



Using CRA (Concrete-to-Representable-to-Abstract) to Teach Algebra. Lesson 3: Abstract

Objective: To teach students to the skills to solve complex algebraic expressions using abstract symbol instruction within the CRA model.

Setting and Materials:

Settings: Inclusion Classroom (General education classroom: 50 minute math/Algebra class)

Materials:

- Paper
- Pencil

Content Taught

Teach the skills needed to solve Algebraic expressions using abstract symbols.

Teaching Procedures

1. Introduce the lesson on solving algebraic expressions using abstract symbols.
2. Model the lesson:
 - a) Step 1: Show the students how to move from making a picture representation of the problem to using numbers only.
 - b) Model for students how to solve the problem.
 - c) $5 - 2X - 6$
 - i. $5 - 6 - 2X$
 - ii. $-1 - 2X$
3. Guide students through procedures:
 - a) Give the students a problem to solve.
 - b) Assist the students in solving the problem.
 - c) Together go through the problem.
4. Independent Practice:
 - a) Give the students problems for independent practice.
 - b) If the students get fewer than 5 correct, give more guided practice.
 - c) After guided practice, give students more problems for independent practice. d) If a student still gets less than 5 correct, repeat the lesson for that student.

Evaluation

Independent practice problems were used to assess the students learning.

Lesson Plan Based on:

Cease-Cook, J.J. (2013). The effects of concrete-representational-abstract sequence of instruction on solving equations using inverse operations with high school students with mild intellectual disability. (Unpublished doctoral dissertation). University of North Carolina at Charlotte, Charlotte, NC.

Witzel, B. S. (2005). Using cra to teach algebra to students with math difficulties in inclusive settings. *Learning Disabilities: A Contemporary Journal*, 3(2), 49-60

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