

EARLY ALGEBRAIC REASONING AND MISCONCEPTIONS OF THE EQUAL SIGN

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Relational Thinking

$95 + 105 = \underline{\hspace{2cm}} + 102$

Solve this problem then explain in writing how you arrived at your solution.

Predict

$8 + 4 = \underline{\hspace{1cm}} + 5$

How might your students solve this equation?

Possible Responses	% of Class

“Equal as Output” 6th Student Response

• Both responses from same student:

1. $8+4=\underline{12}+5$
I added eight plus four and I got twelve.

5. $8=\underline{3}+5$
I did it backwards because in the other way it's five + blank equals eight but it five plus three equals into eight.

“Equal as Output” 6th Student Response

• Same Student:

$26 + 14 = 26 + 14$ True or False? True False
I think the answer is false because $26 + 14$ is not 26 it is 40 so I added $40 + 14$ and my answer was 54. So I know it is true correct because $26 + 14 = 40$ and $40 + 14 = 54$ same 54.

$8 = 8$ True or False? True False
I think it is true, The $8=8$ doesn't show you the 0 but I came up with it because it says $8=8$ so I put $8+0=8$ and got my answer $8+0=8+5$ True or False?

Primary Grade Response

$3 + 5 = 5 + 3$ Yes No

It is true because it has three and three and it has five and five. $3+5=8$ and $5+3=8$

Concrete Representation

How would you model the solution to

$$8 + 4 = \underline{\quad} + 5$$

using manipulatives?

Relational Thinking

Solve the following problem using the manipulatives to demonstrate your thinking:

$$2 \times 6 = \square \times 4$$

Write an explanation for your solution.

Relational Thinking

$$1/3 + 1/2 = \square$$

Closure



- Do your students understand the meaning of the equal sign?
- What evidence will you use to find out what they think?
- How might you address their misconceptions?

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