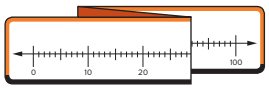
5.4 Addition: Extending the make-ten strategy (number line)

In this lesson, students extend the make-ten strategy to add one-digit numbers to two-digit numbers. They use a number line to help them bridge to a multiple of ten.

Step 1 Preparing the lesson

Number line



Each pair of students will need:

- number line from *The Number Case*

Each student will need:

- Student Journal 5.4

Step 2 Starting the lesson

Organize students into pairs and distribute the resources. Say a two-digit number that is near a multiple of ten (for example, 58, 37, or 79). Ask each pair to show the position of the number on their number line. Then ask, *What ten is after 58?* (60.) *How far away is that ten?* (2.) *How do you know?* Repeat this activity several times before asking, *How can you figure out the distance to the next ten without using the number line?* Invite the students to share their strategies.

Step 3 Teaching the lesson

Write the prices $29 and $6 on the board. Ask, *How can you figure out the total cost?* Invite volunteers to describe their strategies and the tools they would use to solve the problem, for example, base-10 blocks, ten-frames, hundred charts, groups of fingers, or number lines. (**SMP5**) Ensure students justify their decisions.

Draw a number line from 20 to 40 with the multiples of five marked but only the multiples of ten labeled. Discuss the points below:

How could you use the number line to figure out the total?

What jumps would you draw to show your thinking?

How can you make a jump to the next ten?

How does this strategy make the total easier to figure out?

Invite volunteers to model their strategies on the number line (**SMP4**). Highlight the strategy of making the first jump to 30, then adding the 5 left over. Reinforce that they have actually broken the lesser number into parts to make ten (**SMP7**), and that this strategy makes the total much easier to figure out. Ask, *What equations can we write to show the steps?* Invite volunteers to write equations on the board, for example, 29 + 1 + 5 = 35, or 29 + 6 = 35, and to connect each part to their number line model (**SMP4**).

Repeat the activity for $18 and $6, then $37 and $5. For each example, emphasize that the lesser number is broken into parts to help make a ten.

Write the prices $5 and $48 on the board . Ask, *How can you figure out the total cost? What number should you start with?* Reinforce the idea that it is easier to begin with the greater number and add the lesser number.

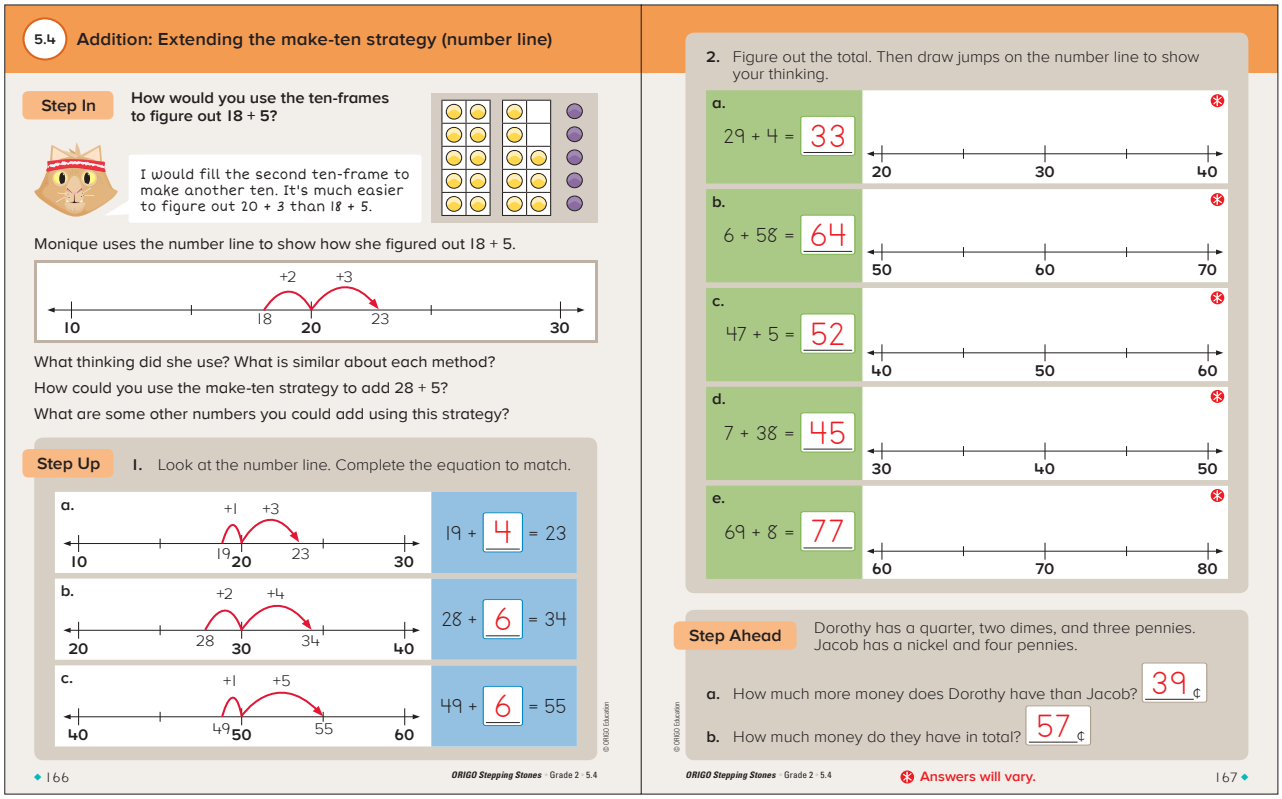
ELL

Provide the students with manipulatives, such as base-10 blocks, to support their thoughts regarding addition. Allow students to process the questions, formulate an answer, and discuss their thoughts with another student before presenting their ideas to the class.

2.NBT.B.5 **2.NBT.B.7** Use a strategy to add two-digit numbers (without composing)
2.NBT.B.9 Explain a computation strategy
2.MD.B.6 Use number lines to represent addition

Major clusters
Use place-value understanding and properties of operations to add and subtract.
Relate addition and subtract to length.

Student Journal 5.4, pp. 166–167



5.4 Addition: Extending the make-ten strategy (number line)

Step In — How would you use the ten-frames to figure out 18 + 5?

I would fill the second ten-frame to make another ten. It's much easier to figure out 20 + 3 than 18 + 5.

Monique uses the number line to show how she figured out 18 + 5.

10 18 20 23 30 (+2, +3)

What thinking did she use? What is similar about each method?
How could you use the make-ten strategy to add 28 + 5?
What are some other numbers you could add using this strategy?

Step Up — 1. Look at the number line. Complete the equation to match.

a. 10 19 20 23 30 (+1, +3) — 19 + 4 = 23
b. 20 28 30 34 40 (+2, +4) — 28 + 6 = 34
c. 40 49 50 55 60 (+1, +5) — 49 + 6 = 55

166 ORIGO Stepping Stones · Grade 2 · 5.4

2. Figure out the total. Then draw jumps on the number line to show your thinking.

a. 29 + 4 = 33 — 20 30 40
b. 6 + 58 = 64 — 50 60 70
c. 47 + 5 = 52 — 40 50 60
d. 7 + 38 = 45 — 30 40 50
e. 69 + 8 = 77 — 60 70 80

Step Ahead — Dorothy has a quarter, two dimes, and three pennies. Jacob has a nickel and four pennies.

