IMB – Unit 2 Study Guide
Addition and Subtraction on a Number Line

Lesson 1: Integers on a Number Line

Absolute value - the positive number of any pair of opposite nonzero real numbers; the absolute value of 0 is 0; the absolute value of a number a is written as $|a|$

Coordinate - the number associated with a point on a number line

Integers - all positive and negative whole numbers including zero {… –2, –1, 0, 1, 2, …}

Number line - a line on which each point represents a number

Opposites - two numbers that are the same distance from zero on the number line

Origin - the point on a number line whose coordinate is zero

Positive – move right

Negative – move left
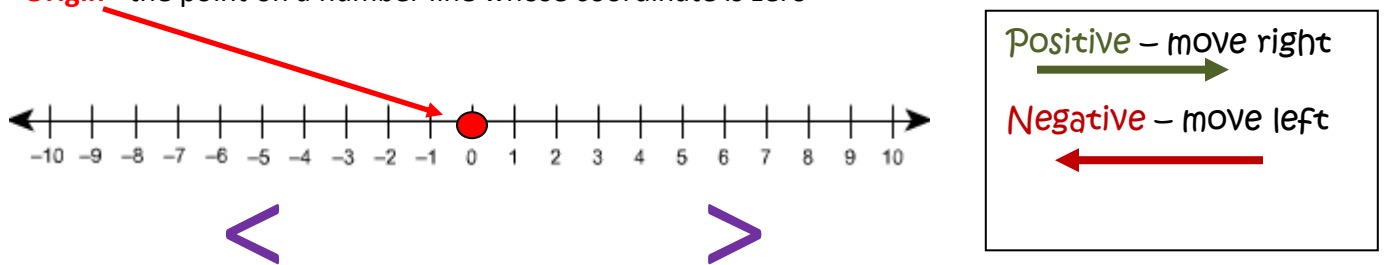
OFFLINE WORK:

- Read pages 39–40.
- Complete Problems 1–12 on page 43 of the reference guide.
- Use the Solution Manual to check your work (optional). The Solution Manual is located in the Resources section in the Online Book Menu of *Intermediate Mathematics B: A Reference Guide and Problem Sets*.

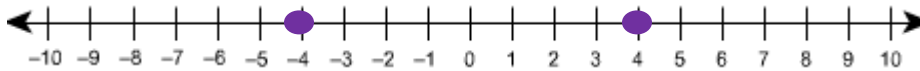Examples/Notes:

IMB – Unit 2 Study Guide
Addition and Subtraction on a Number Line
<u>Lesson 2: Integers on a Number Line, part 2</u>

Absolute Value of a Number – the distance from zero. The absolute value of a number is ALWAYS positive.

- The absolute value of x is written as |x|

- How far away from zero are the following?

  -4 and 4

  Notice that both -4 and 4 are a distance of 4 units away from zero. This means that |-4| and |4| are both 4.

  So, the integer solutions of |x| < 6 are –5, –4, –3, –2, –1, 0, 1, 2, 3, 4, and 5.

OFFLINE WORK:

- Review pages 41–42 in the reference guide.
- Complete Problems 13–27 odd on page 43 in the reference guide.
- Complete Problems 14–28 even, and 32 on pages 43–44 in the reference guide for extra practice. (optional).
- Use the Solution Manual to check your work (optional). The Solution Manual is located in the Resources section in the Online Book Menu of *Intermediate Mathematics B: A Reference Guide and Problem Sets*.
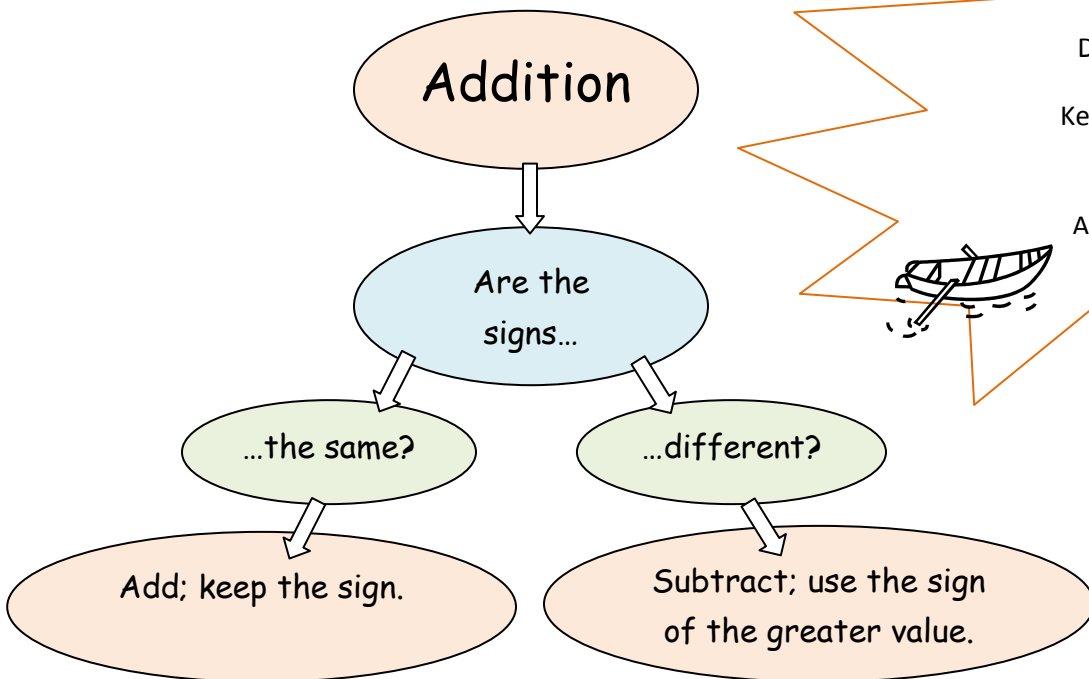
Examples/Notes

Lesson 3: Optional Lesson to Skip in OLS

Lesson 4: Adding Integers

Same signs, add and keep.

