LESSON MAKER PRO

# Number Detective Moves

*Use place value to solve addition and subtraction mysteries.*

**GRADE 3 · 3.PAR.2.2**

**3.PAR.2.2** "Apply part-whole strategies, properties of operations and place value understanding, to solve problems involving addition and subtraction within 10,000..."

NAME _____ DATE _____

## BREAK APART NUMBERS

Break each number into thousands, hundreds, tens, and ones. Add or subtract the parts, then combine them. Use a letter in an equation to stand for an unknown number. Define what the letter means, solve, and check using addition or subtraction.

### WORKED EXAMPLE

Solve: 4,728 + 1,356 = n. Let n stand for the total.

1. Break apart 4,728 and 1,356 by place value.
2. Add the parts: 4,000 + 1,000 = 5,000, 700 + 300 = 1,000, 20 + 50 = 70, and 8 + 6 = 14.
3. Combine: 5,000 + 1,000 + 70 + 14 = 6,084.

**Answer: n = 6,084; 4,728 + 1,356 = 6,084**

## PRACTICE 6 problems

**1** Solve. Show a place-value strategy: 3,468 + 2,157 = n. The letter stands for the missing number.

**ANSWER** _____

**2** Solve. Show a place-value strategy: 7,203 - 1,486 = m. The letter stands for the missing number.

**ANSWER** _____

**3** Find the missing number: 4,900 + p = 7,642. The letter stands for the missing number.

**ANSWER** _____

**4** Find the missing number: q - 2,735 = 3,108. The letter stands for the missing number.

**ANSWER** _____

**5** Find the missing number: 6,010 - r = 2,789. The letter stands for the missing number.

**ANSWER** _____

**6** Solve. You may use compensation: 1,999 + 3,006 = t. The letter stands for the missing number.

**ANSWER** _____

## APPLY IT Show your work

**1** The robotics club collected 3,275 bottle caps on Monday and 1,948 bottle caps on Tuesday. How many bottle caps did it collect altogether? Write an equation with the letter b for the total number of bottle caps, solve it, and tell how you checked.

WORK SPACE

**ANSWER** _____

**2** The school game club printed 8,400 scorecards. It used 3,657 scorecards at a tournament. How many scorecards were left? Write an equation with the letter s for the number of scorecards left, solve it, and tell how you checked.

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

A science club had 3,875 beads for making keychains. It received 2,468 more beads, then used some beads. There were 4,910 beads left. How many beads were used? Write an equation with the letter u for the number of beads used. Explain how you found it.

WORK SPACE AND ANSWER

**ANSWER KEY**

# Number Detective Moves

**GRADE 3 · 3.PAR.2.2**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | Solve. Show a place-value strategy: 3,468 + 2,157 = n. The letter stands for the missing number. | **n = 5,625; 3,468 + 2,157 = 5,625** |
| 2 | Solve. Show a place-value strategy: 7,203 - 1,486 = m. The letter stands for the missing number. | **m = 5,717; 7,203 - 1,486 = 5,717** |
| 3 | Find the missing number: 4,900 + p = 7,642. The letter stands for the missing number. | **p = 2,742; 4,900 + 2,742 = 7,642** |
| 4 | Find the missing number: q - 2,735 = 3,108. The letter stands for the missing number. | **q = 5,843; 5,843 - 2,735 = 3,108** |
| 5 | Find the missing number: 6,010 - r = 2,789. The letter stands for the missing number. | **r = 3,221; 6,010 - 3,221 = 2,789** |
| 6 | Solve. You may use compensation: 1,999 + 3,006 = t. The letter stands for the missing number. | **t = 5,005; 1,999 + 3,006 = 5,005** |

## PART 2 · APPLY IT

1. **3,275 + 1,948 = b; b = 5,223.** Add the two daily amounts. Check by subtracting one addend from the total.
2. **8,400 - 3,657 = s; s = 4,743.** Subtract the scorecards used from the number printed. Check by adding the amount left and the amount used.

## CHALLENGE

**3,875 + 2,468 - u = 4,910; u = 1,433.**

Accept accurate place-value, compensation, or inverse-operation strategies. Accept equivalent equations that define and use a letter for the unknown and correctly justify the answer with a related addition or subtraction equation.