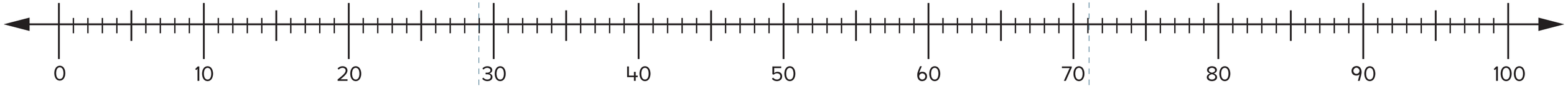
a. How much more money does Dorothy have than Jacob? 39¢
b. How much money do they have in total? 57¢

ORIGO Stepping Stones · Grade 2 · 5.4 — Answers will vary. — 167

Work through the Step In discussion (Student Journal 5.4) with the whole class. Read the Step Up and Step Ahead instructions with the students. Make sure they know what to do, then have them work independently to complete the tasks.

Step 4 Reflecting on the work

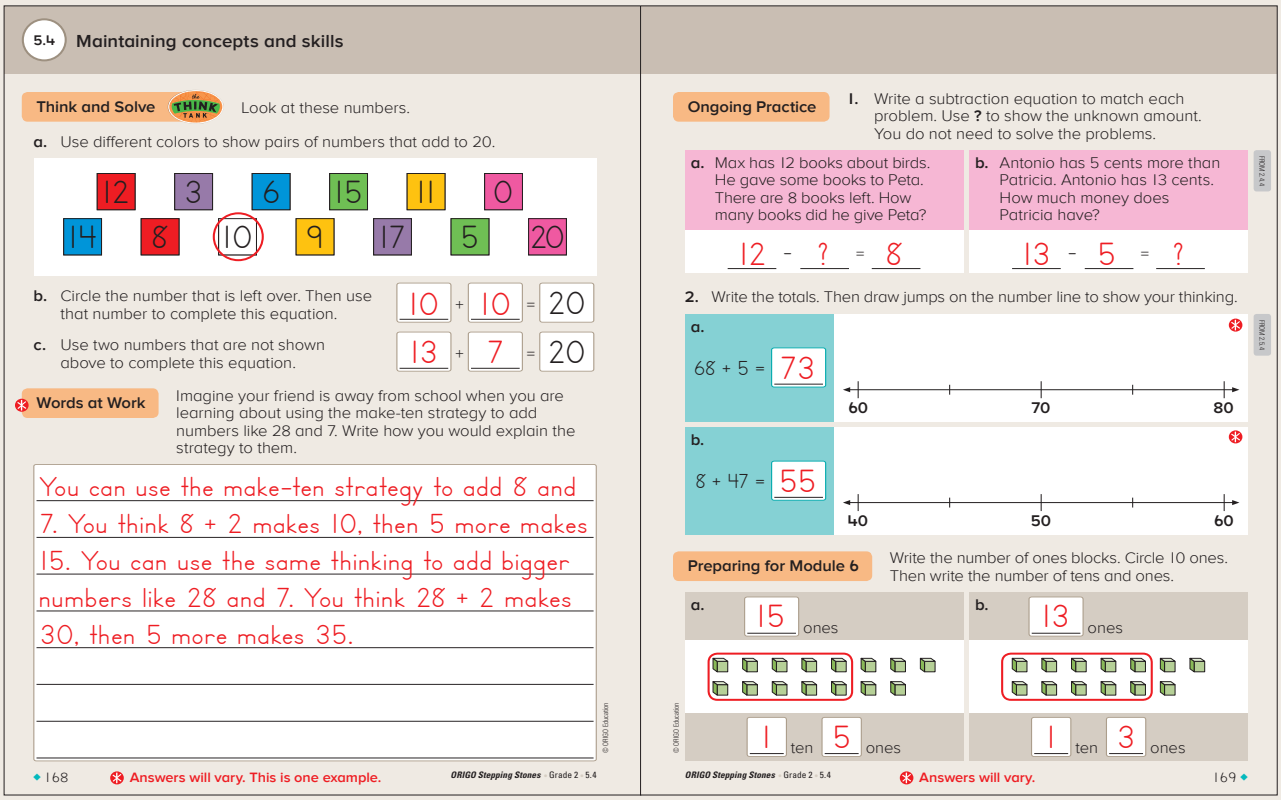
Discuss the students' answers to Student Journal 5.4. Refer to Question 1 and ask, *What do the numbers above the number line tell us? What does the arrow indicate?* Refer to Question 2 and ask, *What number did you begin with? Why? How did you break the lesser number into parts to make a ten?* In Step Ahead, students solve a problem involving money. Look for students who think about the number of coins rather than the value of the coins. Provide extra practice by asking them to tell which has the greater value: 1 dime or 4 pennies.


0
10
20
30
40
50
60
70
80
90
100

Maintaining concepts and skills

This lesson provides a rigorous thinking problem and an activity that develops and practices academic vocabulary. It also provides ongoing practice that revisits content from any previous module and earlier in this module, and a prerequisite skill for Module 6.

Student Journal 5.4, pp. 168–169



5.4 Maintaining concepts and skills

Think and Solve (the THINK TANK) Look at these numbers.

a. Use different colors to show pairs of numbers that add to 20.

12 3 6 15 11 0
14 8 10 9 17 5 20

b. Circle the number that is left over. Then use that number to complete this equation.

10 + 10 = 20

c. Use two numbers that are not shown above to complete this equation.

13 + 7 = 20

Words at Work Imagine your friend is away from school when you are learning about using the make-ten strategy to add numbers like 28 and 7. Write how you would explain the strategy to them.

You can use the make-ten strategy to add 8 and 7. You think 8 + 2 makes 10, then 5 more makes 15. You can use the same thinking to add bigger numbers like 28 and 7. You think 28 + 2 makes 30, then 5 more makes 35.

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168 Answers will vary. This is one example. ORIGO Stepping Stones · Grade 2 · 5.4

Ongoing Practice

1. Write a subtraction equation to match each problem. Use **?** to show the unknown amount. You do not need to solve the problems.

a. Max has 12 books about birds. He gave some books to Peta. There are 8 books left. How many books did he give Peta?

12 - ? = 8

b. Antonio has 5 cents more than Patricia. Antonio has 13 cents. How much money does Patricia have?

13 - 5 = ?

TRM 2.4.4

2. Write the totals. Then draw jumps on the number line to show your thinking.

a. 68 + 5 = 73

60 70 80

b. 8 + 47 = 55

40 50 60

TRM 2.5.1

Preparing for Module 6 Write the number of ones blocks. Circle 10 ones. Then write the number of tens and ones.

a. 15 ones

1 ten 5 ones

b. 13 ones

1 ten 3 ones

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ORIGO Stepping Stones · Grade 2 · 5.4 Answers will vary. 169

Small group differentiation

Extra help

Each pair of students will need:

- number line from *The Number Case*
- 2 cubes labeled:
  cube A: 9, 9, 8, 8, 7, 7
  cube B: 4, 4, 5, 5, 6, 6
- non-permanent marker

Organize students into pairs and distribute the resources. They take turns to roll both cubes, write the equation to match the numbers rolled, and figure out the total in their head. They then draw jumps on a number line to show their thinking. Play continues as time allows.

