

Zero Pair Power

Model integer changes, then calculate.

GRADE 6 • TEKS 6.3.C

6.3.C "represent integer operations with concrete models and connect the actions with the models to standardized algorithms;"

NAME _____

DATE _____

USE ZERO PAIRS

Positive chips represent +1, negative chips represent -1, and one of each makes a zero pair. To add, combine chips and remove zero pairs. To subtract, remove the named chips, adding zero pairs first if you need more chips to remove.

WORKED EXAMPLE

$$30 + (-4)$$

1. Place 30 positive chips and 4 negative chips together.
2. Match 4 positive chips with the 4 negative chips to make 4 zero pairs.
3. 26 positive chips remain.
4. The algorithm matches: $30 + (-4) = 30 - 4 = 26$.

Answer: 26

PRACTICE 6 problems

- 1** A chip model has 8 positive chips and 13 negative chips. Remove zero pairs. What integer is shown?

ANSWER _____

- 2** A chip model has 17 negative chips and 9 positive chips. Remove zero pairs. What integer is shown?

ANSWER _____

- 3** You have 14 positive chips. You must remove 19 positive chips. Use zero pairs if needed. What integer remains?

ANSWER _____

- 4** Use chips or a mental chip picture to find:
 $-11 - (-6)$

ANSWER _____

- 5** Use chips or a mental chip picture to find:
 $-15 + (-7)$

ANSWER _____

- 6** A chip model combines 23 positive chips with 18 negative chips. Remove zero pairs. What integer is shown?

ANSWER _____

APPLY IT Show your work

- 1** In a mobile game, Maya has a score of -12 points after a penalty. She earns 19 points in the next level. What is her new score?

WORK SPACE

ANSWER _____

- 2** In an online game, Jalen has 18 tokens. He buys an upgrade that costs 25 tokens, and his balance can go below zero. What is his token balance?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A player's score changes by -18, then -7, then +14. Write one integer expression, find the total change, and explain how zero pairs help you combine the changes.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A chip model has 8 positive chips and 13 negative chips. Remove zero pairs. What integer is shown?	-5
2	A chip model has 17 negative chips and 9 positive chips. Remove zero pairs. What integer is shown?	-8
3	You have 14 positive chips. You must remove 19 positive chips. Use zero pairs if needed. What integer remains?	-5
4	Use chips or a mental chip picture to find: $-11 - (-6)$	-5
5	Use chips or a mental chip picture to find: $-15 + (-7)$	-22
6	A chip model combines 23 positive chips with 18 negative chips. Remove zero pairs. What integer is shown?	5

PART 2 • APPLY IT

- 7 points** Write $-12 + 19$. Pair 12 positive points with 12 negative points, leaving 7 positive points.
- 7 tokens** Write $18 - 25$. Add 7 zero pairs so 25 positive chips can be removed, leaving 7 negative chips.

CHALLENGE

$-18 + (-7) + 14 = -11$. The 14 positive chips make zero pairs with 14 of the 25 negative chips, leaving 11 negative chips.

Accept equivalent integer expressions and chip-model descriptions that correctly use zero pairs. For the challenge, require both the total change of -11 and an explanation that positive and negative chips cancel in zero pairs.