Stations for Pre-Assessment in Preparation for 3(4)(A)

Materials:

- **Stations 1-3**

Students will rotate through the stations to complete the three problems using the provided representation.

After all the stations have been completed, sort the student work to look for the following:

- Which models do students use the most often?
- With which models are students most successful?
- Which models are NOT being used by students?
- With which models are students least successful?
- Which processes or procedures are students using the most often?
- With which processes or procedures are students most successful?
- Which misconceptions are present in the work?
- Which steps are students taking the most often?

Based on the sorting, what are next steps?

- Which models or processes do we build from in our instructional activities?
- Which models or processes might we need to develop in our instructional activities?
- Which misconceptions or gaps do we need to address with the whole group?
- Which misconceptions or gaps do we need to address with a small group?

Station 1

- Solve each problem using the base-10 blocks.
- Draw or take a picture of your work and solution.

Jake has three bags of marbles.

- The red bag has 120 marbles.
- The blue bag has 72 marbles.
- The green bag has 68 marbles.

1 How many marbles does Jake have in the three bags?

2 How many more marbles does Jake have in the red bag than in the green bag?

Station 2

- Solve each problem using pictures, number lines, or strip diagrams.
- Record your picture.

Kayla is counting the steps between places at school.

- She counted 36 steps from her desk to the window.
- She counted 254 steps from the nurse's office to her classroom.
- She counted 78 steps from her classroom to the end of the hall.

1 How many steps did Kayla count?

2 How many more steps is it from the nurse's office to her classroom than from her classroom to the end of the hall?

Station 3

- Write an equation to represent each problem.
- Solve each problem.

A basketball team played its first three games.

- There were 96 attendees at the first game.
- There were 98 attendees at the second game.
- There were 215 attendees at the third game.

1 What was the total attendance for the first three games?

2 How many more people attended the third game than attended the first game?

Identify Representations of Addition and Subtraction Problems

Materials:

- **Mr. Hooper's Purchases**
- Scissors
- Tape or glue

Prompt students to complete **Mr. Hooper's Purchases**.

Debriefing Questions:

- How does the strip diagram model the problem situation?
- Why does the model on Card D not represent the first problem situation?
- Why does the model on Card A not represent the second problem situation?

Mr. Hooper's Purchases

Mr. Hooper purchased fruit bars for his store.

- He purchased 335 banana bars.
- He purchased 268 coconut bars.
- He purchased 172 mango bars.

1 How many more banana and mango bars did Mr. Hooper purchase than coconut bars?

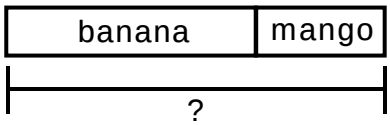
Which strip diagram can be used to represent the problem? Why?

2 How many fruit bars did Mr. Hooper purchase?

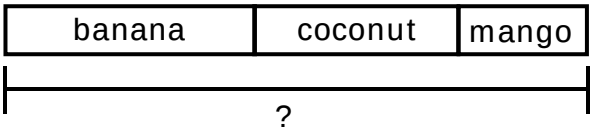
Which strip diagram can be used to represent the problem? Why?

Cut along the dotted lines.

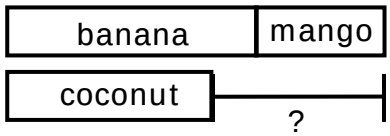
Card A



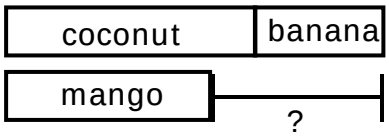
Card C



Card B



Card D



Selecting Appropriate Representations for Addition and Subtraction

Materials:

- **Representations Card Match**
- **Representing Addition and Subtract Cards**
- Scissors
- Tape or glue

Prompt student to complete **Representations Card Match** using the **Representing Addition and Subtraction Cards**.

Debriefing Questions:

- How is the problem situation represented in the strip diagram? The number line? The equation?
- How is the equation represented in the strip diagram? The number line?
- What other representation(s) can be used to model the problem situation?

Representation Card Match

- Cut apart the **Representation Cards**.
- Match a strip diagram model, a number line, and an equation that could be used to represent the problem situation.
- Attach the cards.