Extra practice

Each pair of students will need:

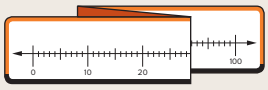
- 2 cubes labeled:
  cube A: 29, 38, 39, 49, 57, 68
  cube B: 4, 5, 6, 7, 8, 9

Each student will need:

- number line from *The Number Case*
- non-permanent marker

Organize students into pairs and distribute the resources. They take turns to roll both cubes, write the equation to match the numbers rolled, and figure out the total in their head. They then draw jumps on a number line to show their thinking. Play continues as time allows.

Number line

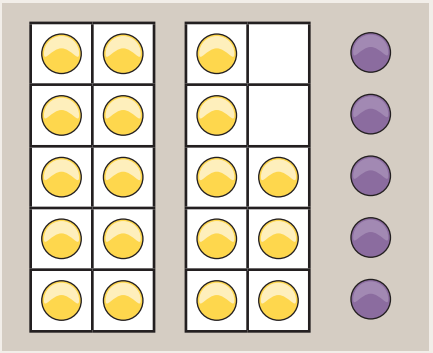


5.4 Addition: Extending the make-ten strategy (number line)

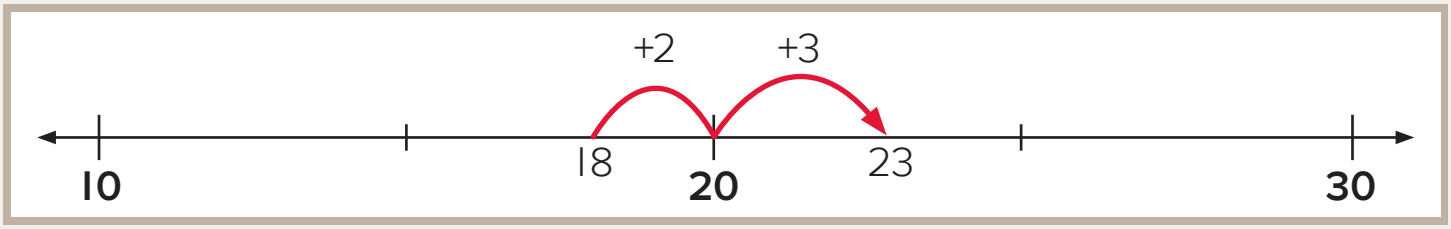
Step In

How would you use the ten-frames to figure out 18 + 5?

I would fill the second ten-frame to make another ten. It's much easier to figure out 20 + 3 than 18 + 5.



Monique uses the number line to show how she figured out 18 + 5.



What thinking did she use? What is similar about each method?

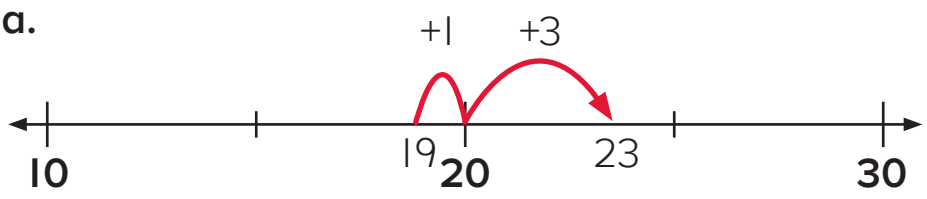
How could you use the make-ten strategy to add 28 + 5?

What are some other numbers you could add using this strategy?

Step Up

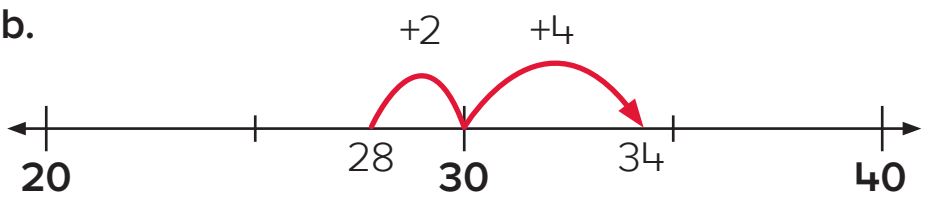
1. Look at the number line. Complete the equation to match.

a.



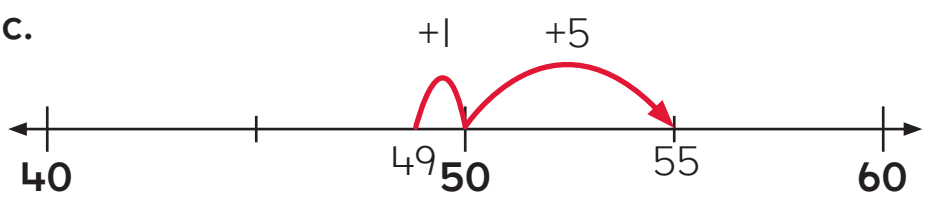
19 + ____ = 23

b.



28 + ____ = 34

c.



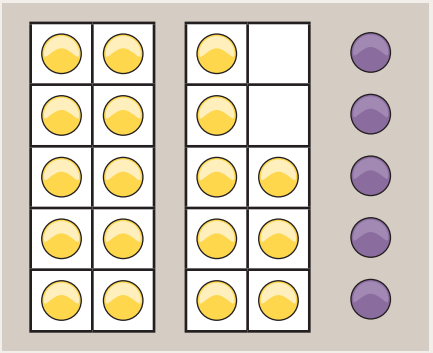
49 + ____ = 55

5.4 Addition: Extending the make-ten strategy (number line)

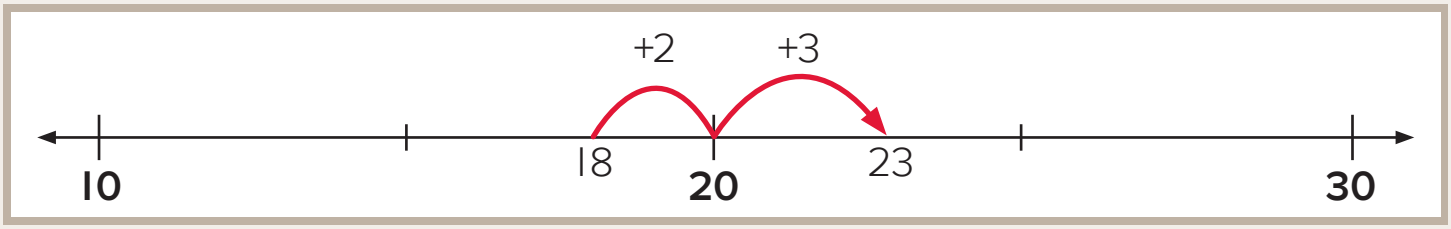
Step In

How would you use the ten-frames to figure out 18 + 5?

I would fill the second ten-frame to make another ten. It's much easier to figure out 20 + 3 than 18 + 5.



