Signed Numbers

I. Addition
   A. To Add Numbers With Like Signs:
      - Ignore the signs on the numbers.
      - Add the numbers together.
      - Give the answer the common sign.

      Examples:
      a. 3 + 4 = 7
      b. (+3) + (+6) = +9
      c. (−3) + (−6) = −9

   B. To Add Numbers With Different Signs:
      - Ignore the signs on the numbers.
      - Subtract the smaller number from the larger.
      - Give the answer the sign of the larger number.

      Examples:
      a. 3 + (−4) = −1
         3 is smaller than 4.
         4 − 3 = 1
         Give the answer the sign of 4, which is negative.
      b. −6 + 3 = −3
         3 is smaller than 6.
         6 − 3 = 3
         Give the answer the sign of 6, which is negative.
      c. 6 + (−3) = 3
         3 is smaller than 6.
         6 − 3 = 3
         Give the answer the sign of 6, which is positive.

   C. To Add Zero:

      $a + 0 = a$
      $0 + a = a$
Signed Numbers: Addition Problems

1. \(-3 + (-5) = \)
2. \(6 + 4 = \)
3. \(8 + (-2) = \)
4. \(7 + (-7) = \)
5. \(-3 + 5 = \)
6. \(-4 + 9 = \)
7. \(6 + (-13) = \)
8. \(-6 + (-6) = \)
9. \(4 + 2 = \)
10. \(5 + (-3) = \)

II. Subtraction

A. To Subtract Signed Numbers:
   - Change the sign of the number being subtracted and perform addition.

   Examples:
   a. \(3 - 7 = -4\)
      Sign of 7 is positive.
      \(3 + (-7)\) (This is an equivalent problem to the one above.
      Now follow the rule for adding numbers with different signs.)
      \(3 + (-7) = -4\)
   b. \(14 - (-12) = 28\)
      Sign of the number being subtracted is negative.
      \(14 + 12\) is an equivalent problem.
      \(14 + 12 = 28\)

B. Summary:
   \(a - b = a + (-b)\)

Signed Numbers: Subtraction Problems

1. \(6 - 8 = \)
2. \(-4 - 8 = \)
3. \(5 - 9 = \)
4. \(8 - 5 = \)
5. \(-3 - 6 = \)
6. \(-8 - 8 = \)
7. \(4 - 9 = \)
8. \(-5 - 0 = \)
9. \(-9 - 4 = \)
10. \(4 - 7 = \)
III. Multiplication
A. To Multiply Numbers with the same sign:
   - Multiply the numbers.
   - Give the answer a positive sign.

   Tip: \( negative \times negative = positive \)
   \( positive \times positive = positive \)

B. To Multiply Numbers with different signs:
   - Multiply the numbers.
   - Give the answer a negative sign.

   Tip: \( positive \times negative = negative \)

Examples:
   a. \( 3(4) = 12 \)
   b. \( 3(-4) = -12 \)
   c. \( (-3)4 = -12 \)
   d. \( (-3)(-4) = 12 \)

Signed Numbers: Multiplication Problems
1. \( 6(-5) = \)
2. \( (-4)(-6) = \)
3. \( (-5)(7) = \)
4. \( 9(9) = \)
5. \( 1(9) = \)
6. \( (-10)(-9) = \)
7. \( (-8)1 = \)
8. \( 6(-8) = \)
9. \( 2(43) = \)
10. \( (-9)(7) = \)
IV. Division
A. Same rules apply as multiplication.
B. To Divide Numbers with the same sign:
   - Divide the numbers.
   - Give the answer a positive sign.

C. To Divide Numbers with different signs:
   - Divide the numbers.
   - Give the answer a negative sign.

Examples:
   a. \( \frac{12}{-4} = -3 \)
   b. \( 12 \div 3 = 4 \)
   c. \( -12 \div -6 = 2 \)
   d. \( \frac{-12}{6} = -2 \)

D. Division by zero is undefined.
   a. \( \frac{4}{0} = \text{undefined} \)
   b. \( \frac{0}{0} = \text{undefined} \)
   c. \( \frac{0}{4} = 0 \)

Signed Numbers: Division Problems

1. \( \frac{12}{4} = \)
2. \( 6 \div -2 = \)
3. \( (-6) \div 3 = \)
4. \( (-6) \div (-6) = \)
5. \( \frac{14}{-7} = \)
6. \( \frac{-5}{0} = \)
7. \( \frac{-24}{-8} = \)
8. \( 36 \div -6 = \)
9. \( \frac{0}{36} = \)
10. \( \frac{0}{-36} = \)
# Signed Numbers: Answer Sheet

## Addition Problems (I)

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## Subtraction Problems (II)

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## Multiplication Problems (III)

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## Division Problems (IV)

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