LESSON 1

NUMBER SENSE

This lesson begins with students defining the sets of whole and natural numbers. Each chapter will introduce students to a new subset of the real numbers, reinforcing the sets previously learned. Students will compare numbers using inequality symbols. The goal is for students to master the inequality symbols so that the symbols themselves will not be an issue as they compare other types of numbers in later chapters. The students will graph numbers on the real number line and the coordinate plane. This lays the foundation of graphing that they will repeat with the other subsets of real numbers. The concept of terms and factors is explored at an arithmetic level, so there will be an easy transition to those same concepts with variables. Order of operations is explored, so the students can discover which operations take precedence. There are several activities to practise the order of operations that follow. Synthesising the lesson with a graphic organiser concludes this lesson.

ACTIVITY 1

CAN YOU DEFINE ME?

Exploratory

Solo

1. Individually, each student completes the exploration.

Pair Consensus

2. For each problem on the investigation, each student shares with his/her partner, using RallyRobin, his/her response. They discuss the problems that they disagree on, trying to come to consensus on the correct response. They mark the problems they can't reach consensus on so they can focus on them during the team phase. Encourage the students to add to their responses if their partner verbalises an understanding they did not see.

Team Consensus

3. Each pair shares their responses, using RallyRobin, with the other pair in their team, augmenting their responses if necessary. When the teams are finished sharing, each student should have a detailed, complete summary.

Structure
- Solo-Pair Consensus-Team Consensus

Materials
- Blackline 1.1.1 per student
- 1 pencil per student

ACTIVITY

4 COMPARE ME

Structure: RallyCoach

For each problem:

a. Write a number sentence using the correct inequality symbol.

b. Using words, write a sentence as the inequality reads from left to right.

c. Using words, write a sentence as the inequality reads from right to left.

1. 9 −3

2. −16 3

3. −5 0

4. −2 −10

5. −12 −8

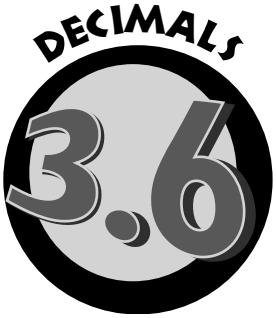
6. 4 7

7. −2 −15

8. −21 −23

Answers:

1. $9 > -3$; Nine is greater than negative three; Negative three is less than nine.
2. $-16 < 3$; Negative sixteen is less than three; Three is greater than negative sixteen.
3. $-5 < 0$; Negative five is less than zero; Zero is greater than negative five.
4. $-2 > -10$; Negative two is greater than negative ten; Negative ten is less than negative two.
5. $-12 < -8$; Negative twelve is less than negative eight; Negative eight is greater than negative twelve.
6. $4 < 7$; Four is less than seven; Seven is greater than four.
7. $-2 > -15$; Negative two is greater than negative fifteen; Negative fifteen is less than negative two.
8. $-21 > -23$; Negative twenty-one is greater than negative twenty-three; Negative twenty-three is less than negative twenty-one.



DECIMALS

This chapter works with decimals. It spirals the pre-algebra/algebra concepts that were introduced in Chapter 1. The first lesson on number sense has students classify, compare and round decimals. Students will graph decimal numbers and ordered pairs. The four arithmetic operations are performed with decimals. Lesson 2 reinforces evaluating and simplifying expressions, but this time the coefficients are decimals. The last lesson has students solving equations and inequalities with decimal coefficients and constants. Each lesson ends with a synthesis activity so students can summarise what they learned.

LESSON 3

EQUATIONS AND INEQUALITIES

This lesson reinforces solving one- and two-step equations and inequalities. The problems in this lesson have fractional coefficients, constants and answers. The students will be required to graph their inequality answers, reinforcing graphing on a number line. The lesson ends with geometric applications and a synthesis activity.

ACTIVITY 1

SOLVE MY ONE-STEP EQUATION

Algebraic

Setup:
In pairs, Student A is the Sage; Student B is the Scribe. Students fold a sheet of paper in half and each writes his/her name on one half.

1. The Sage gives the Scribe step-by-step instructions on how to solve problem one.

2. The Scribe records the Sage's solution step-by-step in writing on the Sage's side of the paper.

3. If the Sage is correct, the Scribe praises the Sage. Otherwise, the Scribe coaches, then praises.

4. Students swap roles for the next problem.

Structure
- Sage-N-Scribe

Materials
- Transparency 4.3.1
- 1 sheet of paper and pencil per pair of students

ACTIVITY 2

SOLVE MY TWO-STEP EQUATION

Algebraic

Setup:
In pairs, Student A is the Sage; Student B is the Scribe. Students fold a sheet of paper in half and each writes his/her name on one half.

1. The Sage gives the Scribe step-by-step instructions on how to solve problem one.

2. The Scribe records the Sage's solution step-by-step in writing on the Sage's side of the paper.

3. If the Sage is correct, the Scribe praises the Sage. Otherwise, the Scribe coaches, then praises.

4. Students swap roles for the next problem.

Structure
- Sage-N-Scribe

Materials
- Transparency 4.3.2
- 1 sheet of paper and pencil per pair of students

ACTIVITIES 6&7

SET ME UP TWO WAYS APPLY ME

Structure: RallyCoach (Activity 6)
Structure: Sage-N-Scribe (Activity 7)
Directions:
Activity 6: Write two different proportions for each problem.
Activity 7: Solve each proportion written in Activity 6.

1. To estimate a wombat population, forest rangers tagged fifteen wombats. Six months later, they captured twenty-nine wombats and of those captured, six were tagged. Estimate the number of wombats in the forest. Round your answer to the nearest whole number.

2. Mosquito Control has a pesticide that covers one hundred and ten square metres for each five and a half litres used. How many litres are needed to treat a six thousand, five hundred square metre lake?

3. The humane society uses sixteen kilograms of dog food for fourteen dogs. If there are twenty dogs at the humane society, how much food is needed to feed them? Round your answer to the nearest kilogram.

4. Linda mows a five hundred and seventy-six square metre lawn in three-quarters of an hour. How long will it take her to mow one thousand, one hundred and fifteen square metres? Round your answer to the nearest hundredth.

5. Three kilograms of apples costs $9.89. How many kilograms of apples can be purchased for $30? Round your answer to the nearest tenth.