

Unit **3**

Adding and Subtracting Within 20

Essential Questions

- How can you use your understanding of teen numbers as a ten and some ones to add and subtract within 20?
- How can you use the relationship between addition and subtraction to find unknown sums and differences?



Unit Story: Impossible

You can read the Unit Story with your student by visiting the Unit Story page on the Caregiver Hub.

Unit Investigation

Lesson 1 is the Unit Investigation. Students explore different ways to compose numbers within 10 to build curiosity and apply their own knowledge in a variety of ways. Use the **Caregiver Connection** to help students continue to explore the math they will see in the unit.

Caregiver Connection

Students may enjoy working with sets of up to 10 objects. Encourage them to find all the ways to compose each amount and to represent their thinking with addition expressions.

Summary | Lesson 2

Each time you add 1 more to a number, the sum will be 1 more. Each time you add 1 less to a number, the sum will be 1 less.

$2 + 4 = 6$



$2 + 6 = 8$



$2 + 5 = 7$



$2 + 5 = 7$



$2 + 6 = 8$



$2 + 4 = 6$



Try This

For Problems 1–6, find the sum.

1 $4 + 1$ _____

2 $4 + 2$ _____

3 $4 + 3$ _____

4 $4 + 4$ _____

5 $4 + 5$ _____

6 $4 + 6$ _____

Each time you subtract 1 more from a number, the difference will be 1 less. Each time you subtract 1 less from a number, the difference will be 1 more.

$7 - 3 = 4$



$7 - 5 = 2$



$7 - 4 = 3$



$7 - 4 = 3$



$7 - 5 = 2$



$7 - 3 = 4$



Try This

For Problems 1–6, find the difference.

1 $9 - 1$ _____

2 $9 - 2$ _____

3 $9 - 3$ _____

4 $9 - 4$ _____

5 $9 - 5$ _____

6 $9 - 6$ _____

One way to find the difference in a subtraction equation is to think about it as an unknown-addend equation and use addition to find the difference.

$$7 - 4 = \underline{\quad}$$

What can I add
to 4 to make 7?

$$4 + \underline{3} = 7$$

Try This

For Problems 1-7, find the difference.

1 $6 - 2$ _____

2 $9 - 6$ _____

3 $7 - 3$ _____

4 $5 - 2$ _____

5 $8 - 3$ _____

6 $8 - 5$ _____

7 $7 - 5$ _____

In this sub-unit . . .

- We looked for patterns and made conjectures about sums.

$$5 + 2 = 7$$

$$5 + 3 = 8$$

$$5 + 4 = 9$$

Each time you add 1 more to a number, the sum is 1 more.


-
- We looked for patterns and made conjectures about differences.

$$6 - 1 = 5$$

$$6 - 2 = 4$$

$$6 - 3 = 3$$

Each time you subtract 1 more from a number, the difference is 1 less.

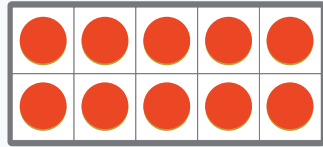
 **Math tip:** You can think about and use patterns to find sums and differences you do not know.

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- We talked about how we can solve a subtraction problem by using addition to find the difference.

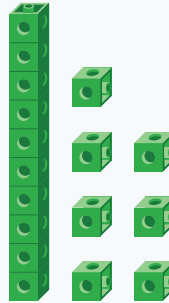
$$9 - 6 = \underline{\quad}$$

I can think about this as $6 + \underline{\quad} = 9$ and use addition to find the difference.

All teen numbers can be represented as a **ten** and some **ones**.



14



17

Try This

For Problems 1 and 2, represent the teen number as a ten and some ones.



Show your thinking.

1

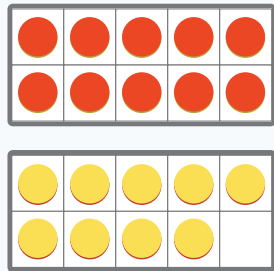
13

2

16

Summary | Lesson 6

Teen numbers can be represented with addition equations with 10 as 1 addend and the number of ones as the other addend.



$$19 = 10 + 9$$

Try This

For Problems 1–7, find the sum. You can use what you know about teen numbers if it is helpful.

1 $10 + 5$ _____

2 $3 + 10$ _____

3 $10 + 7$ _____

4 $10 + 2$ _____

5 $6 + 10$ _____

6 $10 + 9$ _____

7 $8 + 10$ _____

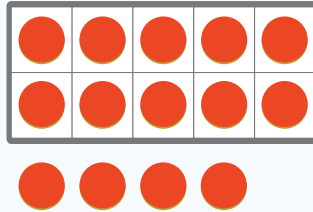
Sometimes, the unknown amount in a story problem is 1 part of a teen number.

