

MATH BOOKLET

NAME: _____

GRADE: _____

- Multiply and divide positive and negative integers.

TEACHER: YARA ALAWABDEH

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:

$$-4 + -7 \quad \underline{\hspace{2cm}}$$

$$-9 + -5 \quad \underline{\hspace{2cm}}$$

$$7 + -3 \quad \underline{\hspace{2cm}}$$

$$20 + -5 \quad \underline{\hspace{2cm}}$$

$$-5 + 12 \quad \underline{\hspace{2cm}}$$

$$-14 + -22 \quad \underline{\hspace{2cm}}$$

$$2 + -8 \quad \underline{\hspace{2cm}}$$

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:

$$8 - 5 \quad \underline{\hspace{2cm}}$$

$$7 - 12 \quad \underline{\hspace{2cm}}$$

2. Subtracting positive from negative

$$-6-4 \quad \underline{\hspace{2cm}}$$

$$-9-2 \quad \underline{\hspace{2cm}}$$

3. Subtracting negative numbers:

$$5-(-3) \quad \underline{\hspace{2cm}}$$

$$-7-(-2) \quad \underline{\hspace{2cm}}$$

4. Mixed practice:

$$10-(-5) \quad \underline{\hspace{2cm}}$$

$$4-(-6) \quad \underline{\hspace{2cm}}$$

$$-3-7 \quad \underline{\hspace{2cm}}$$

$$0-(-8) \quad \underline{\hspace{2cm}}$$

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

$$12 - 5 = 7 \checkmark \text{Correct}$$

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

$$-3 - (-7) = -3 + 7 = 4 \checkmark$$

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: $27 \approx 30$, $36 \approx 40$
- Add: $30+40=70$
- **Estimate:** 70

Example 2 (with negative numbers):

$$-18+23$$

- Round: $-18 \approx -20$, $23 \approx 20$
- 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.