1 Juanita had some baseball cards in a box. Her mother then gave her 128 baseball cards, and her brother gave her 115 baseball cards. Now Juanita has 755 baseball cards. How many baseball cards did Juanita have in her box before she was given more cards?	Equation:
Strip diagram:	Number line:

2 Last week the Ice Cream Factory made 128 gallons of vanilla ice cream and 115 gallons of chocolate ice cream. This week the Ice Cream Factory made 755 gallons of vanilla and chocolate ice cream combined. How many gallons of vanilla ice cream and chocolate ice cream did the Ice Cream Factory make both weeks?	Equation:
Strip diagram:	Number line:

3 In-Style has 115 blue dresses and 755 red dresses. Bargain Barn has 128 fewer blue dresses and red dresses combined than In-Style. How many blue dresses and red dresses does Bargain Barn have?	Equation:
Strip diagram:	Number line:

4 Tuam had $128. He spent $115 on two pairs of tennis shoes. Then, he received $755 for his birthday. How much money does Tuam have now?	Equation:
Strip diagram:	Number line:

Check Point: Selecting Representations of Addition and Subtraction Situations

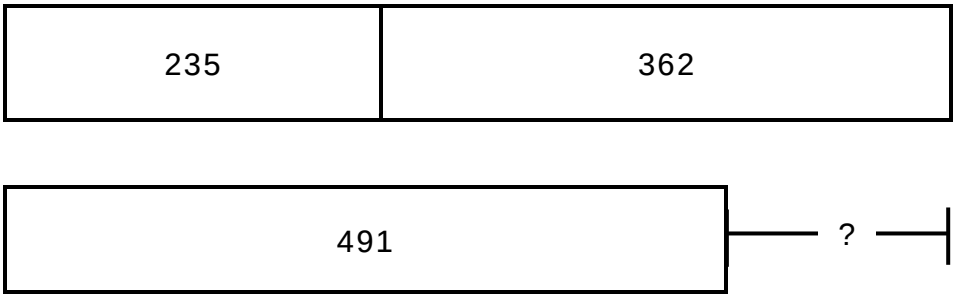
Connor, Kay, and Josepha are collecting marbles.

- Connor has collected 235 marbles.
- Kay has collected 362 marbles.
- Josepha has collected 491 marbles.

How many more marbles have been collected by Connor and Kay than by Josepha?

Which representation shows a way to find how many more marbles Connor and Kay have collected than Josepha?

★



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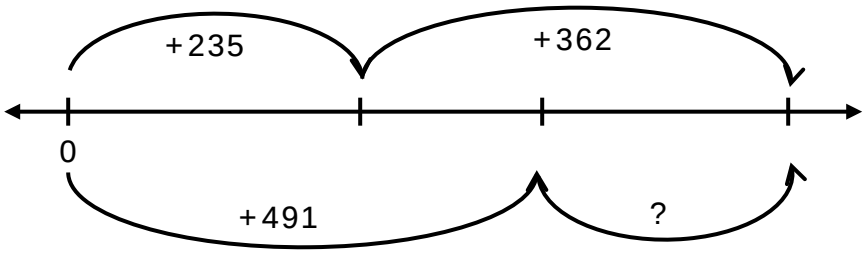