Kenny cut out some paper stars for his scrapbook.

Then Kenny's dad cut out 4 more stars.

Now there are 14 stars.

How many stars did Kenny cut out?



$$\underline{10} + 4 = 14$$

Try This

- 1 Solve the problem and write an equation to show how you solved it.

Use an underline to show the answer in the equation.

Han is working on a page of his music lesson.

He drew some green notes and 10 blue notes.

There are 13 notes on the page.

How many green notes did he draw?



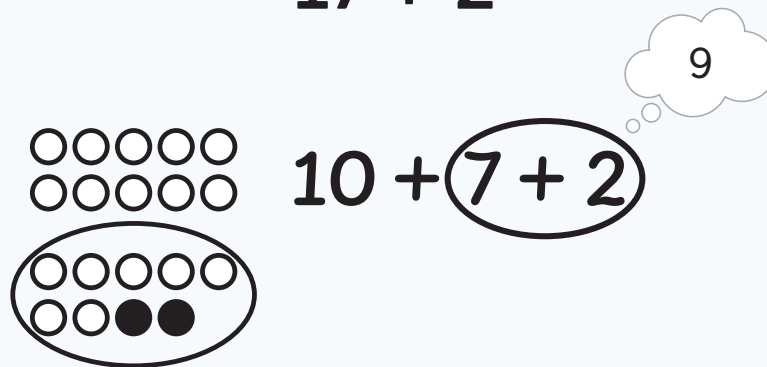
Show your thinking.

answer: _____

equation: _____

When adding ones to a teen number, you can break apart the teen number into a ten and some ones and then use known facts to find the sum.

$$17 + 2$$



Try This

- 1 Solve the problem and write an equation to show how you solved it.

Use an underline to show the answer in the equation.

Kenny's neighbor gave him 14 stickers.

Kenny found 4 more stickers in a drawer at home.

How many stickers does Kenny have now?

 Show your thinking.

answer: _____

equation: _____

When subtracting ones from a teen number, you could think of the teen number as a ten and some ones and then use known facts to find the difference.

$$18 - 6$$



$$18 = 10 + 8$$

$$8 - 6 = 2$$

$$10 + 2 = 12$$

Try This

For Problems 1-7, find the sum or difference.

1 $15 - 3$ _____

2 $13 + 4$ _____

3 $17 - 2$ _____

4 $19 - 6$ _____

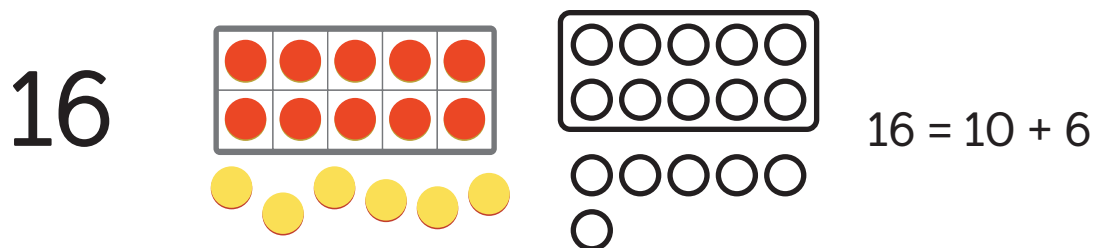
5 $6 + 12$ _____

6 $14 + 5$ _____

7 $18 - 5$ _____

In this sub-unit . . .

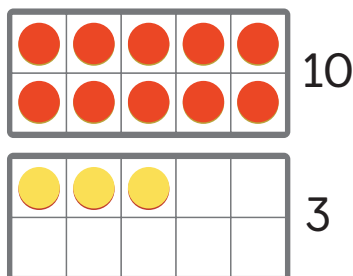
- We represented teen numbers as a ten and some ones in different ways.



- We used what we know about teen numbers being made of a ten and some ones to find unknown addends.

• $13 = 10 + \underline{3}$

• $\underline{10} + 3 = 13$



Math tip: If the sum in an addition equation is a teen number and 1 addend is 10, the unknown addend is the number of ones in the teen number.

- We used what we know about adding and subtracting within 10 to find sums and differences with teen numbers.

• $12 + 4 = \underline{16}$ $2 + 4 = 6$, so the sum is 16.

• $19 - 4 = \underline{15}$ $9 - 4 = 5$, so the difference is 15.

