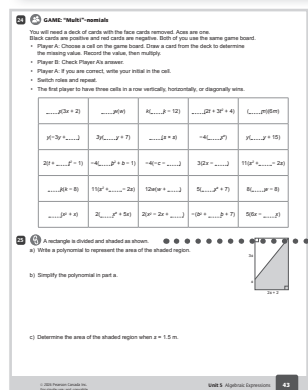
What I Know — Review the things you already know.



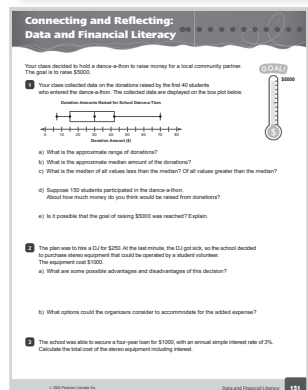
Checking In — Build on your understanding and make connections to the world around you. Use the space provided to clearly record your thinking so others can understand you.

Bringing It Together — Work with others to discuss your thinking and strategies and show them what you know.

What I Learned — Answer the question by reflecting on what you know about important math learning.



Connections question — Think of how working on this math task relates to other things you know.



Connecting and Reflecting — Use what you have learned to complete the task and to help you make sense of the world around you.



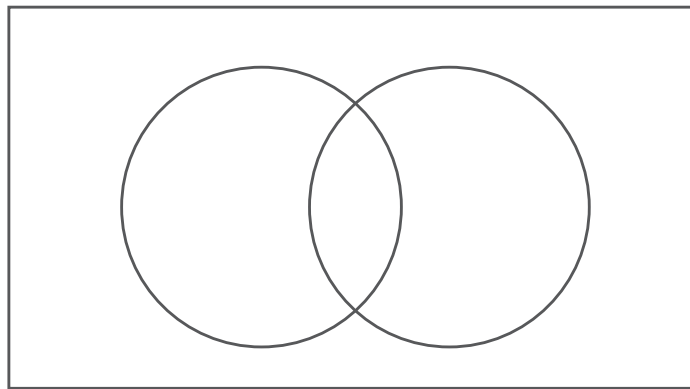
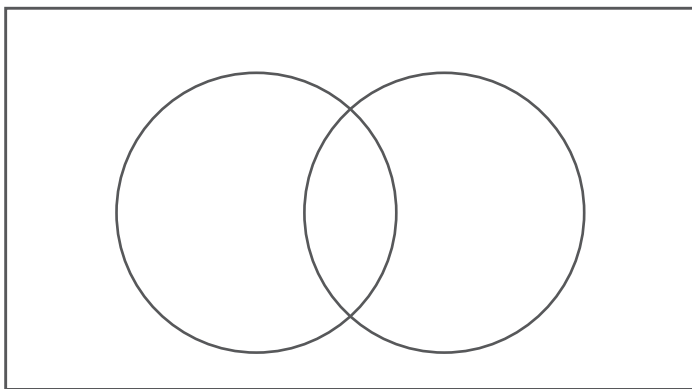
What needs to be considered when planning and managing a community garden at a local park?

What I Know

Record 10 numbers of your choice. Include numbers of different types. Sort the numbers in two different ways on the Venn diagrams below.



Besides the counting numbers, you could also include fractions, decimals, and integers.



Checking In

Number Systems

- 1** A number belongs to all the number systems that have check marks. Identify a possible number each time. Then, add your own number. Check all the number systems to which it belongs.

Possible Number	Natural	Whole	Integer	Rational	Irrational	Real
					✓	✓
	✓	✓	✓	✓		✓
				✓		✓

- 2** Identify a possible real-world context for each number below.

