Related Facts – A Co-Teaching Lesson Plan

Co-Teaching Approaches
A "(Y)" in front of the following list items indicates the approach is outlined in the lesson. An"(N)" in front of the following list items indicates the approach is not outlined in the lesson.

- (N) Parallel Teaching
- (Y) Team Teaching
- (Y) Station Teaching
- (N) One Teach/One Observe
- (N) Alternative Teaching
- (Y) One Teach/One Assist

Subject
Grade 2 Mathematics

Strand
Computation and Estimation

Topic
Recognizing Fact Families

SOL
2.5   The student will
   a) recognize and use the relationships between addition and subtraction to solve single-step practical problems, with whole numbers to 20.

Outcomes
The student will recognize and describe the related facts that represent and describe the inverse relationship between addition and subtraction.

Materials
- Demonstration tool (e.g., document camera, digital display) or a chart if board is not accessible
- 3 Different Ways graphic organizer (attached)
- "Related Facts" anchor chart
- Markers (blue, red, black, purple)
- Chart paper

- Dry-erase materials (boards, markers, and erasers)
- Pointer
- Addition symbol (teacher-made)
- Subtraction symbol (teacher-made)
- Equal symbol (teacher-made)
- Linking cubes in different colors
- One-inch graph paper
- Crayons
- Pencils
- Hand pointer
- Related fact houses (teacher-made) - at least one for each student in a small group
- Number cards (a few sets)/Matching Number sentence cards (a few sets) (teacher-made)
    - Examples: | 5 | | 3 | | 2 | | 2 + 3 = 5 | | 3 + 2= 5 | | 5 - 3 = 2 | | 5 - 2 = 3 |
- Domino Fact Families activity sheet (attached)
- Dominoes
- Transition music
- Family of Facts poem (attached)
- Related Facts Homework (attached)

Vocabulary
addends, adding, addition, difference, equal, fact family, minus, plus, related fact, sum, subtracting, subtraction

Co-Teacher Actions

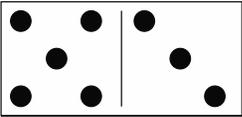| Lesson Component	Co-Teaching Approach(es)	General Educator (GE)	Special Educator (SE)
Anticipatory Set ***Peer Discussion**	Team Teaching	• Before students arrive, have the following "I can …" statement written on the board: "I can … identify related addition and subtraction facts to 20. • Have students read the "I can …" statement aloud together with teachers	• Use the hand pointer to track words on the board while students read the "I can" statement. • Monitor student discussions. • After one minute of discussion, the

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		and then discuss with their mathematics buddy (shoulder partner) what they think they will be doing for the mathematics lesson today based on the statement (remind students to use their "math words" during discussion). Monitor student discussions.	teacher will call on students to share what they discussed with their math buddy. The teacher leads quick discussion on expectations of today's lesson.

Lesson Activities/ Procedures	Team Teach & One Teach/One Assist	• GE will hand out the 3 Different Ways graphic organizer for students to place their strategies.
		
		• GE posts strategies that students share on the classroom's related facts anchor chart.
		
		• GE will write the number of boys on chart paper using the blue marker and the number of girls using the red marker.
		
		  o GE will write down students' responses on the interactive board/chart.
		
		  o Write the students' number sentence(s) on the board/chart.
		
		• GE will write the number sentence on the anchor chart, labeling the numbers (addends, sums) and the symbols.
		
		• Teacher will write the total number of students in the class using the purple marker.
			(Lead instructor) Have students brainstorm different ways to find out how many students are in the class using the 3 Different Ways graphic organizer.
			
			• Have students turn to their mathematics buddy (shoulder partner) for a peer discussion on different strategies they came up with.
			
			• After different strategies are offered and recorded, ask for all the boys to stand up. Have students count the boys in the classroom. Count the boys and record the number. Have the boys sit and repeat the procedure with the girls.
			
			  o Have the students brainstorm how those two numbers can be used to find the total number of students in the class.
			
			  o Guide students in writing a number sentence to match each strategy.

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		- Have different students come up to the interactive board/chart and have them share other strategies used to check their answers (Make sure the students use the red marker for the number of girls, the blue marker for the number of boys, the black marker for the addition and equal symbol, and the purple marker for the total.) - Have students turn to their mathematics buddy (shoulder partner) for a peer discussion about starting the number sentence with the total and take away the boys. - Record the number sentence on the chart paper, using the designated colors. $21 - 14 = 7$ - Record the number sentence on the chart paper, using the designated colors. $21 - 7 = 14$ - GE will draw arrows to accentuate the pattern on the chart paper. GE will write the four key points on the	- Have a discussion with the students about the addition and/or subtraction, equal symbols and their meanings. - On their dry-erase boards, have students write the number sentence using the number of boys and girls to find the total number of students in the class. - Ask the students to check their answer by using the strategies mentioned at the beginning of the activity. - Discuss writing the number of boys and girls in different position of the number sentence. - Ask students what would happen if we started with the total and took away the number representing the boys, leaving only the girls in the class. - Have students write the problem on their dry erase boards. Students need to check their answer with the teacher's answer. - Ask the students to do the same with taking away the number of girls. - Have students write the problem on