When adding 3 numbers, you can think about which 2 numbers to add first.

$$6 + \textcircled{5} + \textcircled{4}$$

$$5 + 4 = 9$$

$$9 + 6 = 15$$

$$\textcircled{6} + 5 + \textcircled{4}$$

$$6 + 4 = 10$$

$$10 + 5 = 15$$

Try This

For Problems 1–5, circle the 2 addends you would add first and explain why.

1 $6 + 3 + 4$ _____

2 $6 + 1 + 6$ _____

3 $7 + 6 + 3$ _____

4 $6 + 4 + 5$ _____

5 $7 + 5 + 7$ _____

When adding 3 numbers, it can be helpful to rewrite the expression as 10 plus a number of ones because you might be able to figure out the sum of 10 plus a number of ones without adding or counting.

$$\begin{array}{c} \textcircled{2} + 9 + \textcircled{8} \\ \downarrow \quad \swarrow \\ \textcircled{10} + 9 \end{array}$$

Try This

For Problems 1–7, write another expression that shows $10 +$ a number of ones and has the same value.

1 $5 + 3 + 5$ _____

2 $7 + 3 + 2$ _____

3 $4 + 6 + 7$ _____

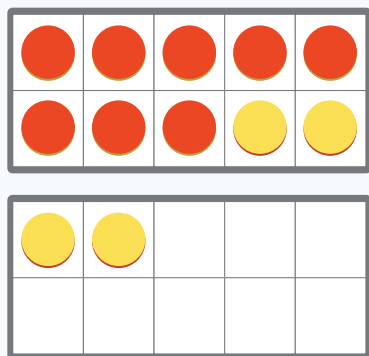
4 $4 + 9 + 6$ _____

5 $5 + 1 + 9$ _____

6 $8 + 6 + 2$ _____

7 $9 + 4 + 1$ _____

When adding 2 numbers, sometimes you can break apart an addend to make a ten.



$$\begin{array}{c} 8 + 4 \\ \downarrow \\ 10 + 2 \end{array}$$

Try This

For Problems 1–7, find the sum.

1 $9 + 3$ _____

2 $5 + 8$ _____

3 $9 + 6$ _____

4 $9 + 8$ _____

5 $7 + 9$ _____

6 $4 + 9$ _____

7 $8 + 4$ _____

The value of an addition expression does not change if 1 addend increases and the other addend decreases by the same amount.

$$\begin{array}{c}
 \text{+2} \quad \text{-2} \\
 \text{8} + \text{5} = 10 + 3 \\
 \text{10} \quad \text{3}
 \end{array}$$

(Note: In the original image, the 8 and 5 are crossed out, and a curved arrow points from +2 to -2.)

Try This

For Problems 1–7, circle to show if the equation is *true* or *false*.

1 $10 + 6 = 9 + 5$



2 $9 + 8 = 10 + 7$



3 $5 + 8 = 3 + 10$



4 $10 + 4 = 7 + 5$



5 $6 + 6 = 7 + 5$



6 $10 + 5 = 7 + 7$



7 $7 + 9 = 10 + 6$



You can change 1 of the addends to make a sum you know. If you make an addend larger, then you have to subtract from the sum. If you make an addend smaller, then you have to add to the sum.

$$6 + 8 = \underline{\quad}$$



$$\begin{aligned} 8 + 8 &= 16 \\ 16 - 2 &= \underline{14} \end{aligned}$$

I know $8 + 8 = 16$.
I subtracted 2
from 16 because 8
is 2 more than 6.

Try This

For Problems 1–4, circle to show if the equation is *true* or *false*.

1 $5 + 5 + 1 = 6 + 5$



2 $5 + 6 = 6 + 6 + 1$



3 $6 + 6 + 2 = 8 + 6$



4 $12 + 6 = 10 + 2 + 6$



You can find the sum of 3 numbers in different ways. You can think about the addends and sums you know to help you choose a strategy.

$$8 + 2 = 10$$

$$2 + 3 = 5$$

$$10 + 5 = 15$$

$$4 + 8 + 3 = \underline{15}$$



I know 8 and 2 make 10, so I can break apart the 4 into 2 and 2 to make 10.

Try This

- 1 Solve the problem and write an equation to show how you solved it.

Use an underline to show the answer in the equation.

Clare noticed that stickers come in different shapes.

She counted 8 squares, 4 rectangles, and 7 circles.

How many stickers did Clare count?

 Show your thinking.

answer: _____

equation: _____

In this sub-unit . . .

