Greek Orthodox Patriarchate School
International - Hanina

MATH BOOKLET

NAME: _____

GRADE: _____

- Add and subtract with positive and negative integers.

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What are integers?

Integers are positive and negative whole numbers, together with zero.

- Integers greater than zero are **positive integers**: 1,2,3
- Integers less than zero are **negative integers**: -1-2-3

You can use a number line to help you to add integers.

Part one: Adding Integers.

Here's a simple and clear explanation of rules for adding integers

Rules for Adding Integers

1. **Same Signs (both positive or both negative):**
   - Add their absolute values (ignore the signs at first).
   - Keep the common sign.
     Example:
   - $4+3=7$
   - $-5+-2=-7$
2. **Different Signs (one positive, one negative):**
   - Subtract the smaller absolute value from the larger absolute value.

- Take the sign of the number with the larger absolute value.
  Example:
- $7+-4=+3$ ($7 - 4 = 3$, sign is +)
- $-9+5=-4$ ($9 - 5 = 4$, sign is -)

Work out:

$-4+-7$ _____

$-9+-5$ _____

$7+-3$ _____

$20+-5$ _____

$-5+12$ _____

$-14+-22$ _____

$2+-8$ _____

Part Two: Subtracting Integers.

Easy Rule (Shortcut):

Subtracting an integer is the same as adding its opposite.

- Example: $7-3=7+(-3)=4$
- Example: $-5-2=-5+(-2)=-7$
- Example: $-3-(-6)=-3+6=3$

Key Steps:

1. Change the subtraction sign to addition.
2. Take the opposite of the number being subtracted.
3. Then add the integers using the rules for adding integers.

Tip: Always think: *"Subtracting a number is like adding its opposite."*

Work out:

1. Simple subtraction:

8–5 _____

7 – 12 _____

2. Subtracting positive from negative

$-6-4$ _____

$-9-2$ _____

3. Subtracting negative numbers:

$5-(-3)$ _____

$-7-(-2)$ _____

4. Mixed practice:

$10-(-5)$ _____

$4-(-6)$ _____

$-3-7$ _____

$0-(-8)$ _____

Part three: Missing Integers problems

1. Missing Integer in Addition (positive number)

Example:

$x+8=15$

Step 1: Identify what's missing

- x is the missing integer.

Step 2: Use the inverse operation

- Since it's addition, subtract the known number from the total: $x=15-8$

Step 3: Solve ($x=7$)

Step 4: Check $7+8=15$✓

2. Missing Integer in Addition (negative number)

$-5+x=-9$

Step 1: Missing integer is x

Step 2: Use inverse operation: $x=-9-(-5)$

Step 3: Simplify ($x=-9+5$)

Step 4: Check

$-5+(-4)=-9$✓

3. Missing Integers in Subtraction

Easy Method for Missing Integer in Subtraction

Step 1: Read the equation carefully
Example:

$12-y=7$

Think: “12 minus what gives 7?”

Step 2: Use the simple rule

Missing number = First number – Result

- Here: $y=12-7$

Step 3: Check

$12-5=7$✓Correct

Another Example (with negative numbers):

$-3-x=4$

Step 1: Ask: “-3 minus what gives 4?”

Step 2: Use the same rule, but be careful with signs:

$x=-3-4=-7$

Step 3: Check

$-3-(-7) =-3+7=4$✓

Work out the missing integers.

a. $x+7=12$ _____

b. $-5+y=-9$ _____

c. $8+z=15$ _____

d. $12-y=7$ _____

e. $-3-x=4$ _____

Part four: **Estimating Integers**

Definition:
Estimating means finding an approximate answer instead of the exact answer. This is useful when you want a quick answer.

1. Estimating Addition of Integers

Step 1: Round each number to a nearby easy number (like nearest 10 or nearest whole number).
Step 2: Add the rounded numbers.
Step 3: The result is an estimate.

Example 1:

27+36

- Round: 27≈30, 36≈40
- Add: 30+40=70
- **Estimate:** 70

Example 2 (with negative numbers):

−18+23

- Round: −18≈−20, 23≈20
- Add: −20+20=0
- **Estimate:** 0

2. Estimating Subtraction of Integers

Step 1: Round each number to a nearby easy number.
Step 2: Subtract the rounded numbers.
Step 3: The result is an estimate.

Example 1:

$54 - 27$

- Round: $54 \approx 50$, $27 \approx 30$
- Subtract: $50 - 30 = 20$
- **Estimate:** 20

Example 2 (with negative numbers):

$-15 - (-8)$

- Round: $-15 \approx -20$, $-8 \approx -10$
- Subtract: $-20 - (-10) = -20 + 10 = -10$
- **Estimate:** -10

Quick Tip:

Rounding makes numbers easier to work with.
For negative numbers, remember that subtracting a negative is like adding.