●

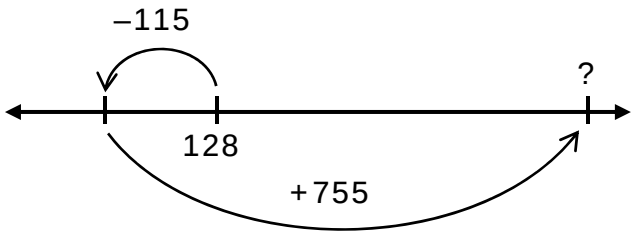
$235 + 362 - \square = 491$

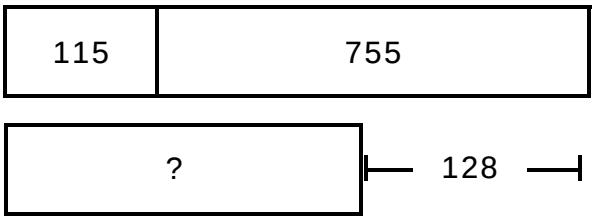
▲

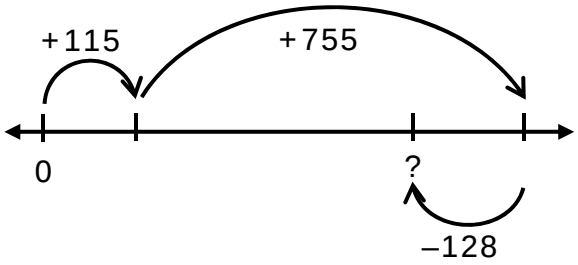
$235 + 362 = 491 - \square$

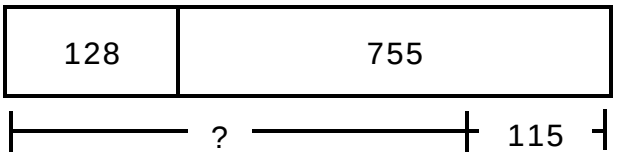
Representing Addition and Subtraction Cards

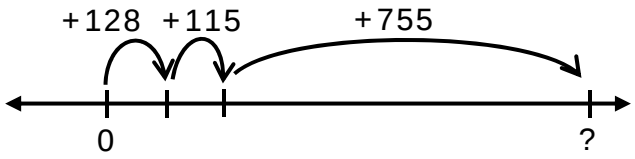
Cut along the dotted lines.

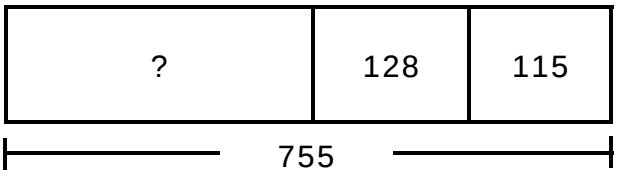


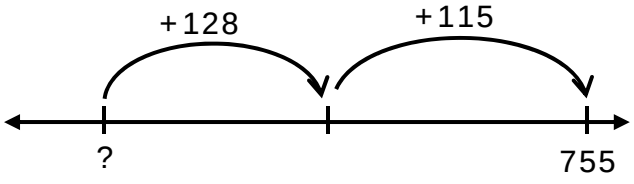


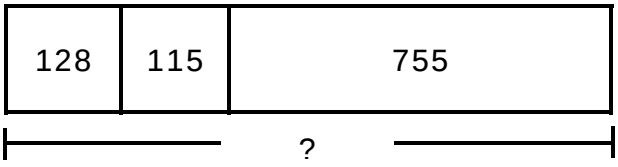


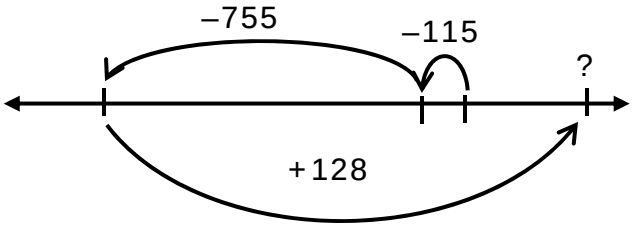


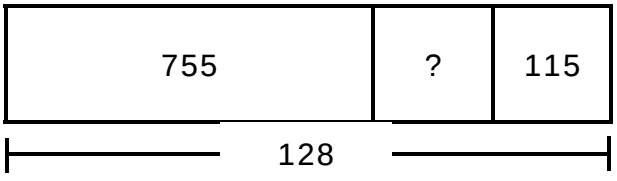












$\square + 128 + 115 = 755$

$115 + 755 - 128 = \square$

$128 + 115 + 755 = \square$

$128 + 115 - 755 = \square$

$128 - 115 + 755 = \square$

Generating Representations for Addition and Subtraction Using Models

Materials:

- **Representations for Addition and Subtraction**
- Colored pencils (optional)

Prompt student to complete **Representations for Addition and Subtraction**.

Debriefing Questions:

- What model did you use to represent the problem situation? Why?
- How is the problem situation represented in your model?
- What other representation could be used to model the problem situation? Why?

Representations for Addition and Subtraction

Represent the following problem situations using two different models. Sketch your models in the space provided.

