Solving Practical Problems – 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.

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

Subject

Grade 7 Mathematics

Strand

Computation and Estimation

Topic

Solving practical problems involving operations with rational numbers

SOL

7.2 The student will solve practical problems involving operations with rational numbers.

Outcomes

The student will be able to solve practical problems involving operations with rational numbers.

Materials

- The Frame Routine Graphic Organizer (attached)
- Tasks Cards (attached)
- Independent Practice Questions (attached)

Vocabulary

common factors, common multiples, decimal, decimal point, estimation, factor, fraction, greatest common factor (GCF), hundredths, improper fraction, leading zero, least common denominator, least common multiple (LCM), like denominators, mixed number, percents, place value, simplest form, simplify, sum difference, tenths, thousandths, unlike denominator

Co-Teacher Actions

Lesson Component	Co-Teaching Approach(es)	General Educator (GE)	Special Educator (SE)
Anticipatory Set	Team Teaching	GE discusses the steps for solving practical problems with students and co-constructs a Frame Routine Graphic Organizer. GE guides students through three practice problems.	SE models the Frame Routine Graphic Organizer on the Board as the students and GE co-construct it. SE models the practice problems on the board.
Lesson Activities/ Procedures	Team Teaching	GE divides students into five groups. GE places a task card at each station with one practical problem. Students independently solve the problem, then compare answers. Students work together to determine which answer is correct. After approximately five minutes, teachers rotate the cards and follow the same process for the next card. G circulates through the groups to encourage participation and collaboration from all students.	SE circulates through the groups to encourage participation and collaboration from all students.
Guided/Independent Practice	Alternative Teaching	Students independently solve problems on the 10 Independent Practice Questions worksheet. GE circulates through the class providing assistance where needed.	SE reteaches problem-solving to a small group of students, then guides them as they solve the problems.
Closure	Team Teaching	GE brings students back together as a whole group. GE reviews each question to check for understanding.	SE puts each problem on the Board while the GE reviews them. SE answers any

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			questions the students have about solving the problems.
Formative Assessment Strategies	Team Teaching	Students complete an exit ticket. GE creates two problems for students to complete independently.	SE writes the questions on the board and moves through the classroom answering questions, as needed.

Homework

- Students will complete five problems on the Independent Practice Questions worksheet.

Specially Designed Instruction (teacher teaches)

- Teacher give one-on-one instruction as needed.
- Teacher gives simplified directions and provides more practice for repetition of problem solving.
- SE works with students to co-construct the Frame Routine Graphic Organizer.

Accommodations (based on student needs)

- Some students may need to utilize a problem solving template to help them guide their thinking.
- **S**tudents receive calculators to solve practical problems, as specified in their IEPs.
- Teachers provide small group and one-on-one instruction, as needed.

Modifications

- Limit problems to one operation per problem for students with significant cognitive delays.
- Students who struggle should have their problems set up according to their IEP accommodations.
- Teachers should modify worksheets to meet the needs of specific students in the class.