- We solved problems with 3 addends.

$$2 + 7 + 8 = \underline{17}$$

$$2 + 8 = 10$$

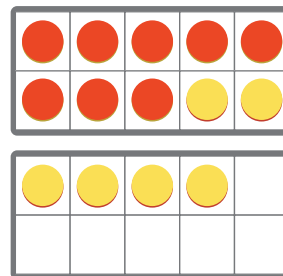
$$10 + 7 = 17$$

🔥 **Math tip:** Because addends can be added in any order, you can choose which 2 numbers to add first.

- We broke addends into parts so we could make 10.

$$\begin{array}{c} 8 + 6 \\ \swarrow \searrow \\ 4 \quad 2 \end{array}$$

6 is $4 + 2$. I can take 2 from 6 and add it to 8 to get 10. $10 + 4$ is 14.



$$8 + 6 = 10 + 4$$

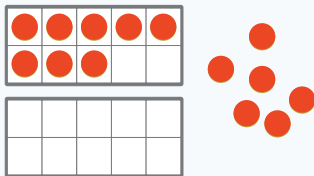
- We used sums we know to find unknown sums by changing an addend.

$$8 + 6$$

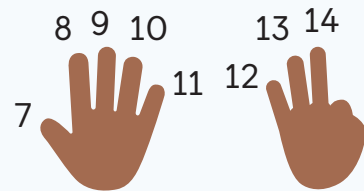
I can change $8 + 6$ to $6 + 6$.
I know that is 12. Since I took 2 away from 8, I have to add 2 back. $12 + 2$ is 14.

There is more than 1 way to subtract a number of ones from a teen number. You can use the same strategies you used to subtract smaller numbers.

$$14 - 6 = \underline{\quad}$$



I took away 6 counters and counted how many were left. The difference is 8.



I thought about $6 + \underline{\quad} = 14$. I counted up from 6 until I got to 14. The difference is 8.

Try This

- 1 Solve the problem and write an equation to show how you solved it.

Use an underline to show the answer in the equation.

Clare had 16 shape stickers.

She gave 7 stickers to her older sister.

How many shape stickers does Clare have left?



Show your thinking.

answer: _____

equation: _____

One way to subtract from a teen number is to think about how many you can subtract to get to 10. Then you can subtract the other part from 10 to find the difference.

$$\begin{array}{r} 15 - 7 \\ \swarrow \quad \searrow \\ 5 \quad 2 \\ 15 - 5 = 10 \\ 10 - 2 = 8 \\ 15 - 7 = 8 \end{array}$$

I need to subtract
 $15 - 5$ to get to 10.
I can break 7 into
5 and 2.

Try This

For Problems 1–5, write a subtraction expression to show the amount you can subtract first to get to 10.

1 $16 - 8$ _____

2 $14 - 5$ _____

3 $12 - 4$ _____

4 $17 - 9$ _____

5 $13 - 6$ _____

Before deciding how to solve, it is helpful to think about the numbers in the problem. Then you can find the difference in a way that makes the most sense to you.

$$19 - 17$$

$$17 + \underline{2} = 19$$

$$\begin{array}{r} 19 - 10 = 9 \\ 9 - 7 = \underline{2} \end{array}$$

Try This

- 1 Solve the problem and write an equation to show how you solved it.
Use an underline to show the answer in the equation.

Shawn has 15 photos and 12 pieces of tape.

How many *fewer* pieces of tape does Shawn have than photos?



Show your thinking.

answer: _____

equation: _____

In story problems that describe an amount that changes by becoming smaller, sometimes how much the amount changes is unknown. Addition or subtraction can be used to find the unknown change.

There were 14 pages in Kenny's scrapbook.
He removed some of the pages.
Now there are 8 pages in his scrapbook.
How many pages did Kenny remove?



$$14 - \underline{6} = 8$$

$$14 - 8 = \underline{6}$$

$$8 + \underline{6} = 14$$

Try This

- 1 Solve the problem and write an equation to show how you solved it.
Use an underline to show the answer in the equation.

13 of Han's friends came to his house.
Some friends went home.
Now there are 9 friends at Han's house.
How many friends went home?



Show your thinking.

answer: _____

equation: _____

It can be helpful to think about the relationship between the numbers in a story problem or equation in order to choose a strategy for solving.

$$13 - 5$$

I can break 5 apart into 3 and 2, subtract 3 to get to 10, and then subtract 2 to get to 8.

I know 5 and 5 is 10, and 3 more is 13. 5 and 3 is 8, so the difference is 8.