Possible Models
Equation Number line Strip diagram

1 Jackie and Dan need 750 party favors for a birthday party.

- Jackie and Dan purchased 461 party favors.
- Jackie's mother purchased 234 party favors.
- Dan's mother purchased the rest of the party favors.

How many party favors did Dan's mother purchase?

Representation 1
Representation 2

2 Jackie and Dan are saving money for a professional photographer to take pictures at the birthday party.

- The photographer charges $250 to take pictures.
- Jackie and Dan plan to buy three framed pictures for a total of $397.
- They currently have $125 saved for the pictures and photographer.

How much more money do they need to save in order to pay for the pictures and the photographer?

Representation 1
Representation 2

Check Point: Representing Addition and Subtraction Using Models

Represent this problem situation using a number line or strip diagram.

Laisha had 493 beads to make jewelry. Sofia used 187 of Laisha's beads to make bracelets. Hannah used 126 of Laisha's beads to make earrings. How many beads does Laisha now have to make necklaces?

Determining Sums and Differences Using Mental Strategies

Materials:

- **Determining Sums and Differences**

Prompt students to complete **Determining Sums and Differences**.

Debriefing Questions:

- How did the student approach the problem?
- How is the second step different from the first step in the student's work? What thinking did the student use to move from step one to step two?
- How is the third step different from the second in the student's work? What thinking did the student use to move from step two to step three?
- How is _____ (the student's) thinking reflected in your work?

1 Maria was asked to determine the difference of $538 - 326$. Maria's method and solution are shown below.

$$538 - 326$$

$$(500 + 30 + 8) - (300 + 20 + 6)$$

$$200 + 10 + 2$$

$$212$$

Determine this difference using Maria's method:

$$786 - 523$$

2 Kari was asked to determine the difference of $273 - 159$. Kari's method and solution are shown below.

$$273 - 159$$

$$(200 + 70 + 3) - (100 + 50 + 9)$$

$$(200 - 100) + (70 - 50) + (3 - 9)$$

$$-10 \longrightarrow +10$$

$$(200 - 100) + (60 - 50) + (13 - 9)$$

$$100 + 10 + 4$$

$$114$$

Determine the difference using Kari's method:

$$494 - 267$$

3 Colin was asked to determine the sum of $456 + 138$. Colin's method and solution are shown below.

$$456 + 138$$

$$(456 + 4) + (138 - 4)$$

$$460 + 134$$

$$594$$

Determine this sum using Colin's method.

$$378 + 514$$

4 Blair was asked to determine the difference of $743 - 528$. Blair's method and solution are shown below.

$$743 - 528$$

$$(743 + 2) - (528 + 2)$$

$$745 - 530$$

$$215$$

Determine the difference using Blair's method.

$$642 - 238$$

Solving Addition and Subtraction Problems Using Mental Strategies

Materials:

- **Mr. Jones' Students** for display
- **Conversation Starter Card** – One per group of students
- **Strategy Cards** – One set per group of students
- Scissors

1. Display **Mr. Jones' Students**.
2. Prompt students to discuss how they would solve the problem.
   Note: The intended focus is for students to share their problem-solving strategies and not their solutions.
3. Distribute a set of **Strategy Cards** and a **Conversation Starter Card** to each group of students.
4. Explain to students that the **Strategy Cards** represent the work of the six students in Mr. Jones class.
5. Prompt students to sort the cards based on the similarities and differences that they notice among the solution processes and use the Conversation Card to guide the discussion as the cards are sorted.
6. Debrief using the debriefing questions and a set of **Strategy Cards** for display, while prompting groups of student to share their groupings and rationales.

Debriefing Questions:

- Which cards did you group together?
- What do the cards in this group have in common?
- How do the solution strategies differ *within* this group?
- What makes one group of cards different from another?

Mr. Jones' Students

Mr. Jones asked his students to write an equation to represent the problem below.

> Christina had 168 stickers. Marlin gave Christina 109 stickers. Then, Christina gave 59 stickers to Nancy. How many stickers does Christina have now?

All six students wrote the equation $168 + 109 - 59 = \square$ to represent this problem.

