

WORDS TO KNOW

addend

sum

Commutative Property of
AdditionAssociative Property of
Addition

Lesson 8

FLUENTLY ADD AND SUBTRACT 3.NBT.A.2

INTRODUCTION

Real-World Connection

A movie theater has three showtimes. The theater sells tickets to 120 people for the first show, 162 people for the second show and 180 people for the third show. The movie theater has 247 seats. How many people see the movie in all? How many seats are empty at the third show? Let's practice the skills in the **Guided Instruction** and the **Independent Practice** and see one way to solve this problem at the end of the lesson!

What I Am Going to Learn

- How to fluently add and subtract multi-digit numbers
- Different strategies to add and subtract numbers to 1,000

What I May Already Know

2.NBT.A.1, 2.NBT.B.5, 2.NBT.B.8

- I know that the digits in a three-digit number represent hundreds, tens, and ones.
- I know how to use models, place value, and other strategies to add and subtract two-digit numbers.
- I know how to mentally add 10 or 100 to a three-digit number.

Vocabulary in Action

- When you add, you find the total number of items when two or more items are joined.
 - The numbers being added are the **addends**.
 - The total number is the **sum**.



- You can use number properties to add.
 - The **Commutative Property of Addition** states that you can add two or more numbers in any order and get the same sum. For example, $28 + 15 + 12 = 28 + 12 + 15$.

$$28 + 15 + 12 = 43 + 12 = 55$$

$$28 + 12 + 15 = 40 + 15 = 55$$

- The **Associative Property of Addition** states that you can group addends in different ways and get the same sum. For example, $13 + (7 + 4) = (13 + 7) + 4$.

$$13 + (7 + 4) = 13 + 11 = 24$$

$$(13 + 7) + 4 = 20 + 4 = 24$$

- When you subtract, you find the number of items that remain when some items are given away.

You can use mental math strategies to add and subtract.

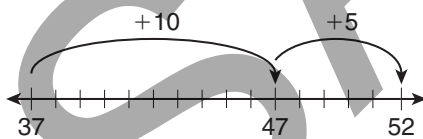
EXAMPLE

Count Up Strategy

Count up to add.

$$37 + 15$$

Think: Count by tens.
Then count ones.



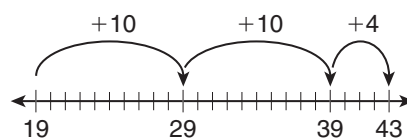
$$37 + 10 + 5 = 52,$$

$$\text{so } 37 + 15 = 52.$$

Count up to subtract.

$$43 - 19$$

Think: Start at 19. Count up to 43. Add the jumps.



$$10 + 10 + 4 = 24,$$

$$\text{so } 43 - 19 = 24.$$

SKETCH IT

You can draw a number line to help you count up.

TURN AND TALK

Think about the two strategies.

When might the break apart strategy work better than the count up strategy?

EXAMPLE

Break Apart Strategy

Break apart to add.

$$\begin{array}{r} 258 + 327 \\ + 300 + 20 + 7 \\ \hline 500 + 70 + 15 \end{array}$$

Break apart the addends.

Add each place value.

$$\begin{array}{l} \text{Add the sums. } 500 + 70 + 15 \\ = 585, \text{ so } 258 + 327 = 585. \end{array}$$

Break apart to subtract.

$$\begin{array}{r} 369 - 132 \\ - 100 - 30 - 2 \\ \hline 200 + 30 + 7 \end{array}$$

Subtract the hundreds.

Subtract the tens.

Subtract the ones.

Add the differences.

$$\begin{array}{l} 200 + 30 + 7 = 237, \text{ so} \\ 369 - 132 = 237. \end{array}$$

You can use place value to add and subtract.

EXAMPLE

Place Value

Add. $286 + 635$

Add the ones.

$$6 + 5 = 11, \text{ so regroup } 10 \text{ ones as } 1 \text{ ten.}$$

Add the tens.

$$1 + 8 + 3 = 12, \text{ so regroup } 10 \text{ tens as } 1 \text{ hundred.}$$

Add the hundreds.

$$1 + 2 + 6 = 9$$

$$\begin{array}{r} 11 \\ 286 \\ + 635 \\ \hline 921 \end{array}$$

Subtract. $317 - 109$

Subtract the ones.

$$7 < 9, \text{ so regroup } 1 \text{ ten as } 10 \text{ ones.}$$

Subtract the 9 from 17 ones.

$$17 - 9 = 8$$

Subtract the tens.

$$0 - 0 = 0$$

Subtract the hundreds.

$$3 - 1 = 2$$

$$\begin{array}{r} 017 \\ 3\cancel{1}7 \\ - 109 \\ \hline 208 \end{array}$$

GUIDED INSTRUCTION

1. During the first week of the summer, the concession stand at the waterpark sold 156 ice cream cones and 257 popsicles. How many total treats were sold? How many more popsicles were sold than ice cream cones?