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		chart paper.	their dry erase boards. Students need to check their answer with the teacher's answer.
			• Have students discuss the pattern they see.
		• Play transition music and dismiss students to their assigned stations.	• Have a discussion with the students in recognizing and articulating the following key points:
			o Four number sentences are created (if the addends are doubles, then there are only two number sentences).
			o Two number sentences are addition.
			o Two number sentences are subtraction.
			o The same three numbers are used in all four number sentences.
			• The GE teacher will introduce the stations and groups for the day.
Guided/ Independent Practice	Station Teaching	**Station 1 (Teacher 1)**	**Station 2 (Teacher 2)**
		Materials: linking cubes in different colors, graph paper, dry-erase board, dry-erase markers	*Materials: Related fact houses, sets of number cards, sets of number sentence cards*
		Students will be creating number sentences with linking cubes to reinforce the key points, using no more than 20	Students will be using a frame model of a related fact house to write addition/subtraction facts.

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		cubes per student –10 of one color and 10 of another. • Direct students to connect three cubes of one color and four cubes of the second color. Stress that the cubes should be joined in like colors, not patterns (e.g., three reds together, four blues together). Now connect the two small trains together and record a number sentence to show the train they have made (i.e., $3 + 4 = 7$). • Have students record their related facts on graph paper. • Have the students flip the cube train over and record their number sentence on their graph paper. • Have the students start with the whole amount and break off the cubes of one color, leaving the other color. Have students record the number sentence. • Next, have the students start with the whole amount and break off the cubes of the other color first this time, leaving the first color. Have students record the number sentence. • Have students draw arrows to reinforce the concept of the same three numbers being used and the changes	• The teacher will model how to complete a related fact house. The objective is to complete a house using the related numbers and correct number sentences. • The teacher will pick a house and explain to the students that the related fact house is complete when the house has the three related numbers on the roof of the house and the four number sentences (two addition and two subtraction) on the bottom of the house. • The teacher will demonstrate by picking a set of numbers (e.g., 4, 5, 9) and then find the corresponding number sentences that will prove these numbers are related facts. $$4 + 5 = 9$$ $$5 + 4 = 9$$ $$9 - 5 = 4$$ $$9 - 4 = 5$$ • The teacher will discuss why these numbers are the only numbers that should be in this house. Explain to the students that the <u>sum</u> (larger number) should be at the top of the roof, with the <u>addends</u> (smaller numbers) on the

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		to their locations on their graph paper. • Allow students time to create their own related facts, using other numbers to model with the cubes and recording what they create. • Teacher will monitor and observe how students complete the task. Assist as necessary.	side corners of the roof. Ask why this is important. (The addends combine to create the sum.) • Question the students to see what would happen if the addends were doubles. • When the students appear to understand the object of the activity, hand out the Related Fact Houses activity sheet to the group along with the first set of number cards and number sentence cards, enough to complete each of the houses. • Teacher will monitor and observe how students complete the task. Assist as necessary. • When the students are finished with the first set of numbers and number sentence, discuss the completed houses and check for accuracy. • Repeat the activity with a different set of number cards and number sentence cards for as much time as is allotted. Be sure to have students complete at least three related fact houses.
	Station Teaching	**Station 3: Dominos Fact Family (Independent Station)** *Materials: Domino Fact Families activity sheet, dominoes, paper, pencil*	

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		• Before starting the activity, remove all dominoes from the set that contain doubles, for example 5/5 or 4/4. • Have buckets of dominoes and recording sheets available. • Explain to the students that they will be finding related facts by using the dots on the dominoes. Demonstrate how to use a domino to record the three numbers in related number sentences. $$5 + 3 = 8$$ $$3 + 5 = 8$$ $$8 - 5 = 3$$ $$8 - 3 = 5$$	
Closure	Team Teaching	• Revisit the "I can …" statement from the beginning of the lesson. • Ask: "How can you use related facts to figure out an addition or subtraction fact you may not know?" "How are addition and subtraction related to each other?"	• Post the Family of Facts poem for students to recite together with the SE. The SE uses a hand pointer to track the words while reciting the poem.
Formative Assessment Strategies	Team Teaching	• GE gives students one number sentence card (e.g., $2 + 6 = 8$), and has them individually find the related facts as an exit ticket. • Give each student a "sum" number and ask them to write a possible collection of related facts for that sum.	* When appropriate, the teachers will pull aside a small group of students for read-aloud accommodations.

Lesson Component	Co-Teaching Approach(es)	General Educator (GE)	Special Educator (SE)
Homework	Team Teaching	The students will be given a worksheet with related facts problems for review of addition and subtraction by using the three numbers that are related facts with problems not to exceed 20.	Same as GE.

Specially Designed Instruction
- Teacher will provide multisensory teaching strategies
- Teacher will provide direct instruction for creating fact families.
- Teacher will provide repetitive verbal practice paired with visuals and manipulatives.