Check Point: Solving Addition and Subtraction Problems Using Mental Strategies

- Fold your paper along the dotted line.
- Use your number sense and mental strategies to solve the problem situation in Part I.
- Once you have solved the problem, unfold your paper and answer Part II.

Part I

Malia filled balloons for the school dance with helium gas. She filled 267 red balloons and 336 gold balloons. While tying the balloons, 45 balloons popped. How many balloons did Malia have for the school dance?

Part II

Samar and Kevin solved the same problem using different strategies.
Whose strategy is more like yours? Justify your answer.

Samar	Kevin
$267 + 336 - 45$ $(200 + 300) + (60 + 30) + (7 + 6) - 45$ $500 + (90 - 40) + (13 - 5)$ $500 + 50 + 8$ 558	$267 + 336$ $(200 + 300) + (60 + 30) + (7 + 6)$ $500 + 90 + 13$ $590 + 13$ 603 $603 - 45$ -3 ( ) -3 $600 - 42$ 558

Conversation Starter Cards

Cut along the dotted lines. Two cards are provided.

Conversation Starters

What do the cards in each group have in common?

- All of the students in this group show. . . .
- These students both. . . .

What are the differences in the solution strategies *within* a group?

- This student seems to be thinking about. . . .
- The unique part of this student's work is. . . .

What makes one group of cards different from another?

- These students all seem to be thinking about. . . .
- The students in the other group seem to be thinking more about. . . .

Conversation Starters

What do the cards in each group have in common?

- All of the students in this group show. . . .
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What are the differences in the solution strategies *within* a group?

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- The unique part of this student's work is. . . .

What makes one group of cards different from another?

- These students all seem to be thinking about. . . .
- The students in the other group seem to be thinking more about. . . .

Strategy Cards

Cut along the dotted lines.

Student A

$$168 + 109$$
$$(100 + 60 + 8) + (100 + 9)$$
$$(100 + 100) + 60 + (8 + 9)$$
$$200 + 60 + 17$$
$$200 + 77$$
$$277$$

$$277 - 59$$
$$+3 \quad +3$$
$$280 - 62$$
$$218$$

Christina has 218 stickers left.

Student B

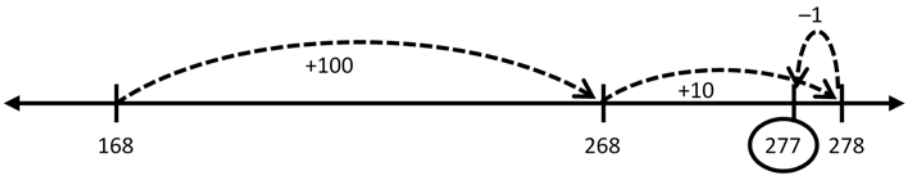
$$168 + 109$$
$$+2 \quad -2$$
$$170 + 107$$
$$277$$

$$277 - 59$$
$$(200 + 67 + 10) - (50 + 9)$$
$$200 + 17 + 1$$
$$218$$

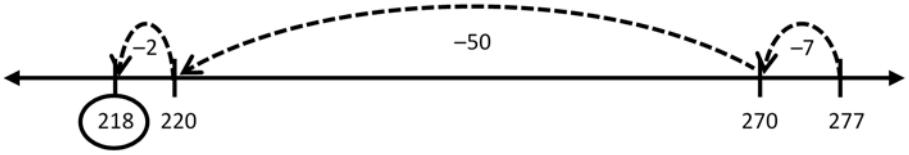
Christina has 218 stickers left.

Student C

$168 + 109 = \square$



$277 - 59 = \square$



Christina has 218 stickers left.

Student D

$168 + 109$

$(150 + 18) + (100 + 9)$

$250 + (18 + 9)$

+2 … −2

$250 + 20 + 7$

277

$277 - 59$

+2 … −2

$275 - 57$

$275 - 50 - 7$

$225 - 5 - 2$

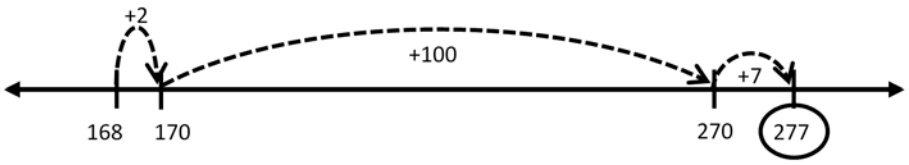
$220 - 2$

218

Christina has 218 stickers left.