Monique uses the number line to show how she figured out 18 + 5.



What thinking did she use? What is similar about each method?

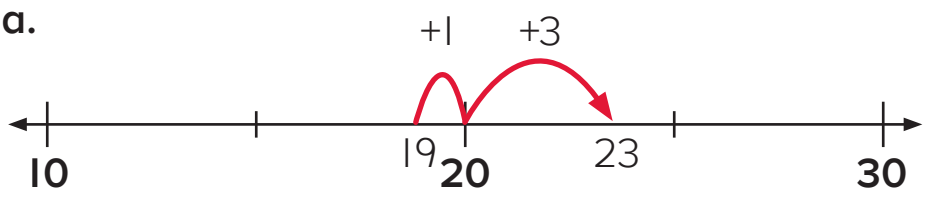
How could you use the make-ten strategy to add 28 + 5?

What are some other numbers you could add using this strategy?

Step Up

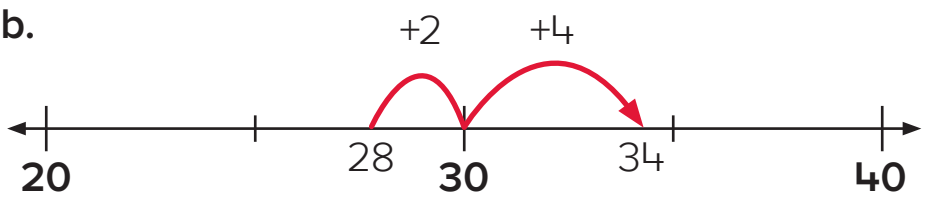
1. Look at the number line. Complete the equation to match.

a.



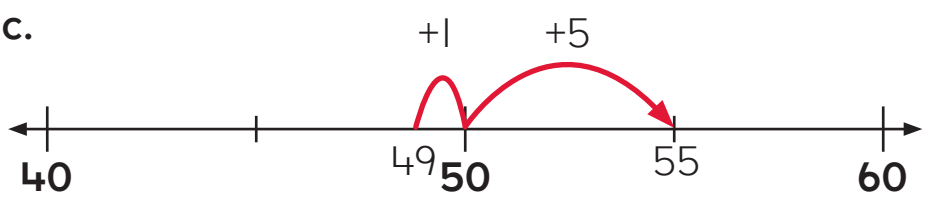
19 + 4 = 23

b.



28 + 6 = 34

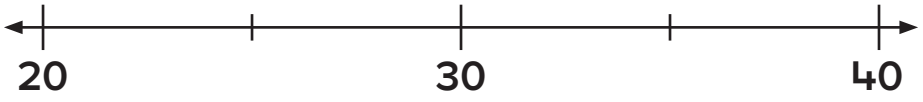
c.



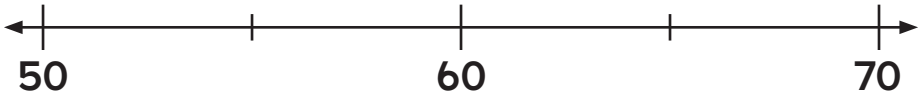
49 + 6 = 55

2. Figure out the total. Then draw jumps on the number line to show your thinking.

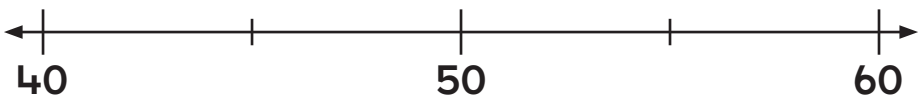
a. 29 + 4 = _____



b. 6 + 58 = _____

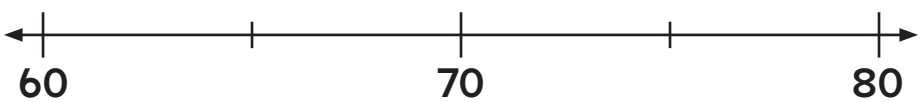


c. 47 + 5 = _____



d. 7 + 38 = _____

e. 69 + 8 = _____



Step Ahead

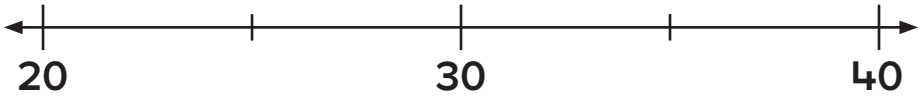
Dorothy has a quarter, two dimes, and three pennies. Jacob has a nickel and four pennies.

a. How much more money does Dorothy have than Jacob? _____¢

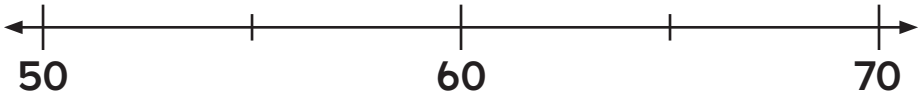
b. How much money do they have in total? _____¢

2. Figure out the total. Then draw jumps on the number line to show your thinking.

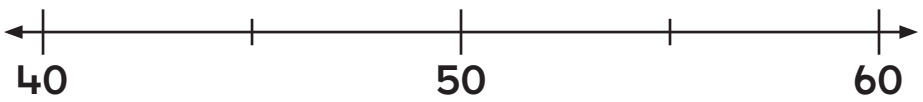
a. 29 + 4 = 33



b. 6 + 58 = 64

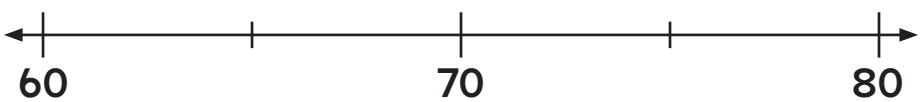


c. 47 + 5 = 52



d. 7 + 38 = 45

e. 69 + 8 = 77



Step Ahead

Dorothy has a quarter, two dimes, and three pennies. Jacob has a nickel and four pennies.

a. How much more money does Dorothy have than Jacob? 39 ¢

b. How much money do they have in total? 57 ¢

Answers will vary.

Ongoing Practice

1. Write a subtraction equation to match each problem. Use **?** to show the unknown amount. You do not need to solve the problems.

FROM 2.4.4

a. Max has 12 books about birds. He gave some books to Peta. There are 8 books left. How many books did he give Peta?

_____ – _____ = _____

b. Antonio has 5 cents more than Patricia. Antonio has 13 cents. How much money does Patricia have?

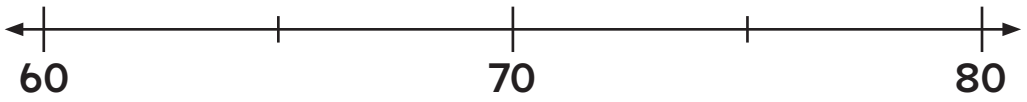
_____ – _____ = _____

2. Write the totals. Then draw jumps on the number line to show your thinking.

FROM 2.5.4

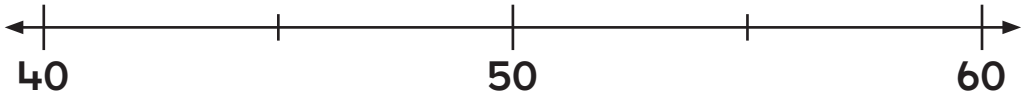
a.

