Solving Equations II

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Summary	Students will be asked to represent and solve verbal problems requiring algebra and to use the syntactic rules of algebra to solve equations with variables on both sides of the equals sign.
Goals	1. To develop proficiency in solving equations. 2. To work on the concept of "solution(s) of an equation".
Materials	Overheads, Handouts
Keywords	Balancing Equations Contextualized Situations Full Class Discussion Interpretation of Stories Linear Functions Production of Equations Small Group Work Solving Equations

Activity Plan:

1. Solving a verbal problem (whole class work: 20 minutes).

   Show the overhead in Page 1 and distribute the first handout (also Page 1).

   Building upon children's suggestions, represent the problem and go through all the steps to solve the equation and to answer the problem question. As a solution is developed and discussed, children will take notes on their handouts. They will keep their written work available for consultation as they attempt to solve the next problem.

2. Solving another problem (group work: 20 minutes).

   Distribute the handout in Page 2 and ask the children to solve the problem.

3. Discussing children's solutions (whole class discussion: 20 minutes).

   Show the overhead in Page 2 and ask a few children to show and discuss their representations and solutions for the problem in the corresponding handout. Discuss in depth how to simplify the equation $3(N - 10) = 21$.

4. Solving equations (group work: 30 minutes).

   Distribute the handout in Pages 3 and 4 and worksheets (page 7). Ask children to solve as many equations as they can (Page 7 is optional, but if used many copies may be necessary.)

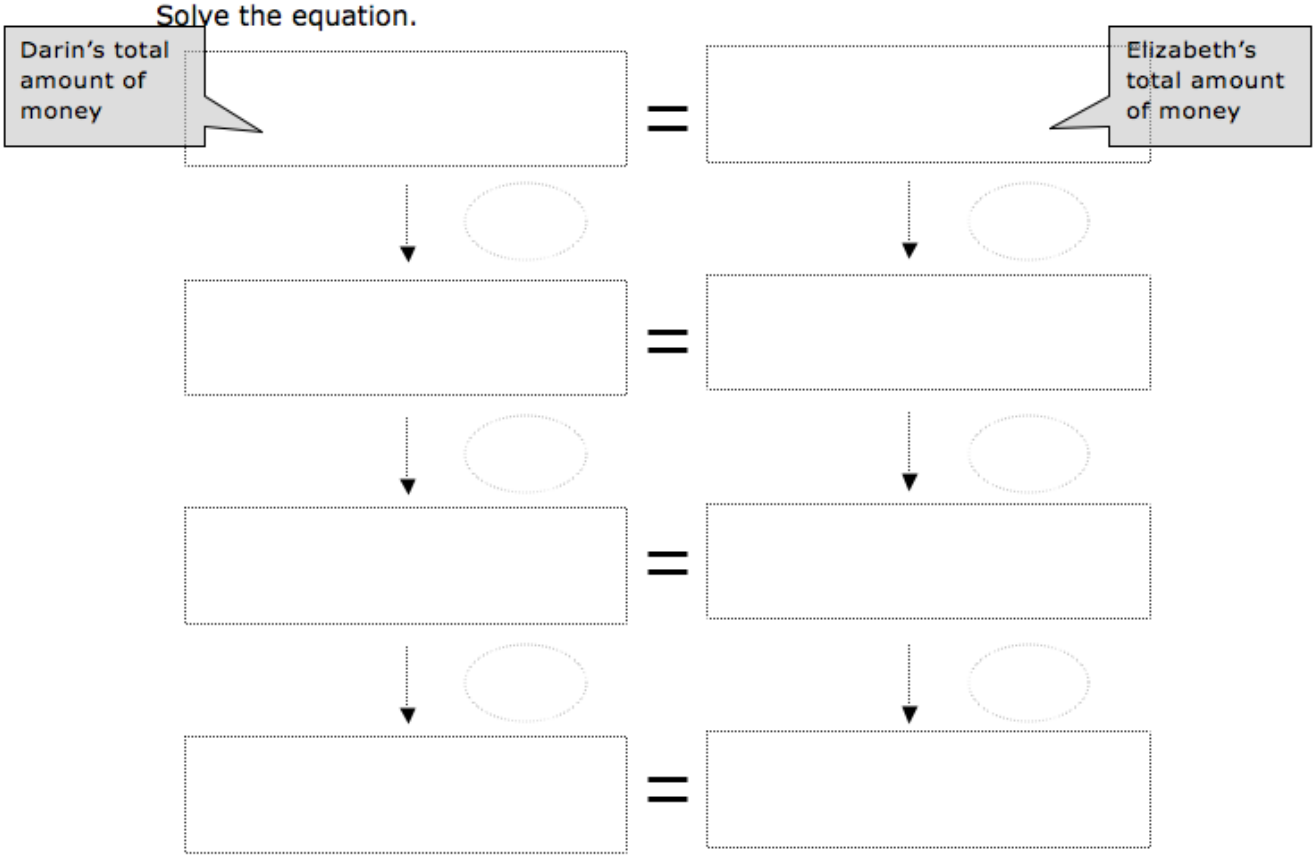
5. Homework: Equations (Pages 5, 6, & 7)