a) 1935

b) 45.89

c) $2\frac{3}{8}$

d) 9π

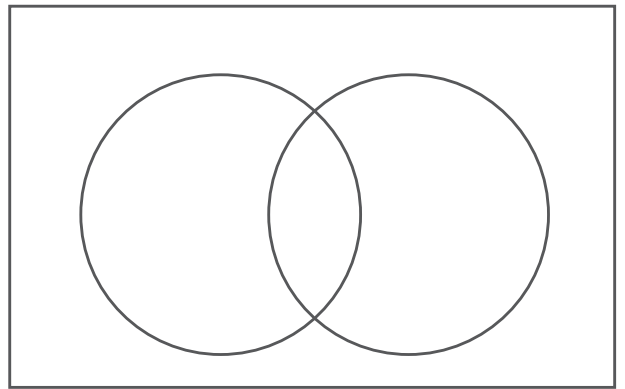
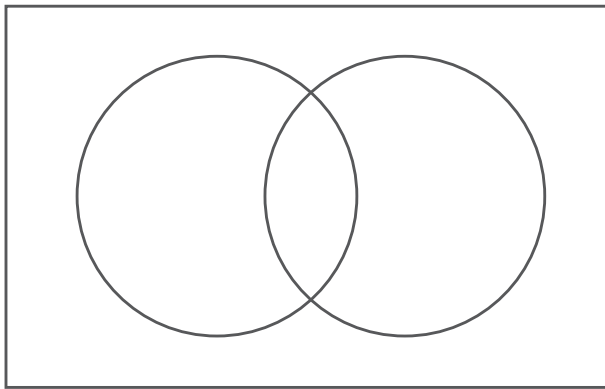
- 3** Walk around your school, home, or neighbourhood in search of five numbers. Record each number and where you spotted it. Identify all the number systems that each number belongs to.

- 4** Sort these numbers on the Venn diagram each time so that the given criteria are met.

1 2.25 3 4 5 7 9 10.5 11 12.75 14 16

a) No numbers belong to both sets.

b) At least 3 numbers belong to both sets.



- 5** Write a short story that includes at least one number that belongs to each of these number systems. Indicate a system that each number belongs to.

Natural

Whole

Integer

Rational

6 PUZZLE: The Odd One Out!

Identify the number that doesn't belong each time. Explain your choice.

a)

A	11	21	B
C	19	5	D

b)

A	0	-6	B
C	25	99	D

c)

A	13	0.375	B
C	$\frac{2}{3}$	$\sqrt{2}$	D

d)

A	π	$\sqrt{9}$	B
C	$\sqrt{5}$	$\sqrt{8}$	D

Density, Limits, and Infinity

7 a) Represent this sequence on the graph.

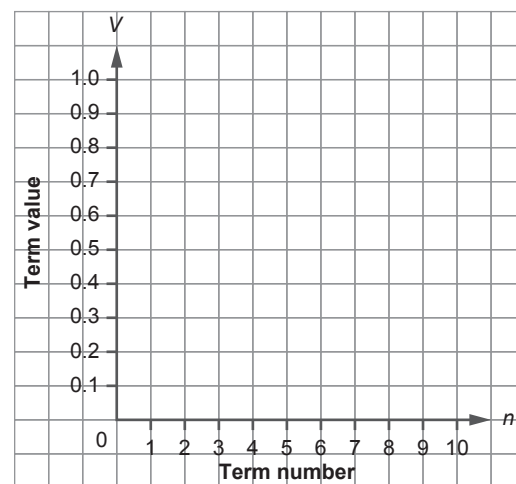
$$\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \frac{1}{81}, \dots$$

What is the limit of the sequence?

How do you know from looking at the graph?

b) Add 100 to each term in the sequence in part a.
What happens to the limit? Explain.

$$100\frac{1}{3}, 100\frac{1}{9}, 100\frac{1}{27}, 100\frac{1}{81}, \dots$$



8  Choose a whole number between 10 and 20 to be the first term of a sequence:
Use each rule to write the next three terms of the sequence.
State the limit of the sequence. Justify your thinking.

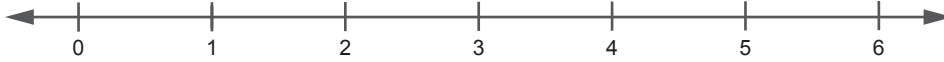
a) Add 2 each time.

b) Multiply by 2 each time.

c) Divide by 2 each time.