68 + 5 = ____



b.

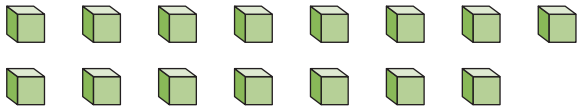
8 + 47 = ____



Preparing for Module 6

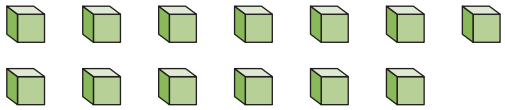
Write the number of ones blocks. Circle 10 ones. Then write the number of tens and ones.

a. ____ ones



____ ten ____ ones

b. ____ ones



____ ten ____ ones

Ongoing Practice

1. Write a subtraction equation to match each problem. Use **?** to show the unknown amount. You do not need to solve the problems.

FROM 2.4.4

a. Max has 12 books about birds. He gave some books to Peta. There are 8 books left. How many books did he give Peta?

12 − ? = 8

b. Antonio has 5 cents more than Patricia. Antonio has 13 cents. How much money does Patricia have?

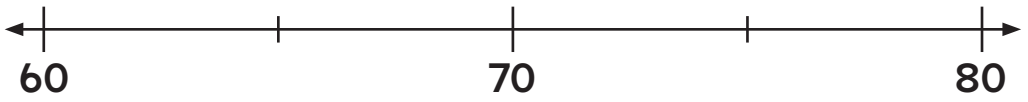
13 − 5 = ?

2. Write the totals. Then draw jumps on the number line to show your thinking.

FROM 2.5.4

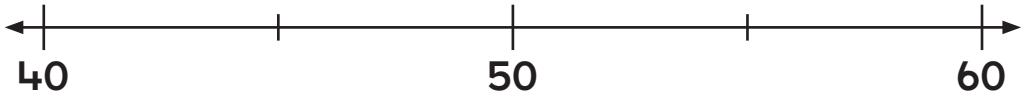
a.

68 + 5 = 73



b.

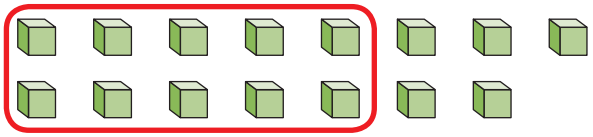
8 + 47 = 55



Preparing for Module 6

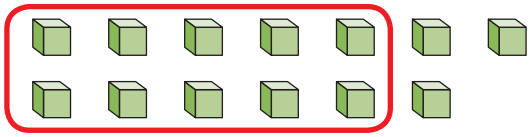
Write the number of ones blocks. Circle 10 ones. Then write the number of tens and ones.

a. 15 ones



1 ten 5 ones

b. 13 ones



1 ten 3 ones

Answers will vary.

Think and Solve

Look at these numbers.

a. Use different colors to show pairs of numbers that add to 20.

12	3	6	15	11	0	
14	8	10	9	17	5	20

b. Circle the number that is left over. Then use that number to complete this equation.

____ + ____ = 20

c. Use two numbers that are not shown above to complete this equation.

____ + ____ = 20

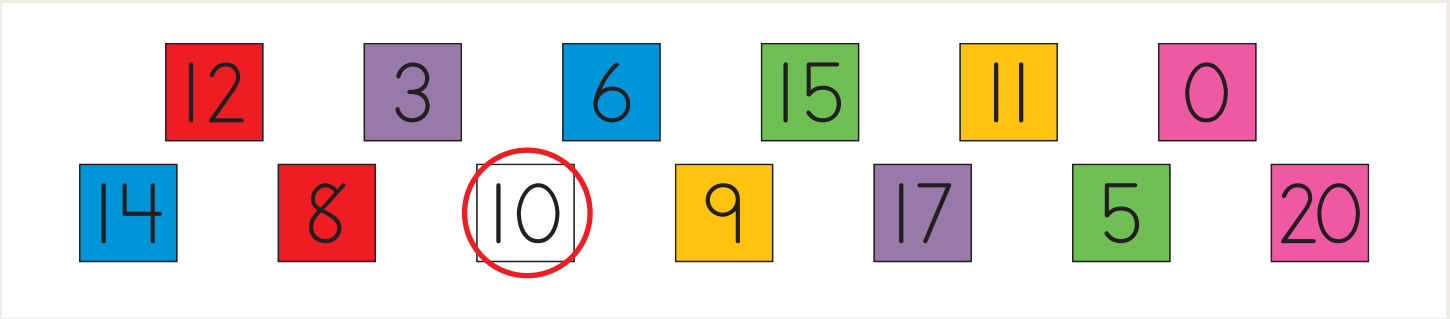
Words at Work

Imagine your friend is away from school when you are learning about using the make-ten strategy to add numbers like 28 and 7. Write how you would explain the strategy to them.

Think and Solve

Look at these numbers.

a. Use different colors to show pairs of numbers that add to 20.



b. Circle the number that is left over. Then use that number to complete this equation.

10 + 10 = 20

c. Use two numbers that are not shown above to complete this equation.

13 + 7 = 20

Words at Work

Imagine your friend is away from school when you are learning about using the make-ten strategy to add numbers like 28 and 7. Write how you would explain the strategy to them.

You can use the make-ten strategy to add 8 and 7. You think 8 + 2 makes 10, then 5 more makes 15. You can use the same thinking to add bigger numbers like 28 and 7. You think 28 + 2 makes 30, then 5 more makes 35.

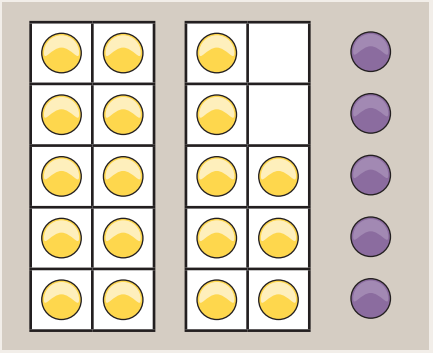
Answers will vary. This is one example.

5.4 Suma: Ampliando la estrategia de hacer diez (recta numérica)

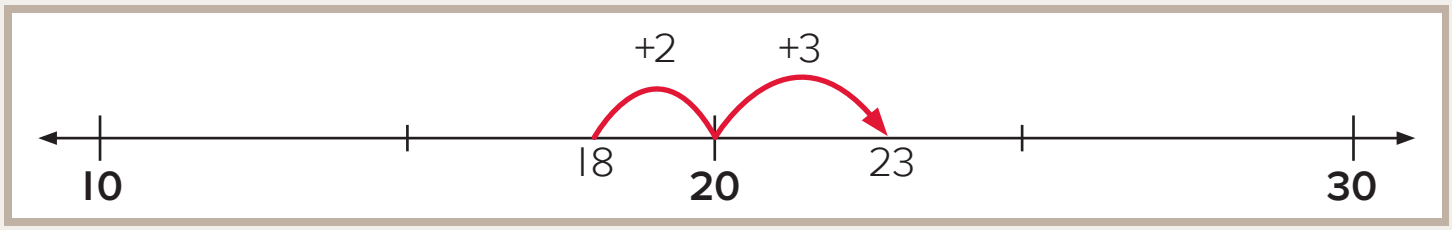
Conoce

¿Cómo utilizarías los marcos de diez para calcular 18 + 5?