Try This

- 1 Solve the problem and write an equation to show how you solved it.
Use an underline to show the answer in the equation.

There were 8 paper cranes in a basket.
Priya folded some more paper cranes.
Now there are 14 paper cranes.
How many paper cranes did Priya fold?



Show your thinking.

answer: _____

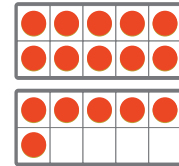
equation: _____

In this sub-unit . . .

- We subtracted from teen numbers in parts to get to 10.

$$16 - 7$$

16 is 10 and 6. So, $16 - 6$ is 10. I need to subtract 7, so I need to take away 1 more. $10 - 1$ is 9.



$$\begin{aligned} 16 - 6 &= 10 \\ 10 - 1 &= 9 \end{aligned}$$

-
- We noticed we can use addition or subtraction to find how much an amount changed.

$$18 - \underline{7} = 11 \quad \text{I can think of how many to take away from 18 to get to 11.}$$

$$11 + \underline{7} = 18 \quad \text{I can think of how many to add to 11 to get to 18.}$$

-
- We thought about the relationship between numbers when choosing strategies for finding sums and differences.

$$16 - 13 \quad \text{When I count, 13 and 16 are close together. So, I can count on from 13 to 16 to find the difference.}$$

🔥 **Math tip:** One way to find the difference between 2 numbers that are close together is to count on.

Try This | Answer Key

Lesson 2

1 5 2 6 3 7 4 8 5 9 6 10

Lesson 3

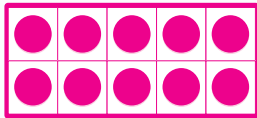
1 8 2 7 3 6 4 5 5 4 6 3

Lesson 4

1 4 2 3 3 4 4 3 5 5 6 3 7 2

Lesson 5

1 Sample response:



2 Sample response:

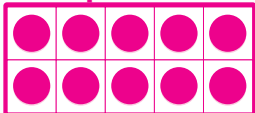


Lesson 6

1 15 2 13 3 17 4 12 5 16 6 19 7 18

Lesson 7

1 Sample work:



10 blue



3 green

answer: 3 green notes

equation: Sample response: $10 + \underline{3} = 13$

Lesson 8

1 Sample work:

$$4 + 4 = 8$$

$$10 + 8 = 18$$

answer: 18 stickers

equation: Sample response: $14 + 4 = \underline{18}$

Try This | Answer Key

Lesson 9

1 12 2 17 3 15 4 13 5 18 6 19 7 13

Lesson 10

1 $(6) + 3 + (4)$ 6 + 4 makes 10.

2 $(6) + 1 + (6)$ Double 6 is 12.

3 $(7) + 6 + (3)$ 7 + 3 makes 10.

4 $(6) + (4) + 5$ 6 + 4 makes 10.

5 $(7) + 5 + (7)$ Double 7 is 14.

Lesson 11

1 $10 + 3$ 2 $10 + 2$ 3 $10 + 7$ 4 $10 + 9$ 5 $10 + 5$

6 $10 + 6$ 7 $10 + 4$

Lesson 12

1 12 2 13 3 15 4 17 5 16 6 13 7 12

Lesson 13

1 false 2 true 3 true 4 false 5 true

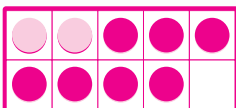
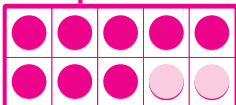
6 false 7 true

Lesson 14

1 true 2 false 3 true 4 true

Lesson 15

1 Sample work:



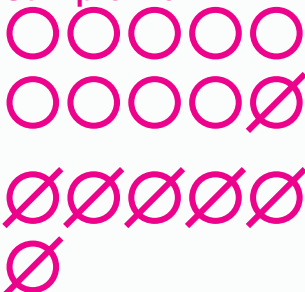
answer: 19 stickers

equation: Sample response: $8 + 4 + 7 = 19$

Lesson 16

1

Sample work:



answer: 9 stickers

equation: Sample response: $16 - 7 = \underline{9}$

Lesson 17

1

$16 - 6$

2

$14 - 4$

3

$12 - 2$

4

$17 - 7$

5

$13 - 3$

Lesson 18

1

Sample work:



answer: 3 fewer pieces of tape

equation: Sample response: $12 + \underline{3} = 15$

Lesson 19

1

Sample work:



answer: 4 friends

equation: Sample response: $9 + \underline{4} = 13$

Lesson 20

1

Sample work:



answer: 6 paper cranes

equation: Sample response: $8 + \underline{6} = 14$