Equals signs notes and practice:

name:_____

1. How is the the equals sign is different from add, subtract, multiply and divide?

2. a. Give an example of a “running equals sign” or a “run-on equation”

b. Is a running equals sign a correct or an incorrect use of the “=” symbol?

3. What do researchers at University of Texas at Austin identify as a likely cause or partial cause of the children’s misunderstandings about the equals sign in the US?

4. What is the difference between an equation and an expression?

5. Are children more likely to misunderstand the meaning of the equals sign in grade 1 or grade 5?

6. If children don’t understand the balance meaning of the equals sign, what do they probably think it means?

7. What is another helpful word/phrase teachers can use besides “equals” when reading the “=” sign in an equation?

8 (notes). Show two ways of fixing this unbalanced equation:

$7 \times 5 = 35 + 7 = 42$

9. (practice). Show two ways of fixing this unbalanced equation: $3 \times 4 = 12 \div 2 = 6 \times 4 = 24 + 16 = 40$

10. Write a variety of open number sentence problems to help teach the meaning of the equals sign. Include (and label) at least one that is easier and one that is tricky.

11. These examples are taken from
http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/pages/equalsign25.aspx
Luke, Cameron, Fiona and Chris are all answering the question: 7 + 6 = ? + 5

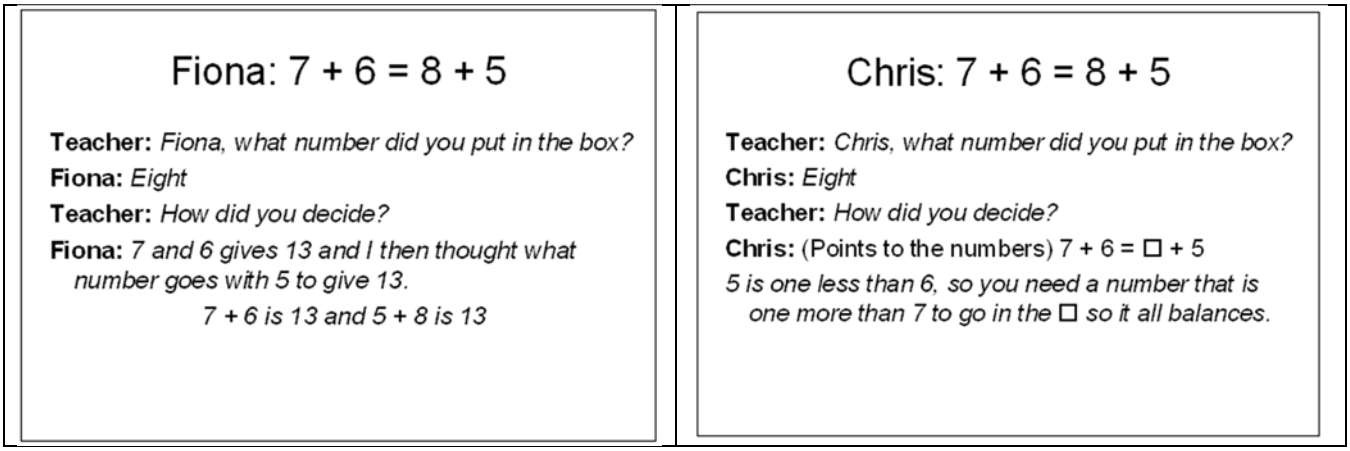
Luke: 7 + 6 = 13 + 5

Teacher: *Luke, what number did you put in the box?*
Luke: *Thirteen*
Teacher: *How did you decide?*
Luke: *7 and 6 are 13*
Teacher: *What about the 5?*
Luke: *It doesn't matter. The answer to 7 + 6 is 13*
Teacher: *What is the 5 doing then?*
Luke: *It's just there.*

Cameron: 7 + 6 = 18 + 5

Teacher: *Cameron, what number did you put in the box?*
Cameron: *Eighteen*
Teacher: *How did you decide?*
Cameron: *7 and 6 are 13 and 5 more is 18*
Teacher: *Does 7 plus 6 equal 18 plus 5?*
Cameron: *7 + 6 is 13 and 5 more is 18*

What can you say about how Luke and Cameron think about the equals sign and what it means in an equation? How do they go about solving a problem with a missing number like this?



What can you say about how Fiona and Chris think about the equals sign and what it means in an equation? How do they go about solving a problem with a missing number like this?

12. Chris' strategy of thinking how to change things so it all balances is an important one, but it changes depending in whether you're adding, subtracting, multiplying or dividing. Figure out how to make things balance in these situations, and finish the sentence

a. $3+8=\_+7$

The addend (7) on the right is one less than the addend (8) on the right, so to keep the sums the same you have to change the other addend on the left (3) by...

2. $10-7=11-\_$

The minuend (11) on the right is one more than the minuend (10) on the left, so to keep the differences the same, you have to change the subtrahend on the left (7) by...