- 9** Use estimation to plot each fraction on the number line.
What is the limit of the sequence?

$$\frac{5}{1}, \frac{5}{4}, \frac{5}{9}, \frac{5}{16}, \frac{5}{25}, \dots$$



- 10** Which set has the greater density? Explain your thinking.

a) The set of whole numbers from 0 to 20 or the set of rational numbers from 0 to 20.

b) The set of real numbers from -10 to 10 or the set of integers from -10 to 10 .

c) The set of prime numbers from 1 to 50 or the set of natural numbers from 1 to 50.

- 11** Consider the set of natural numbers from 1 to 100.

a) Identify a number set that is less dense.

b) Identify a number set that is more dense.

- 12** You love apple pie. You start with a whole pie and eat one-half of the pie on the first day. Each day after that, you eat half of what is left. When will you finish the pie? Show your thinking.



Coding

13 Jerome wrote this Python code to generate a number set. When the code is executed, six even numbers are output, starting at 0. Here is Jerome’s code, along with the output.

Note: The * symbol means to multiply.

Code	Output
for i in range (0,6):	0
number = i * 2	2
print (number)	4
	6
	8
	10

Jerome explained their code:

Line 1: “i” represents the “input” value, and “for i in range (0, 6)” means the input values start at 0 and run up to, but not including 6.
Line 2: the * symbol means to multiply, so the input number is multiplied by 2, ensuring the output number is always even.
Line 3: the output number is printed each time.

Jerome altered the code in a variety of ways to produce different number sets. Match Jerome’s altered code to its output. The altered lines of code are highlighted.

Outputs

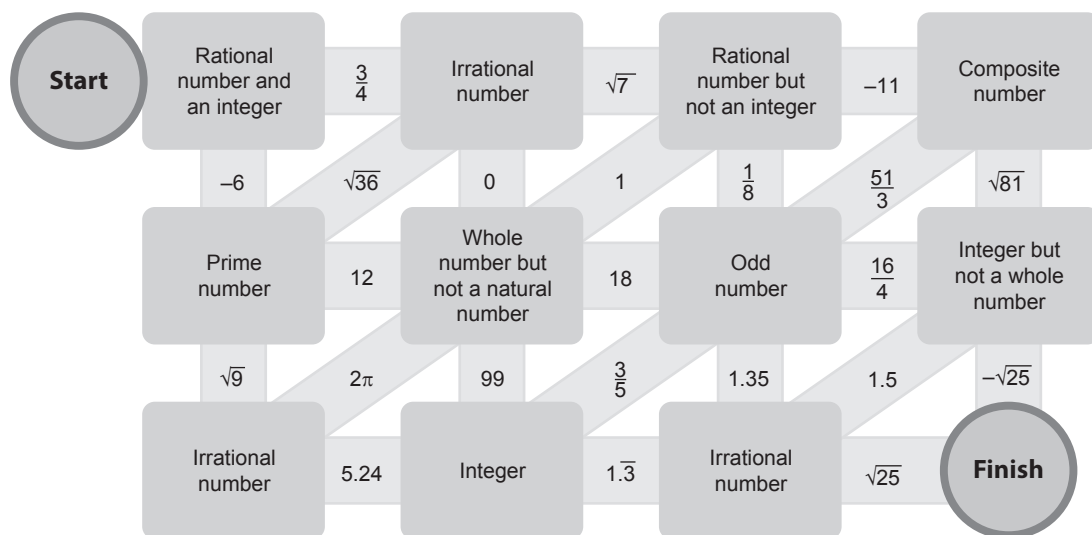
Altered Code	Matching Output
for i in range (0,11): number = i * 2 print (number)	
for i in range (0,6): number = i * 2 + 1 print (number)	
for i in range (0,6): number = i print (number)	

A	B	C
1	0	0
3	2	1
5	4	2
7	6	3
9	8	4
11	10	5
	12	
	14	
	16	
	18	
	20	

Bringing It Together

14 Part A: Escape the Maze!

Move through the maze by identifying the number that matches the given criteria, then following its path.



Part B: My Day Is the Limit!

Use the day of your birth.

- Write a decreasing number sequence with that limit.
- Write an increasing number sequence with that limit.
- Write a number set with that density.

What is the date of your birth?

DD	MM	YYYY
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↑
Limit

What I Learned

What is one thing you learned about different types of numbers in this unit? Explain. Include any ways that you have related this new knowledge to your daily life.