

# Integer Chip Lab

*Model integer operations with chips, groups, and zero pairs.*

**GRADE 6 • 6.CE.2.a**

**6.CE.2.a** "Demonstrate/model addition, subtraction, multiplication, and division of integers using pictorial representations or concrete manipulatives.\*"

NAME \_\_\_\_\_

DATE \_\_\_\_\_

## PART 1: CHIP MODELS

You can draw circles marked + and - to stand for positive and negative chips. One positive chip and one negative chip make a zero pair, so they cancel. For multiplication, draw equal groups, and for division, split chips into equal groups.

## WORKED EXAMPLE

Model  $(-8) + (+11)$  with integer chips.

1. Draw 8 negative chips and 11 positive chips.
2. Pair 8 positive chips with 8 negative chips to make zero pairs.
3. 3 positive chips are left.

**Answer: +3**

## PRACTICE 6 problems

**1** Draw integer chips to model  $(+10) + (-16)$ .

**ANSWER** \_\_\_\_\_

**2** Use integer chips to model  $(-15) - (+5)$ .

**ANSWER** \_\_\_\_\_

**3** Use integer chips to model  $(-9) - (-2)$ .

**ANSWER** \_\_\_\_\_

**4** Draw 5 equal groups of 12 negative chips to model  $(+5) \times (-12)$ .

**ANSWER** \_\_\_\_\_

**5** Draw 7 equal groups of 4 negative chips to model  $(+7) \times (-4)$ .

**ANSWER** \_\_\_\_\_

**6** Split 54 negative chips into 6 equal groups to model  $(-54) \div (+6)$ .

**ANSWER** \_\_\_\_\_

## APPLY IT Show your work

- 1** At a gaming tournament, Eli starts with 0 points. He earns 25 points, loses 32 points, and then earns 9 points. Use a chip drawing or number line to find Eli's final score.

WORK SPACE

ANSWER \_\_\_\_\_

- 2** A school club has a debt of \$63 that is shared equally among 9 members. Use negative chips in equal groups to find the integer that represents each member's share of the debt.

WORK SPACE

ANSWER \_\_\_\_\_

## CHALLENGE One step up

### CHALLENGE

Use an integer-chip drawing to find  $(-14) - (-19) + (-12)$ . Explain how zero pairs help you subtract.

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## PART 1 • PRACTICE

| # | PROBLEM                                                                  | ANSWER     |
|---|--------------------------------------------------------------------------|------------|
| 1 | Draw integer chips to model $(+10) + (-16)$ .                            | <b>-6</b>  |
| 2 | Use integer chips to model $(-15) - (+5)$ .                              | <b>-20</b> |
| 3 | Use integer chips to model $(-9) - (-2)$ .                               | <b>-7</b>  |
| 4 | Draw 5 equal groups of 12 negative chips to model $(+5) \times (-12)$ .  | <b>-60</b> |
| 5 | Draw 7 equal groups of 4 negative chips to model $(+7) \times (-4)$ .    | <b>-28</b> |
| 6 | Split 54 negative chips into 6 equal groups to model $(-54) \div (+6)$ . | <b>-9</b>  |

## PART 2 • APPLY IT

- 2 points** Model the changes as  $(+25) + (-32) + (+9)$ . Pair zero pairs to leave 2 positive points.
- 7 dollars** Represent the debt as -63 and split 63 negative chips into 9 equal groups. Each group has 7 negative chips.

## CHALLENGE

**-7. Draw 14 negative chips, add 19 zero pairs, and remove 19 negative chips. Then combine the 5 positive chips left with 12 negative chips to get 7 negative chips.**

Accept clear chip drawings that use positive and negative chips and show zero pairs when needed. Accept answers written with or without a plus sign for positive integers.