Notes

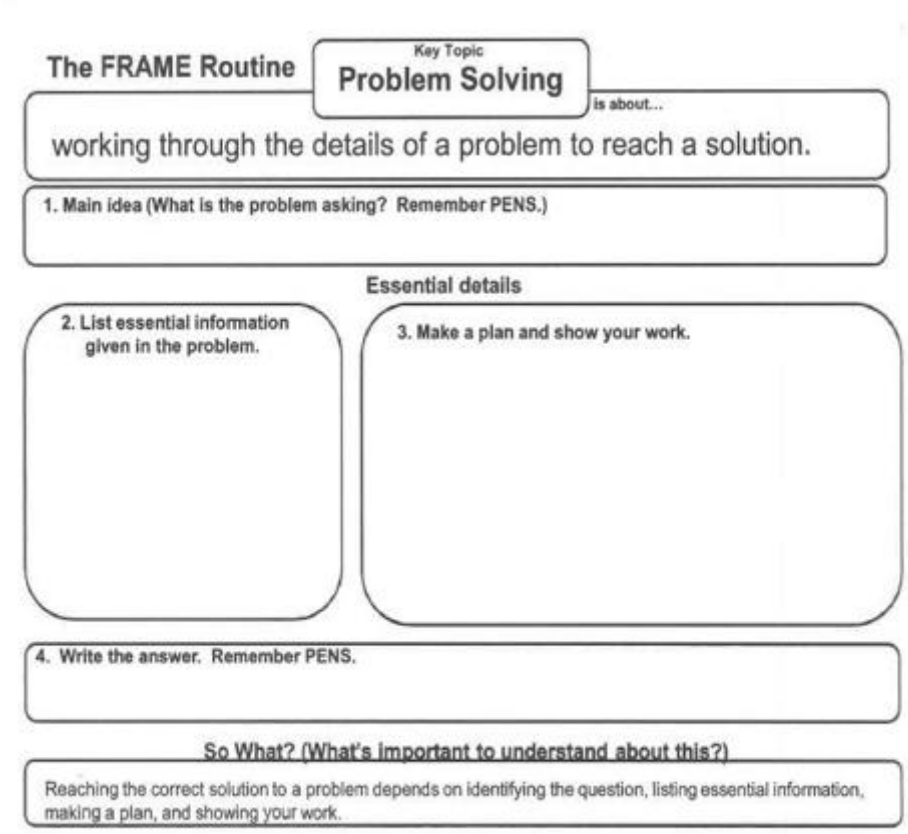
- "Special Educator" as noted in this lesson plan might be an EL Teacher, Speech Pathologist, or other specialist co-teaching with a General Educator.
- The co-teachers who developed this lesson plan received required professional development in the use of specialized instructional techniques which combine an explicit instructional routine with the co-construction of a visual device (graphic organizer). The *Framing Routine* used in conjunction with the "Frame" helps to develop understanding of information and procedures by associating their main ideas and details. These Content Enhancement Routines were developed at the Center for

Research on Learning at the University of Kansas. Link: http://www.kucrl.org/sim/brochures/CEoverview.pdf

- Other graphic organizers should be used by teachers who have not received professional development in the *Concept Mastery Routine*. If Virginia teachers would like to learn Content Enhancement Routines, contact your regional TTAC.

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

The Frame Routine Graphic Organizer



Tasks Cards

Task Cards
The temperature this morning in Colorado was -25 degrees. By the afternoon, the temperature had risen by 15 degrees. When the sun went down in the evening, the temperature had dropped 20 degrees. What was the temperature after the sun went down?
At York Valley Middle School, ½ of the students ride the bus to school and 1/8 are car riders. The rest of the students walk to school. What percent of the students walk to school?
Ms. Jones assigned a book project on September 25th. The students had 2 weeks to work on it. Sam worked on his for 5 ½ hours. Katie worked on hers for 2 1/5 hours. Altogether, how many hours did they work on their book projects? How much longer did Sam work on his?
Mr. and Mrs. Wilson have 5 children. At the beginning of the school year, they bought each child 40 pencils, 10 pens, and a pack of 8 markers. How many writing instruments did they buy in all?
Frank spent $0.50 per pound on apples. Bill spent $0.40 per pound. If Frank bought 6 pounds and Bill bought 7 pounds, who spent more? How much more?

Independent Practice Questions

1. Tyler spent 3 hours and 20 minutes practicing the guitar. What is this number represented as a decimal?	2. The temperature started off very cold at -10.5 degrees. By 12:00 the temperature had risen to 25.6 degrees. What was the change in temperature?
3. An average slice of cheddar cheese is about ⅛ inch thick. What is the height in simplest form of a package containing 12 slices?	4. Sarah received a 65% on her math test and she answered 10 out of 11 questions correctly on her science test. On which test did she receive a higher score?
5. Mr. Smith has 270 acres planted with corn. His fields were invaded by deer and he lost ⅓ of his crop. How many acres of corn does Mr. Smith still have?	6. Dr. Parker needs to see 90 patients on Monday. This is ½ as many as Dr. Jones. How many patients does Dr. Jones need to see?
7. Mr. Lionel is going on vacation and has hired a pet sitter to take care of his two pigs. One pig eats 3 1/4 cups of food per day and the other eats 1 3/4 cups of food per day. How much food should he leave for the pig sitter to cover one week of food for his two pigs?	8. John got an 87 % on his math test and bragged to his mother. His twin brother got 14 out of 15 correct on the test and told his mother he did better. Who was right?

9. Cameron filled 1/ 3 of his gas tank. His gas tank holds 12 gallons. Samantha filled ½ of her gas tank. Her gas tank holds 20 gallons. How many more gallons of gas did Samantha put in her tank than Cameron?	10. Jamie is 1/ 4 as old as his father. If his father is 36, how old is Jamie?