Add to find the total number of treats sold.
You can use the break apart strategy.

Step One Break apart the addends.

$$100 + 50 + 6 + 200 + 50 + 7$$

Step Two Add the hundreds.

$$100 + 200 = \boxed{}$$

Step Three Add the tens.

$$50 + 50 = \boxed{}$$

Step Four Add the ones.

$$6 + 7 = \boxed{}$$

Step Five Add the sums.

$$300 + 100 + 13 = \boxed{}$$

There were $\boxed{}$ treats sold in all.

Subtract to find how many more popsicles were sold than ice cream cones. Find $257 - 156$.

You can use the place-value strategy.

Step One Subtract the ones.

$$7 - 6 = 1$$

Step Two Subtract the tens.

$$5 - 5 = 0$$

Step Three Subtract the hundreds.

$$2 - 1 = 1$$

TIPS AND TRICKS

This is just one strategy for finding the sum. Try using place value or another strategy.



Step Four Enter the answers in the boxes below.

$$257$$

$$-156$$

There were more popsicles sold than ice cream cones.

HINT, HINT

Subtract the hundreds, then the tens, and finally the ones.

2. Part A

Subtract. $434 - 121$

Use the numbers in the box and the break-apart strategy to subtract.

The numbers cannot be used more than once. Write each number in the appropriate box.

1	2	3	4	10	20	30	40	100	200	300	400
---	---	---	---	----	----	----	----	-----	-----	-----	-----

$$400 - \boxed{} = \boxed{}$$

$$\boxed{} - 20 = \boxed{}$$

$$\boxed{} - \boxed{} = \boxed{}$$

TIPS AND TRICKS

This is the second part of the question. Look back at the work you completed in Part A. Add the differences of the hundreds, tens, and ones. Record the sum. This is the difference of 434 and 121.

Part B

Find the difference. Write your answer in the box.

$$434 - 121 = \boxed{}$$

How Am I Doing?

What questions do you have?

Write down three numbers between 0 and 1,000. Show two ways to find the sum.

What are some strategies you can use to add or subtract?

Make a list and tell when you would choose to use each.

Give examples to support your answers.

TURN AND TALK

With a partner, answer the following: Owen swims for 30 minutes in the morning and for 37 minutes in the afternoon. Choose a method and use it to find out how many minutes he swam in all. Explain why you chose the method.

Color in the traffic signal that shows how you are doing with the skill.



INDEPENDENT PRACTICE

Answer the questions.

TIPS AND TRICKS

Think about the answer choices in question 1. Do any not make sense as the sum of 82 and 49? If so, you can cross that answer choice out.

WORK SPACE

1. What is $82 + 49$?

(A) 33

(B) 121

(C) 127

(D) 131

2. Pete has 197 beads. He gives 39 away. How many beads does Pete have remaining?

Write your answer in the box.

beads

3. Think about the problem $530 + 156$.

Use the break-apart strategy to solve. Draw a line to show each step in order from 1–4.

$0 + 6 = 6$	1
$600 + 80 + 6 = 686$	2
$30 + 50 = 80$	3
$500 + 100 = 600$	4

4. Circle the number that correctly completes the subtraction equation.

$427 - 199 =$

128

130

228

230

238

5. Write the addend that correctly completes the equation.

$$219 + \boxed{} = 573$$

6. There are 518 books in the library. There are 327 fiction books. How many books are **not** fiction?

- (A) 111
- (B) 191
- (C) 211
- (D) 845

★ **Part A**

Vale finds the value of the expression $12 + 29 + 188$.

She used the Commutative Property of Addition in her first step and the Associative Property of Addition in her second step.

Show the steps that Vale could have used to find the value of the expression. Be sure to label each property in your work shown.

★ **Part B**

Show another strategy that can be used to solve Vale’s problem. Name the strategy you used.

◀ **HINT, HINT**

The total is 573. You know one addend is 219. What number added to 219 is 573? Use subtraction to help you.

WORK SPACE

EXIT TICKET

3.NBT.A.2

Now that you have mastered using different strategies to add and subtract, let's solve the problem in the **Real-World Connection**.

A movie theater has three showtimes. The theater sells tickets to 120 people for the first show, 162 people for the second show and 180 people for the third show. The movie theater has 247 seats. How many people see the movie in all? How many seats are empty at the third show?

Add and subtract to find the answers.

Add the number of people at each show to find the total number of people who see the movie.

$$\boxed{} + \boxed{} + \boxed{} = \boxed{}$$

Subtract the number of people at the third show from the total number of seats to find the number of empty seats. Use place value to subtract. Regroup when necessary.

$$\begin{array}{r} 247 \\ - 180 \\ \hline \end{array}$$