Different signs subtract.

Keep the sign of the higher number.

And then you'll be exact.

Addition

Are the signs…

…the same?

…different?

Add; keep the sign.

Subtract; use the sign of the greater value.

OFFLINE WORK:

- Read pages 45–49 in the reference guide.
- Complete Problems 2–28 even on pages 48–49.
- Complete Problems 29–30 on page 49 for extra practice (optional).
- Use the Solution Manual to check your work (optional). The Solution Manual is located in the Resources section in the Online Book Menu of *Intermediate Mathematics B: A Reference Guide and Problem Sets*.

Examples/Notes:

Lesson 5: Subtracting Integers

Difference- the solution to a subtraction problem

You can subtract a number by adding its opposite.

$$3 - 12 = 3 + (-12) = -9$$

Then you can follow the addition rules learned in Lesson 3!

OFFLINE WORK:

- Review pages 50–51 in the reference guide.
- Complete Problems 1-29 on page 52 of the reference guide.
- For additional practice, see Problems 15 and 25 on page 52 of the reference guide.
- Use the Solution Manual to check your work (optional). The Solution Manual is located in the Resources section in the Online Book Menu of *Intermediate Mathematics B: A Reference Guide and Problem Sets.*
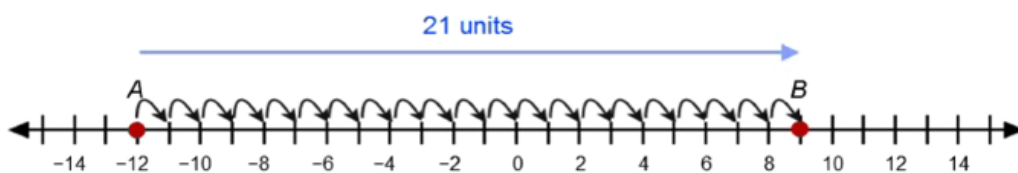
Examples/Notes

Lesson 6: Distance

Distance is NEVER negative.

Find distance by counting.

The distance from *A* to *B* is 21.

Find distance by subtracting the lesser coordinate from the greater coordinate.

Distance = $9 - (-12) = 9 + 12 = 21$

Remember: Subtracting is the same as adding the opposite.

OFFLINE WORK:

- Read pages 53–54.
- Complete Problems 1–2 on page 55.
- Use the Solution Manual to check your work (optional). The Solution Manual is located in the Resources section in the Online Book Menu of *Intermediate Mathematics B: A Reference Guide and Problem Sets*.

Lesson 7: Optional Your Choice to SKIP

Lesson 8: Decimals on a Number Line

- Positive and negative decimals can be graphed on a number line the same way positive and negative integers are graphed.

The number line helps us to order and compare decimals.

-0.6 < 0.4   0.8 > -1.0   0 > -0.6

OFFLINE WORK:

- Read pages 56–59 in the reference guide.
- Complete Problems 1–29 odd on pages 59–60.
- Complete Problems 2–28 even on pages 59–60 for extra practice (optional).
- Use the Solution Manual to check your work (optional). The Solution Manual is located in the Resources section in the Online Book Menu of *Intermediate Mathematics B: A Reference Guide and Problem Sets*

Examples/Notes:

Lesson 9: Adding Decimals part 1

Sum – the result of an addition; the numbers added are *addends*

To add decimals: Use the SAME strategy as adding integers (refer to lesson 3 notes)

OFFLINE WORK:

- Read pages 61–63 in the reference guide.
- Complete Problems 1–8, 21–25 odd on page 64.
- Use the Solution Manual to check your work (optional). The Solution Manual is located in the Resources section in the Online Book Menu of *Intermediate Mathematics B: A Reference Guide and Problem Sets*.

Examples/Notes:

Lesson 10: Adding Decimals part 2

Equation - the number sentence that indicates that two expressions are equal

Expression - a group of mathematical symbols that represent a numerical value; an expression must contain numerals as well as operation signs and/or grouping symbols; an expression containing one or more variables is called a "variable expression" or "algebraic expression"

Inequality - a mathematical sentence formed by placing an inequality symbol between two expressions $>$ $<$ $\geq$ $\leq$

Inverse operations - mathematical operations that undo each other, such as addition and subtraction, or multiplication and division

Problem Solving Strategy –
Step 1 – Identify
Step 2 – Strategize
Step 3 – Set up
Step 4 – Solve
Step 5 – Check

OFFLINE WORK:

- Read pages 62–63 in the reference guide.
- Complete Problems 27–33 on page 64.
- Use the Solution Manual to check your work (optional). The Solution Manual is located in the Resources section in the Online Book Menu of *Intermediate Mathematics B: A Reference Guide and Problem Sets*.

Examples/Notes:

Lesson 11: Core Focus: Additive Inverses

NOTE: Be sure to watch all videos in OLS

The Core Concept

If the sum of two quantities is zero, the quantities are additive inverses.

The additive inverse of a number is its opposite.

Example: The additive inverse of 6 is –6.

Additive Inverse Property

The sum of a number and its additive inverse is 0.

$$6 + (-6) = 0$$

OFFLINE WORK:

- Read pages 65–66 in the reference guide.
- Complete Problems 1–4 on pages 66–67.
- Use the Solution Manual to check your work (optional). The Solution Manual is located in the Resources section in the Online Book Menu of *Intermediate Mathematics B: A Reference Guide and Problem Sets*.