   Children will work on a verbal problem and on the solution of equations (Page 7 is optional, but if used many copies may be necessary.)

Overhead and Handout: Solving a Problem (Page 1)

Name: _____ Date: _____

Elizabeth and Darin each have some money.
Elizabeth has $40 in her wallet and the rest of her money is in her piggy bank.
Darin has, altogether, exactly five times as much money as Elizabeth has in her piggy bank.
Elizabeth's total amount of money is equal to Darin's total amount of money.
Write an equation showing that Elizabeth's total amount of money is equal to Darin's total amount of money.
Solve the equation.



How much money does Elizabeth have in her piggy bank?

Overhead and Handout: Solving another Problem

(Page 2)

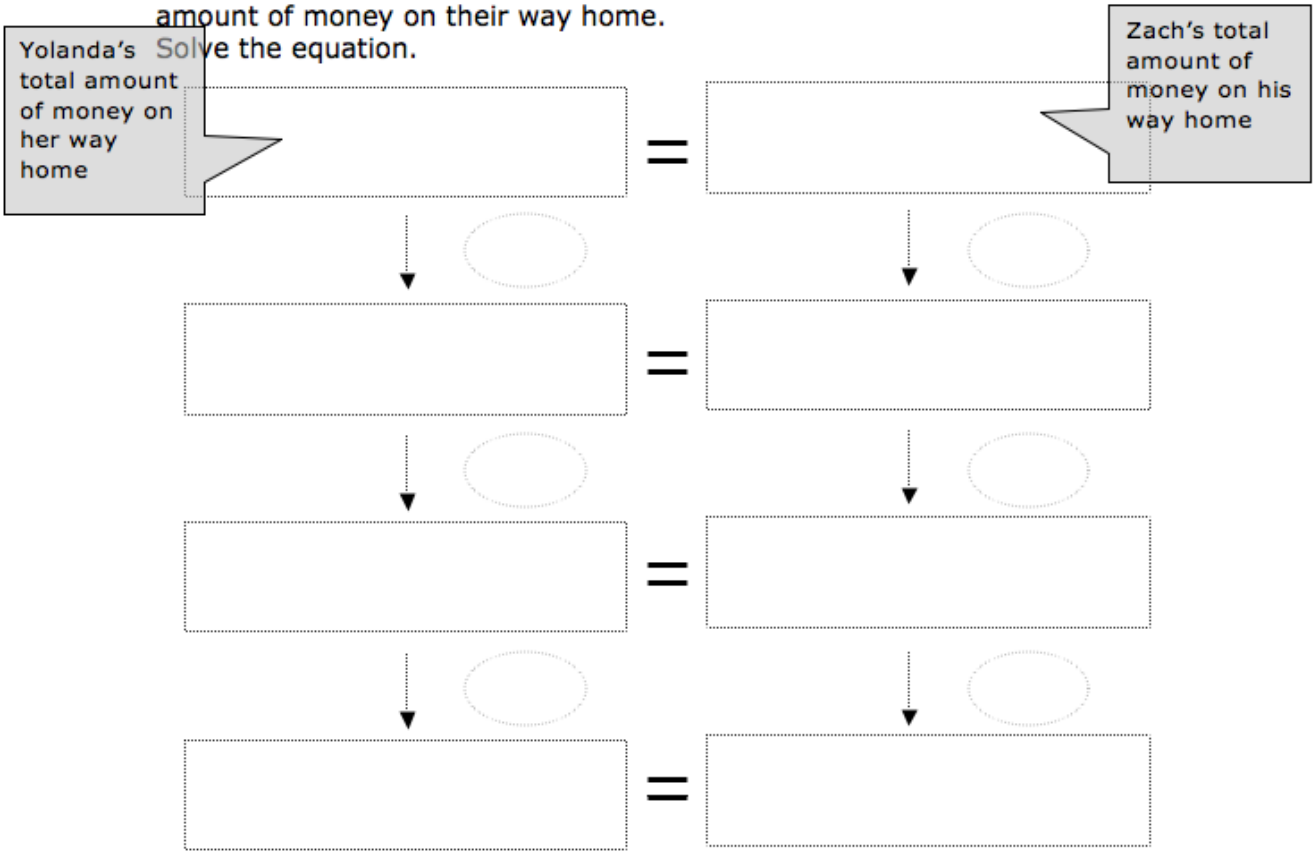
Name: _____ Date: _____

Yolanda went to the beach with some money. She spent ten dollars on lunch and then tripled her remaining money by selling seashells. The same day, Zach went to the beach with thirty-five dollars. He found seven dollars in the sand, and then spent half of all his money on ice cream.

On their way home, Yolanda and Zach discovered that they had the same amount of money.

Write an equation showing that Yolanda and Zach had the same amount of money on their way home.

Solve the equation.



How much money did Yolanda have when she arrived at the beach?

Handout: Solving Equations - Part I (Page 3)

Name: _____ Date: _____

Solve some of the following equations. Use a worksheet (separate paper) for each equation.

Solve for n: $4n + 4 = 20$

Answer: n = _____

Solve for n: $4(n + 4) = 20$

Answer: n = _____

Solve for n: $10n - 10 = 50$

Answer: n = _____

Solve for n: $10(n - 10) = 50$

Answer: n = _____

Solve for n: $n - n + 5(n - 7) = 45$

Answer: n = _____

Solve for n: $16(n + 4) = 4(n + 49)$

Answer: n = _____

Solve for p: $p \div 13 = 4$

Answer: p = _____

Solve for t: $t \times 10 + 2 = 52$

Answer: t = _____

Solve for n: $10n - 4n = n + 15$

Answer: n = _____

Solve for p: $\frac{8p}{2} - 10 = 50$

Answer: p = _____

Solve for n: $4(n + 3) = 8$

Answer: n = _____

Handout: Solving Equations- Part II (Page 4)