Student E

$168 + 109 = ?$



$277 - 59$

+2

$279 - 59$

220

−2

218

Christina has 218 stickers left.

Student F

$168 + 109$

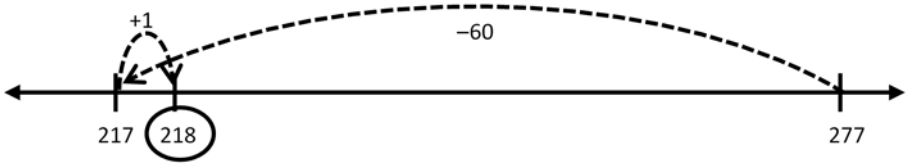
+1

$168 + 110$

278

−1

277



Christina has 218 stickers left.

Solving Addition and Subtraction Problems

Materials:

- **Solving Addition and Subtraction Problems: Scavenger Hunt**
- **Solving Addition and Subtraction Problems: Scavenger Hunt Posters** – for display
- Tape

1. Display the **Solving Addition and Subtraction Problems: Scavenger Hunt Posters** randomly around the classroom.
2. Prompt pairs/small groups of students to stand by each poster.
3. Prompt students to solve the problem on the bottom of the poster on **Solving Addition and Subtraction Problems: Scavenger Hunt** in the workspace provided.
4. Prompt students to then find their solution on the top of another poster. That poster will contain their next problem to solve.
5. Continue this process for the remaining problems.

Debriefing Questions:

- How did you determine the solution?
- What strategies did you use to solve the problem, if any? Why?
- What model(s) did you use to represent the problem situation, if any? Why?
- How does your model represent the problem situation?

Solving Addition and Subtraction Problems: Scavenger Hunt

Starting Letter	Work Space	Solution

Check Point: Solving Addition and Subtraction Problems

1 Oksana, Riley, and Jackson went to the beach to collect sea shells for the day. Oksana found 143 seashells, and Riley found 218 seashells. Jackson found 14 more seashells than Oksana and Riley combined. How many seashells did Jackson find?

2 A concession stand is selling peanuts, popcorn, and sodas. The amount of money they collected for each item is listed below.

- They collected $235 selling peanuts.
- They collected $313 selling popcorn.
- They collected $756 selling sodas.

How much more money was collected on sodas than on peanuts and popcorn combined?

A

589

Peggy has a rock collection. Her mother gave her 20 new rocks for her birthday. Peggy gave 56 of the rocks to her science teacher. She now has 264 rocks. With how many rocks did Peggy start?

B

212

Yesterday, Mitch collected 345 power stars while playing a video game. He used 146 of the power stars to move to the next level in the game. Today, Mitch collected 128 more power stars. How many power stars does Mitch have now?

C

300

Jamie earned $345 by mowing lawns all summer. He spent $146 on a skate board and $128 on a pair of tennis shoes. How much money does Jamie have now?

D

232

Karen had $128 in her savings. On Friday, she deposited $264 of her birthday money into her savings. On Saturday, Karen deposited $20 of her babysitting money into her savings. How much money does Karen have in her savings account now?

E

412

Jackie had some money in her savings. She deposited $121 on Monday and $250 on Wednesday. She now has $960 in her savings account. How much money did Jackie have in her savings account before she made the two deposits?

F

71

Jose and Michael each have a collection of miniature cars. Jose has 121 sports cars and 243 cars that are not sports cars. Jose has 152 more cars than Michael. How many cars does Michael have in his collection?

G

454

Jackson Elementary recorded the following transfer and enrollment information during the first six weeks of school.

- 20 third-grade students transferred to a different school.
- 52 third-grade students enrolled.
- There were 264 third-grade students at the end of the first six weeks of school.

How many third-grade students did Jackson Elementary have at the beginning of the first six weeks of school?

H

327

Marcella had 721 red and white beads before she started making spirit bracelets to sell at the school festival.

- On Monday, she used 146 red beads to make the bracelets.
- On Tuesday, she used 121 white beads to make the bracelets.

How many beads did Marcella have left after making the spirit bracelets?

