



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:

- $3 + 4 = 7$
- $(+3) + (+6) = +9$
- $(-3) + (-6) = -9$

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:

- $3 + (-4) = -1$
3 is smaller than 4.
 $4 - 3 = 1$
Give the answer the sign of 4, which is negative.
- $-6 + 3 = -3$
3 is smaller than 6.
 $6 - 3 = 3$
Give the answer the sign of 6, which is negative.
- $6 + (-3) = 3$
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. $-3 + (-5) =$

6. $-4 + 9 =$

2. $6 + 4 =$

7. $6 + (-13) =$

3. $8 + (-2) =$

8. $-6 + -6 =$

4. $7 + (-7) =$

9. $4 + 2 =$

5. $-3 + 5 =$

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. $6 - 8 =$

6. $-8 - 8 =$

2. $-4 - 8 =$

7. $4 - 9 =$

3. $5 - 9 =$

8. $-5 - 0 =$

4. $8 - 5 =$

9. $-9 - 4 =$

5. $-3 - 6 =$

10. $4 - 7 =$

III. Multiplication

A. To Multiply Numbers with the same sign:

- Multiply the numbers.
- Give the answer a positive sign.

Tip: *negative x negative = positive*
positive x positive = positive

B. To Multiply Numbers with different signs:

- Multiply the numbers.
- Give the answer a negative sign.

Tip: *positive x negative = negative*

Examples:

- a. $3(4) = 12$
- b. $3(-4) = -12$
- c. $(-3)4 = -12$
- d. $(-3)(-4) = 12$

Signed Numbers: Multiplication Problems

1. $6(-5) =$

6. $(-10)(-9) =$

2. $(-4)(-6) =$

7. $(-8)1 =$

3. $(-5)(7) =$

8. $6(-8) =$

4. $9(9) =$

9. $2(43) =$

5. $1(9) =$

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. $\frac{12}{4} =$

6. $\frac{-5}{0} =$

2. $6 \div -2 =$

7. $\frac{-24}{-8} =$

3. $(-6) \div 3 =$

8. $36 \div -6 =$

4. $(-6) \div (-6) =$

9. $\frac{0}{36} =$

5. $\frac{14}{-7} =$

10. $\frac{0}{-36} =$

Signed Numbers: Answer Sheet

Addition Problems (I)

- | | |
|-------|--------|
| 1. -8 | 6. 5 |
| 2. 10 | 7. -7 |
| 3. 6 | 8. -12 |
| 4. 0 | 9. 6 |
| 5. 2 | 10. 2 |

Subtraction Problems (II)

- | | |
|--------|--------|
| 1. -2 | 6. -16 |
| 2. -12 | 7. -5 |
| 3. -4 | 8. -5 |
| 4. 3 | 9. -13 |
| 5. -9 | 10. -3 |

Multiplication Problems (III)

- | | |
|--------|---------|
| 1. -30 | 6. 90 |
| 2. 24 | 7. -8 |
| 3. -35 | 8. -48 |
| 4. 81 | 9. 86 |
| 5. 9 | 10. -63 |

Division Problems (IV)

- | | |
|-------|--------------|
| 1. 3 | 6. undefined |
| 2. -3 | 7. 3 |
| 3. -2 | 8. -6 |
| 4. 1 | 9. 0 |
| 5. -2 | 10. 0 |