Name: _____ Date: _____

Solve for n: $4n + 3 = 2n + 11$

Answer: n = _____

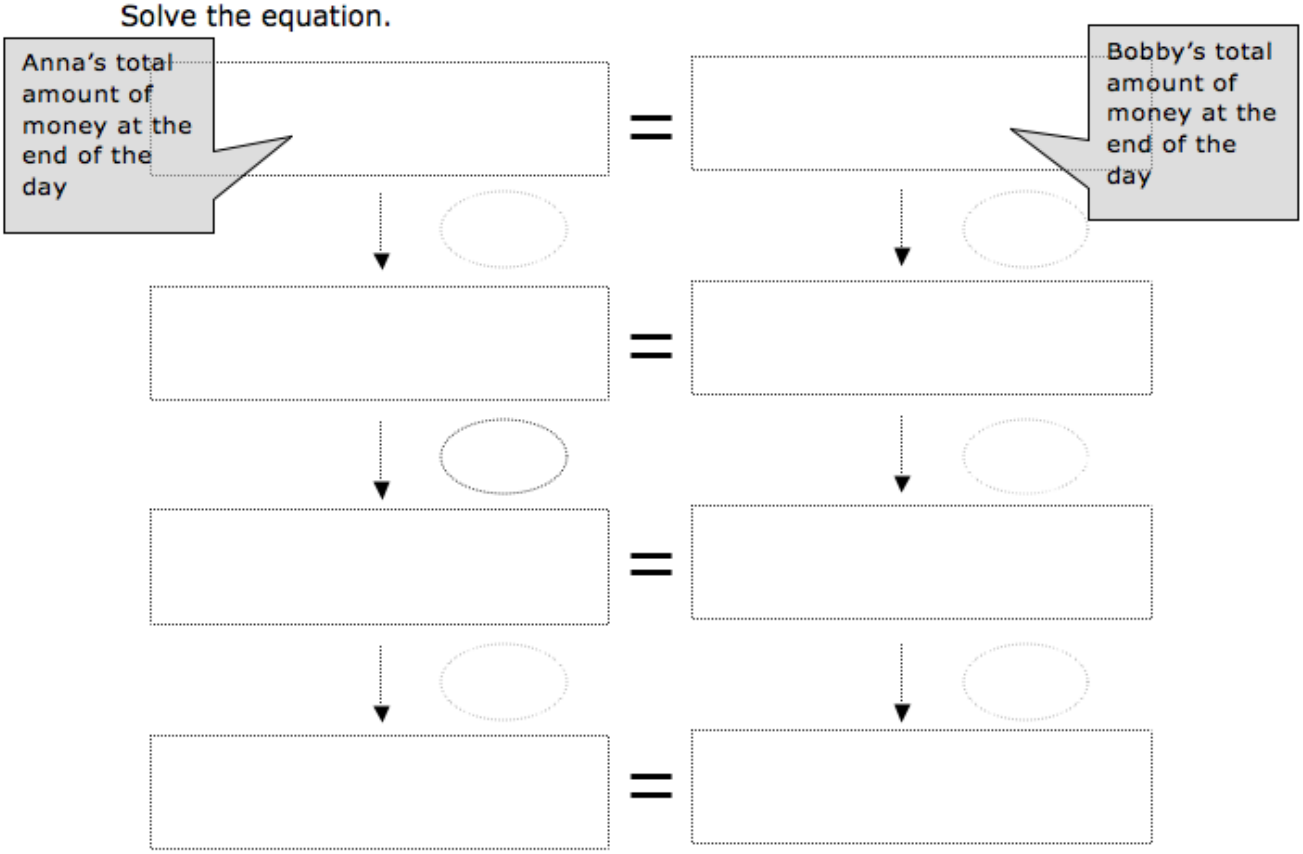
Solve for p: $p + p + 6(p + 3) = 118 - 2p$

Answer: p = _____

Homework: Solving a Problem- Part I **(Page 5)**

Name: _____ Date: _____

Anna went to the arcade with some amount of money. She then spent five dollars playing video games. After that, she won a prize where they doubled her money.
The same day, Bobby went to the arcade with ten dollars. When he got there, his mother gave him thirty more dollars. Afterwards, he spent half of all of his money playing video games.
At the end of the day, Anna and Bobby discovered that they did have the same amount of money.
Write an equation showing that Anna and Bobby had the same amount of money at the end of the day.
Solve the equation.



How much money did Anna have when she arrived at the arcade?

Homework: Solving Equations- Part II **(Page 6)**

Name: _____ Date: _____

Solve some of the following equations. Use a worksheet (separate paper) for each equation.

Solve for n: $5n + 5 = 20$

Answer: n = _____

Solve for n: $5(n + 5) = 20$

Answer: n = _____

Solve for n: $5n - 5 = 30$

Answer: n = _____

Solve for n: $5(n - 5) = 30$

Answer: n = _____

Solve for p: $p \div 10 = 4$

Answer: p = _____

Solve for t: $t \times 20 + 2 = 62$

Answer: t = _____

Solve for n: $8n - 4n = n + 15$

Answer: n = _____

Solve for p: $\frac{8p}{2} - 10 = 90$

Answer: p = _____

Solve for n: $8(n + 1) = 16$

Answer: n = _____

Solve for n: $6n + 3 = 2n + 11$

Answer: n = _____

Worksheet: Solving Equations **(Page 7)**

Name: _____ Date: _____