Accommodations
- FM headset transmitters (The students hear the speaker's words directly in their ears, without any distracting background noise, allowing them to enjoy and participate fully in class.)
- Peer buddy (Students are discreetly grouped by ability, and this provides a chance for students with and without disabilities to work together.)
- Visual memory aids (This assists students with deficits in registering information in short-term memory.)
- Simplifying directions (when directions are given for students to have clarification)
- Extended time to complete assessments
- Breaking assignments into smaller steps (for students that become overwhelmed when presented with too many items at once)
- Limit choices to two or provide choices if none is given (not bombarding students with too many choices; keeping frustration level to a minimum)
- During assessment, students are allowed to point to the answer instead of writing or clicking on choices
- Assessment questions and answer choices read to the student by the teacher (for students permitted a read-aloud on assessments for mathematics)
- Provide a template for students to use to fill in the related facts (e.g., ___ + ___ = ___)
- Color-coded lines for the template like the examples in the activity

Modifications

- For students who require a modified curriculum, the content can be reduced to knowing fact families up to a smaller number instead of 20.
- Content can be modified to only the addition or subtraction facts.

Notes

- "Special Educator" as noted in this lesson plan might be an EL Teacher, Speech Pathologist, or other specialist co-teaching with a General Educator.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Family of Facts Poem

It's a family of numbers

That adds and subtracts,

So we call it a family,

A family of facts.

Take 2 + 3, 5 is the sum.

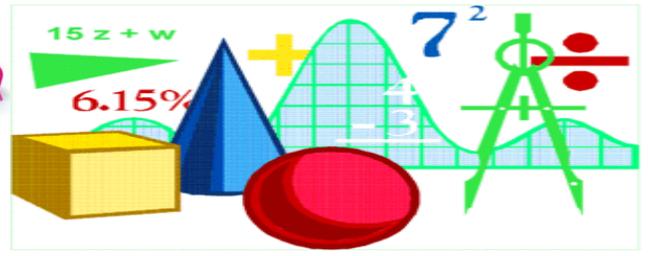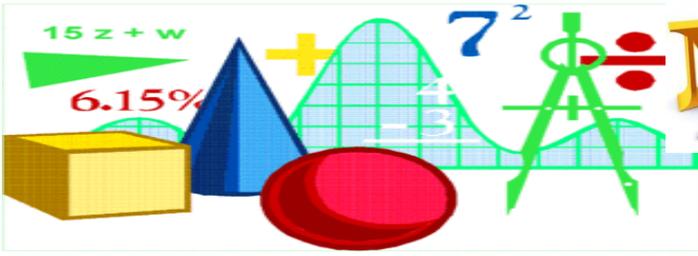Think 3 + 2, and the answer will come.

5 – 3? That's 2, if you please!
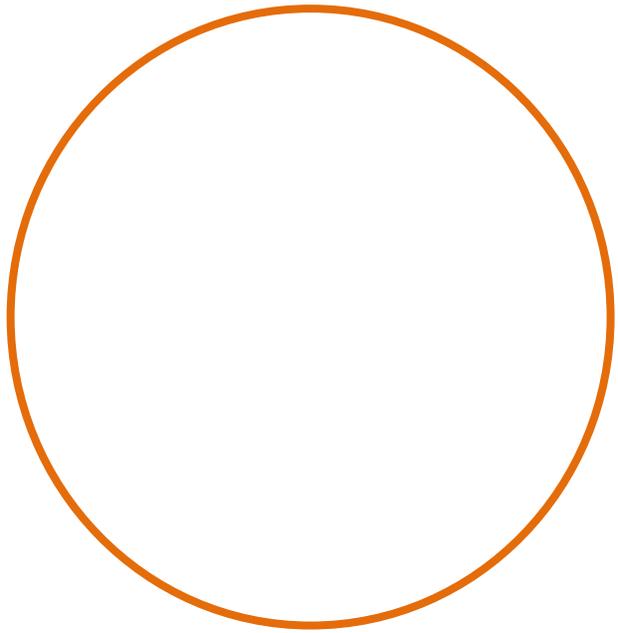
5 – 2? You can do that with ease.

It's a family of numbers

That adds and subtracts

So we call it a family,

A family of facts.

3 Different Ways To Solve!

Three Different Ways

Domino Fact Families

_ **+**

____ **=** ____

    ____ + ____ = ____

    ____ + ____ = ____

    ____ - ____ = ____

    ____ - ____ = ____

____ **+**

____ **=** ____

    ____ + ____ = ____

    ____ + ____ = ____

    ____ - ____ = ____

    ____ - ____ = ____

    ____ + ____ = ____

    ____ + ____ = ____

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    ____ + ____ = ____

    ____ + ____ = ____

    ____ - ____ = ____

    ____ - ____ = ____

    ____ + ____ = ____

    ____ + ____ = ____

    ____ - ____ = ____

    ____ - ____ = ____

Related Facts Homework

Name_____Date_____

Directions: Complete each family of facts.

20

11   9

___ + ___ = ___

___ + ___ = ___

___ - ___ = ___

___ - ___ = ___

18

9   9

___ + ___ = ___

___ - ___ = ___

7

3   4

___ + ___ = ___

___ + ___ = ___

___ - ___ = ___

___ - ___ = ___