

## SKILL #02

CODE: OP.1

# OPERATIONS WITH INTEGERS

### Core Concept

Integers are whole numbers — both positive and negative — including zero. Understanding how they interact in different operations helps us handle math problems!

## THE GOLDEN RULES

### ADDITION & SUBTRACTION

- 💡 Same Signs: Add the numbers, keep the sign
- 💡 Different Signs: Subtract smaller from larger, use sign of larger number
- 💡 Subtraction Trick: Change to "add the opposite"

## THE GOLDEN RULES

### MULTIPLICATION & DIVISION

- 💡 Same Signs: Result is POSITIVE (+)
- 💡 Different Signs: Result is NEGATIVE (-)

### + ADDITION RULES

$P \rightarrow$  positive  
 $N \rightarrow$  negative

rule	example
$P+P$	add, keep + $5+3=8$
$N+N$	add, keep - $-4+(-2)=-6$
$P+N$	subtract, bigger wins $5+(-3)=2$
$N+P$	subtract, bigger wins $-4+2=-2$

Note → addition is commutative → Order does not matter  $(1+2) = 3+1 = 4$

### - SUBTRACTION RULES

«Add the opposite»

$P-P$	original $8-3$	change to $8+(-3) = 5$
$N-N$	$-8-(-3)$	$-8+3 = -5$
$P-N$	$8-(-3)$	$8+3 = 11$
$N-P$	$-8-3$	$-8+(-3) = -11$

Note → subtraction is not commutative →  $\begin{cases} 8-3=5 \\ 3-8=-5 \end{cases}$

### ✖ MULTIPLICATION RULES

$P \times P$	positive $4 \times 3 = 12$
$N \times N$	positive $-4 \times (-3) = 12$
$P \times N$	negative $4 \times (-3) = -12$
$N \times P$	negative $-4 \times 3 = -12$

Note → multiplication is commutative → Order does not matter  $(1 \times 2) = (2 \times 1) = 2$

### ÷ DIVISION RULES

«Same rules as multiplication»

$P \div P$	positive $24 \div 3 = 8$
$N \div N$	positive $-24 \div (-3) = 8$
$P \div N$	negative $24 \div (-3) = -8$
$N \div P$	negative $-24 \div 3 = -8$

Note → division is not commutative →  $\begin{cases} 14 \div 2 = 7 \\ 2 \div 14 = \frac{1}{7} \end{cases}$

### Resource Links

Video Tutorial -->



Extra worksheet -->



Games -->



### Real-Life Connection

🌡 Weather: Temperature changes ↑ ↓

💰 Banking: Deposits (+) and withdrawals (-)

🎮 Gaming: Points gained (+) and lost (-)

📊 Business: Profit (+) and loss (-)

### ⚠ Common Mistakes to Avoid

✗ Forgetting that subtracting a negative means adding

✗ Ignoring the order in subtraction or division.

✗ Multiplying two negatives and saying result is negative

✗ Parentheses Confusion -->  $-3 + 2 = (-3) + 2$