Yo llenaría el segundo marco de diez para hacer otra decena más. Es mucho más fácil calcular 20 + 3 que 18 + 5.



Monique utiliza la recta numérica para indicar cómo calculó 18 + 5.



¿Qué razonamiento utilizó ella? ¿Qué es similar en ambos métodos?

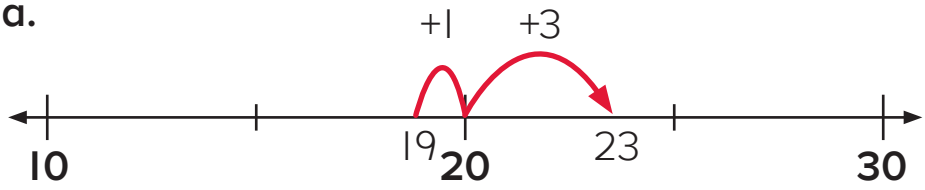
¿Cómo podrías utilizar la estrategia de hacer diez para sumar 28 + 5?

¿Cuáles son otros números que podrías sumar utilizando esta estrategia?

Intensifica

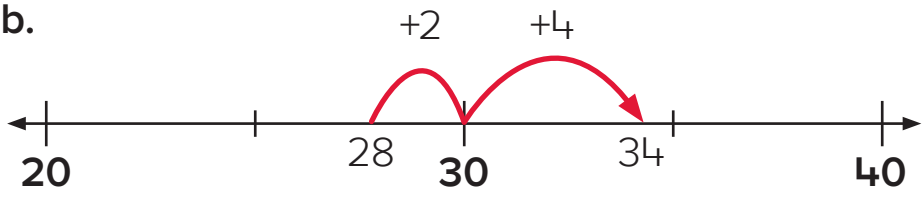
1. Observa la recta numérica.
Completa la ecuación correspondiente.

a.



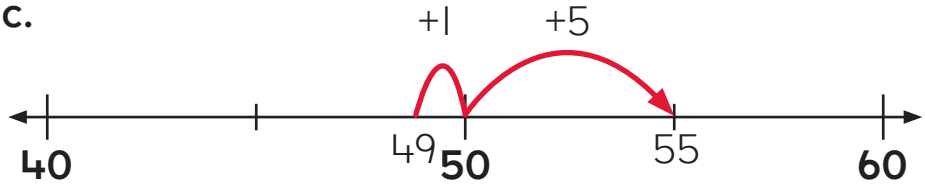
19 + ____ = 23

b.



28 + ____ = 34

c.



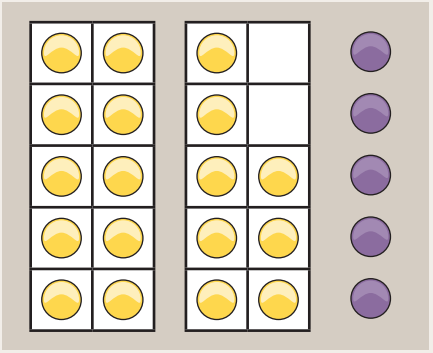
49 + ____ = 55

5.4 Suma: Ampliando la estrategia de hacer diez (recta numérica)

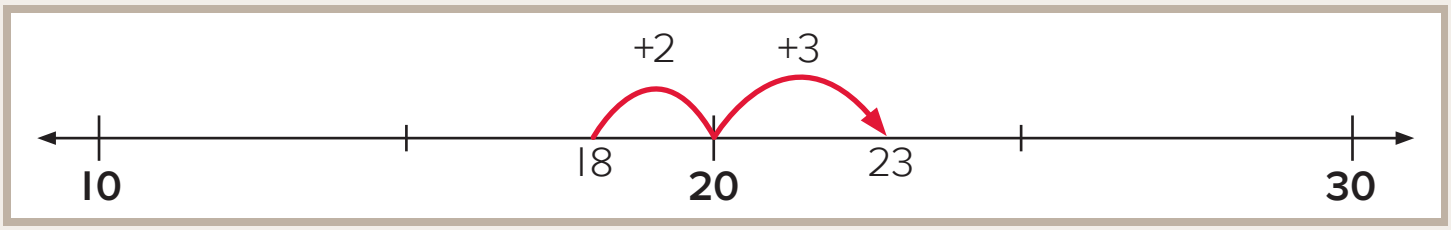
Conoce

¿Cómo utilizarías los marcos de diez para calcular 18 + 5?

Yo llenaría el segundo marco de diez para hacer otra decena más. Es mucho más fácil calcular 20 + 3 que 18 + 5.



Monique utiliza la recta numérica para indicar cómo calculó 18 + 5.



¿Qué razonamiento utilizó ella? ¿Qué es similar en ambos métodos?

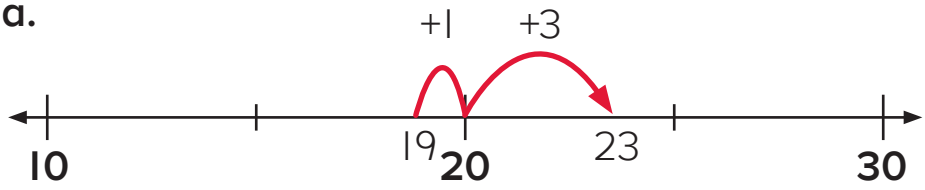
¿Cómo podrías utilizar la estrategia de hacer diez para sumar 28 + 5?

¿Cuáles son otros números que podrías sumar utilizando esta estrategia?

Intensifica

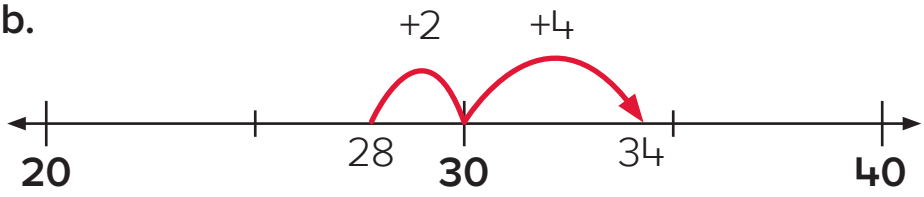
1. Observa la recta numérica. Completa la ecuación correspondiente.

a.



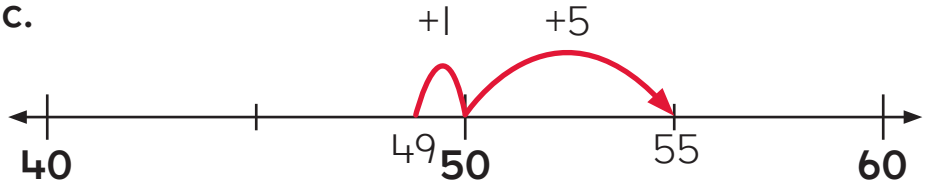
19 + 4 = 23

b.



