Greek Orthodox Patriarchate School
International - Hanina

Unit 4

Name: _____ **Lesson 4.2** **Grade 6A**

Date: _____ **Adding and subtracting decimals** **Study sheet**

Part 1: Adding & Subtracting Positive Decimals

The key to accuracy is correct place value alignment.

Written Method: Vertical Format

1. **Write the problem vertically.** Stack the numbers on top of each other.
2. **Line up the decimal points.** This is the most important step. Draw a clear decimal point for each number.
3. **Add zeros as placeholders.** If a number has fewer decimal places, add zeros to the right until all numbers have the same number of digits after the decimal.
4. **Add or subtract.** Work from right to left, just as you would with whole numbers.
5. **Drop the decimal point down.** Bring the decimal point straight down into your answer.

Example: 15.3 - 4.76

15.30 <-- Zero added as a placeholder

\- 4.76

10.54 <-- Decimal point brought straight down

Mental Method: Break by Place Value

Break the numbers into their whole number and decimal parts. Handle each part separately and then combine them.

Example: 15.3 - 4.76

1. Think of it as: (15 - 4) + (0.30 - 0.76)
2. 15 - 4 = 11
3. 0.30 - 0.76 = -0.46 (Since 0.76 is larger, you owe 0.46)
4. Combine: 11 - 0.46 = 10.54

Part 2: Adding Positive & Negative Decimals

This uses the same rules as adding integers.

Mental & Written Method: The Rules of Addition

- Same Signs:
    1. Add their absolute values (ignore the signs).
    2. Keep the common sign.

(-2.5) + (-3.1) = -5.6 (Both negative, so add 2.5+3.1=5.6 and keep the negative sign)

- Different Signs:
    1. Subtract the smaller absolute value from the larger one.
    2. Take the sign of the number with the larger absolute value.

(-4.8) + 2.5 = -2.3 (Subtract 4.8 - 2.5 = 2.3. Since -4.8 has the larger absolute value, the answer is negative).

Part 3: Subtracting Positive & Negative Decimals

The core idea is that subtraction is the same as adding the opposite.

Mental & Written Method: "Add the Opposite" (KCC)

1. **K**eep the first number the same.
2. **C**hange the subtraction operation (-) to an addition operation (+).
3. **C**hange the sign of the second number (positive becomes negative, negative becomes positive).

After applying KCC, follow the **rules for addition** from Part 2.

Examples:

- 5.2 - 1.5 becomes 5.2 + (-1.5) = 3.7
- 5.2 - (-1.5) becomes 5.2 + (+1.5) = 6.7
- -3.5 - 2.1 becomes -3.5 + (-2.1) = -5.6
- -3.5 - (-2.1) becomes -3.5 + (+2.1) = -1.4

Practice Problems

Set 1: Positive Decimals

1. 8.05 + 12.9

2. 7.4 - 2.86

3. 11 - 3.276

Set 2: Positive & Negative Decimals (Add)

4. -5.75 + 3.2

5. -1.8 + (-4.3)

6. 6.25 + (-2.9)

Set 3: Positive & Negative Decimals (Subtract)

7. 4.1 - (-0.5)

8. -3.8 - 1.2

9. -2.25 - (-1.5)

Set 4: Mixed Practice

10. -6.4 + 10.1

11. 5.5 - 8.75

12. -2.2 - (-4.7)

Set 5: Word Problems

13. A submarine is 125.5 meters below sea level. It rises 48.25 meters. What is its new depth?

14. The temperature was -3.8°C. It then fell by 2.5 degrees. What is the temperature now?

15. Sarah has £25.50. She buys a book for £12.99 and a snack for £3.50. How much money does she have left?