28 + 6 = 34

c.

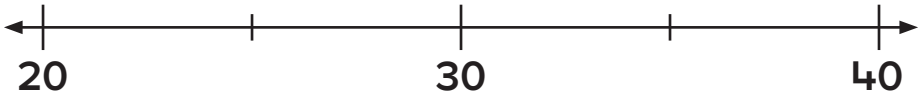


49 + 6 = 55

2. Calcula el total. Luego dibuja saltos en la recta numérica para indicar tu razonamiento.

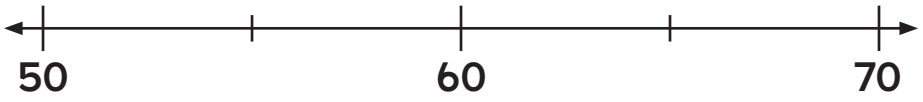
a.

29 + 4 = _____



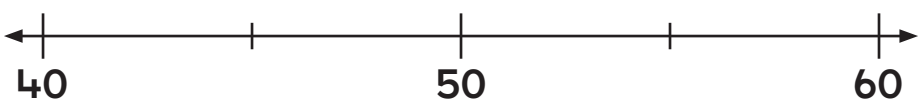
b.

6 + 58 = _____



c.

47 + 5 = _____

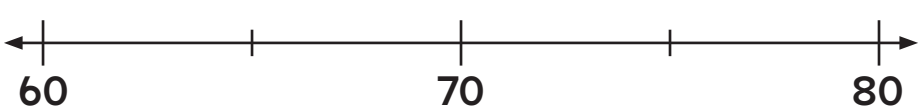


d.

7 + 38 = _____

e.

69 + 8 = _____



Avanza

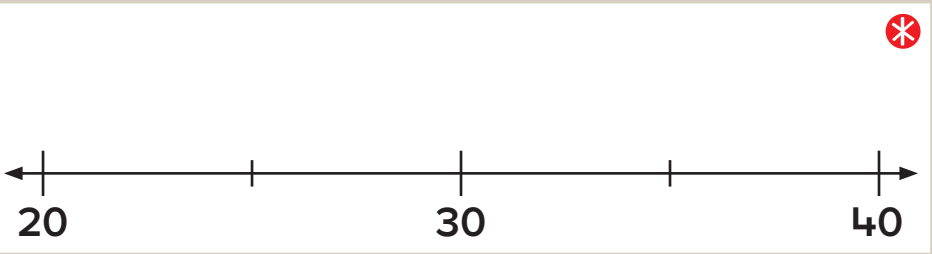
Dorothy tiene un *quarter*, dos *dimes* y tres *pennies*. Jacob tiene un *nickel* y cuatro *pennies*.

a. ¿Cuánto dinero más tiene Dorothy que Jacob? _____¢

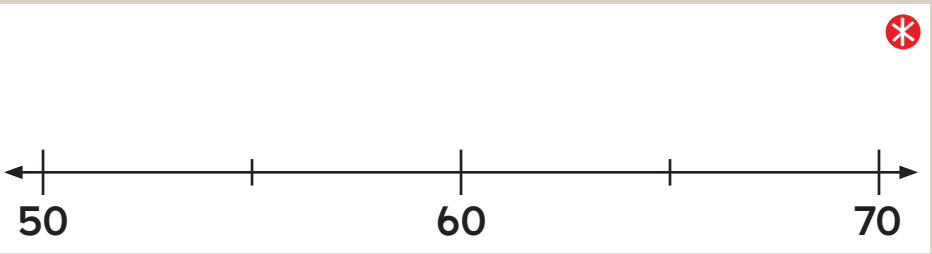
b. ¿Cuánto dinero tienen ellos en total? _____¢

2. Calcula el total. Luego dibuja saltos en la recta numérica para indicar tu razonamiento.

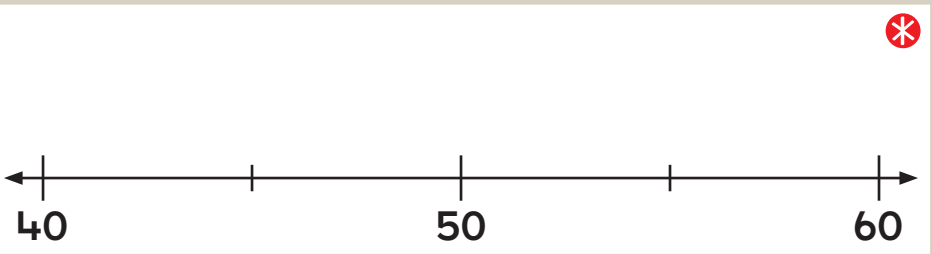
a. $29 + 4 =$ 33



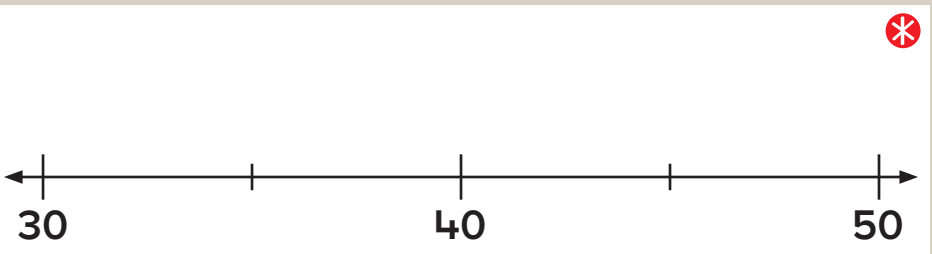
b. $6 + 58 =$ 64



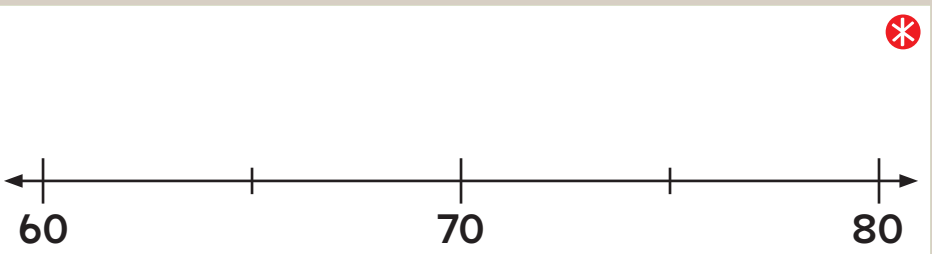
c. $47 + 5 =$ 52



d. $7 + 38 =$ 45



e. $69 + 8 =$ 77



Avanza

Dorothy tiene un *quarter*, dos *dimes* y tres *pennies*. Jacob tiene un *nickel* y cuatro *pennies*.

a. ¿Cuánto dinero más tiene Dorothy que Jacob? 39 ¢

b. ¿Cuánto dinero tienen ellos en total? 57 ¢

Las respuestas pueden variar.

Piensa y resuelve

Observa estos números.

a. Utiliza colores diferentes para indicar pares de números que sumen 20.

12	3	6	15	11	0
14	8	10	9	17	5	20

b. Encierra el número que sobra. Luego utiliza ese número para completar esta ecuación.

____ + ____ = 20

c. Utiliza dos números que no se indican arriba para completar esta ecuación.

____ + ____ = 20

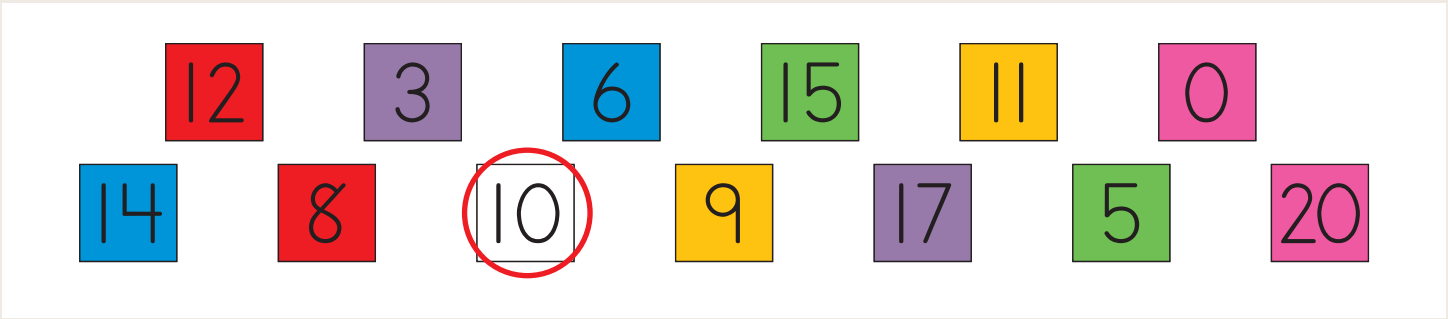
Palabras en acción

Imagina que tu amigo está ausente el día que estás aprendiendo a utilizar el marco de diez para sumar números como 28 y 7. Escribe cómo le explicarías la estrategia.

Piensa y resuelve

Observa estos números.

a. Utiliza colores diferentes para indicar pares de números que sumen 20.



b. Encierra el número que sobra. Luego utiliza ese número para completar esta ecuación.

10 + 10 = 20

c. Utiliza dos números que no se indican arriba para completar esta ecuación.

13 + 7 = 20

Palabras en acción

Imagina que tu amigo está ausente el día que estás aprendiendo a utilizar el marco de diez para sumar números como 28 y 7. Escribe cómo le explicarías la estrategia.

Puedes utilizar la estrategia de hacer diez para sumar 8 y 7. Piensas 8 + 2 hacen 10, luego 5 más hacen 15. Puedes utilizar el mismo razonamiento para sumar números más grandes como 28 y 7. Piensas 28 + 2 hacen 30, luego 5 más hacen 35.

Las respuestas pueden variar. Este es un ejemplo.

Práctica continua

1. Escribe la ecuación de resta que corresponda a cada problema. Utiliza **?** para indicar la cantidad desconocida. No necesitas resolver el problema.

DE 2.4.4

a. Max tiene 12 libros de pájaros. Él le da algunos libros a Peta. Quedan 8 libros. ¿Cuántos libros le dio a Peta?

_____ – _____ = _____

b. Antonio tiene 5 centavos más que Patricia. Antonio tiene 13 centavos. ¿Cuánto dinero tiene Patricia?

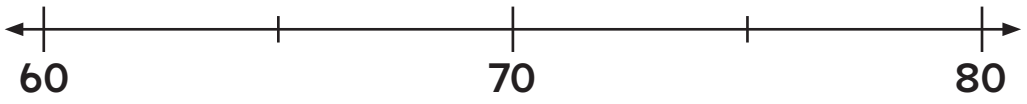
_____ – _____ = _____

2. Escribe los totales. Luego dibuja saltos en la recta numérica para indicar tu razonamiento.

DE 2.5.4

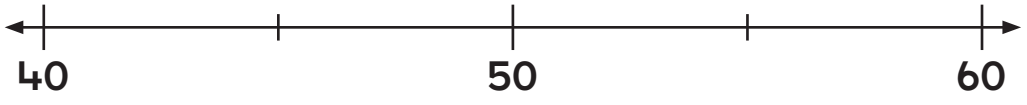
a.

68 + 5 = _____



b.

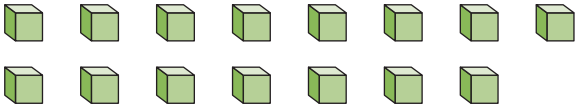
8 + 47 = _____



Prepárate para el módulo 6

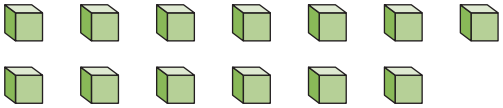
Escribe el número de bloques de unidades. Encierra 10 unidades. Luego escribe el número de decenas y unidades.

a. _____ unidades



_____ decena _____ unidades

b. _____ unidades



_____ decena _____ unidades

Práctica continua

1. Escribe la ecuación de resta que corresponda a cada problema. Utiliza **?** para indicar la cantidad desconocida. No necesitas resolver el problema.

DE 2.4.4

a. Max tiene 12 libros de pájaros. Él le da algunos libros a Peta. Quedan 8 libros. ¿Cuántos libros le dio a Peta?

12 − ? = 8

b. Antonio tiene 5 centavos más que Patricia. Antonio tiene 13 centavos. ¿Cuánto dinero tiene Patricia?

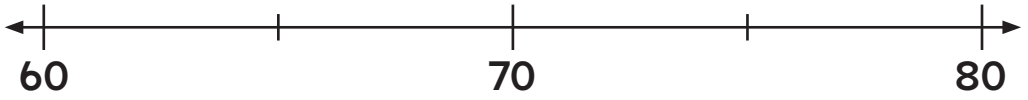
13 − 5 = ?

2. Escribe los totales. Luego dibuja saltos en la recta numérica para indicar tu razonamiento.

DE 2.5.4

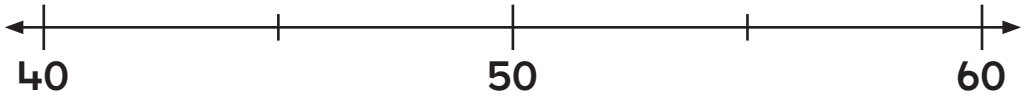
a.

68 + 5 = 73



b.

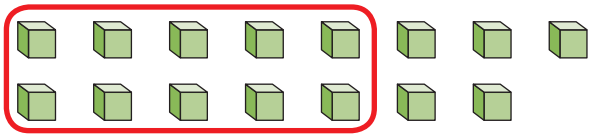
8 + 47 = 55



Prepárate para el módulo 6

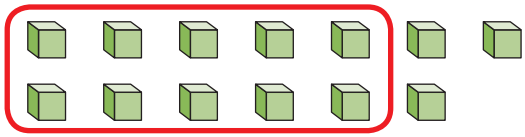
Escribe el número de bloques de unidades. Encierra 10 unidades. Luego escribe el número de decenas y unidades.

a. 15 unidades



1 decena 5 unidades

b. 13 unidades



1 decena 3 unidades

✻ Las respuestas pueden variar.