Glide and Step
Grade 1 Additional Balsa Plane
Drug Demand Reduction Manipulative Item Lesson

Topics: counting, addition, word problems

Length of Lesson: 30 minutes

Objectives:
- Students will use addition to solve math problems.
- Students will create word problems using addition.

<u>National Standards:</u>
CCSS Math:
- 1.OA.C.5 Relate counting to addition and subtraction.
- 1.OA.B.3 Apply properties of operations as strategies to add and subtract.
- 1.OA.A.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem

Next Generation Science Standards:
K-2-ETS1-2
- Structure and Function - The shape and stability of structures of natural and designed objects are related to their function(s).

Background Information:

In this lesson, students will use their previously gained knowledge about balsa planes (from ACE, Grade 1, Academic Lessons #3,Plane Art, and #4, Plane Flight Pie Chart) to fly their balsa gliders provided by CAP for first grade. The students will be following the directions of the Air Traffic Controller to allow the planes to "take off and land" on the classroom runway. Students will then use the math operation of addition to combine two numbers to find the sum of the two. Then, students will write simple math word problems and complete the operation. Teachers may want students to work in small groups while learning the process of writing math word problems.

Materials:
- Balsa glider (provided by CAP)
- Masking tape
- One pencil per student
- Whiteboard, chalkboard, or chart paper
- Copy of "Glide and Step" worksheet per student

Lesson Presentation:

Preparation of the classroom involves moving desks and chairs to allow you to make a runway made of masking tape, with a piece of tape at the point where the planes will take off. (If needed, make more than one runway for the students to 'glide and step.')

1. Ask students to discuss previous flights of their balsa gliders, having them share some of their experiences with trying to get the plane to fly, how some of the gliders crashed, and how high and far their glider sailed. (*answers will vary*)

2. Ask the students what part of the airplane actually helped the airplane to fly? (*the wings*)

3. Ask students what it is called when the plane lifts off the ground to fly (*take off*) and what it is called when the plane comes back to the ground (*land*). Tell the students that they will be using their balsa planes to take off and land today.

4. As the students if they know what the person is called who gives the pilot approval to take off and land. (*Air Traffic Controller*) Ask why an Air Traffic Controller is needed at airports. (*to keep order on the runway and in the sky and to ensure the planes do not crash into each other*) Remind the students that pilots have to take turns on the runway, with the directions of the Air Traffic Controller, and they will be taking turns to fly today with the direction of an Air Traffic Controller (the teacher or another designated person).

5. Demonstrate a flight of the balsa glider in front of the class on the runway allowing your plane to take off at the take-off mark on the floor and stop where it lands. Then, using masking tape, measure where the plane landed. Use your feet to count the number of your footsteps from "take off" to "landing." Record this number on the board for the class to see.

6. Fly the balsa glider again, measuring the number of steps from "take off" to "landing." Record this number on the board under the first number.

7. Explain to the class that they are going to add the two numbers together to see how far both flights were together. (Add the numbers together on the board.)

When you complete the addition of the two numbers, tell the students the total number is called the sum of the two numbers.

8. After you and the class have completed this math problem, ask the students to explain how this math problem was performed (*using addition*) and what the total of the two numbers is called (sum).

9. Next, have students discuss the process that was performed using a story form. For example: The first flight of the glider was 8 steps long. The second flight of the glider was 9 steps long. We wanted to find out the total number of steps both gliders flew, so we added 8 steps plus 9 steps which totaled 17 steps. 17 was the sum steps of the two flights of the glider.

10. Work with students to then write a word problem for this story, such as: *The teacher's airplane glider flew 8 steps on the first flight and 9 steps on the second flight. How many total steps did the airplane fly?*

11. Distribute copies of "Glide and Step" and student gliders. Have students work in pairs or groups to measure their flights and complete the word problems on their sheets. Tell students they will need to wait their turn to fly their glider and only do so when the Air Traffic Controller says to go. (This may take more than one runway to allow all students to glide and step.)

12. For number 3 on the sheet, instruct students to make up their own Word Problems. and write it on the lines, remembering to solve the word problem and find the sum of the two numbers.

Summarization:
Ask students to share their examples of word problems they made on the "Glide and Step" sheets. Discuss how writing and solving word problems help make adding numbers easier. Ask students to think of examples of word problems that they might use in everyday life.

Character Connection: Just as a pilot has to wait his/her turn from the Air Traffic Controller to take off and land, so do we need to work with others to wait our turn to make things run smoothly in life. While working with others, we must take turns, listen politely, and help our teammates. Being a good teammate also means to encourage your partner to do their best and be proud of their accomplishments, as well as our own.
-   The Drug Demand Reduction (DDR) connection can also be shared at this time which is found on page 9 of the ACE teachers guide.

Assessment:
- Student answers during class discussion.
- Participation in word problem scenarios during whole group.
- Student completion of "Glide and Step" sheet.

Additional activity ideas to enrich and extend the primary lesson (optional):

- Repeat the procedures and have students write Fact Families using their Word Problems.

- Have the students add some weight to the plane (such as different weights of paper on the wings, tail section, and nose). Then, have them fly their planes and see if the weight adjustments made to the airplane made a difference in the number of steps the glider flew.

- Have students determine who has the highest sum for their flights. Discuss reasons for this in two sections, below.

   1- *Flight performance as the difference*:
   - Discuss what things may have affected the length of flight.
   - Discuss how those who threw their planes in a more level flight got more steps from take-off to landing.
   - Discuss other factors that could have affected the length of the flight.

   2- *Sizes of feet as the difference*:
   - Discuss sizes of students' feet and how it might affect the students' sums.
   - Discuss if larger feet, such as the teacher's, will make the sum larger or smaller, and why.
   - Discuss if smaller feet will make the sum larger or smaller and why.
   - Discuss a better way to measure so that everyone's sums would be more closely aligned.

- Make room in the classroom (or go outside) for some fun physical airplane activities, such as those on the videos, Airplanes for Kids and The Airplane Song.

Resources:
- Example of how to solve a word problem: "Addition First Grade - Addition Word Problems for Kids Math Video"
- Looking at fact families and word problems: "Jessie Solving Word Problems" by ABCmouse.com
- Word problem addition practice: "Fish Bowl Addition"
- "Glider Planes for Kids"

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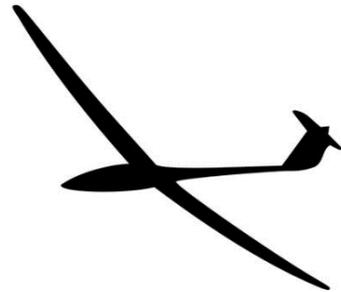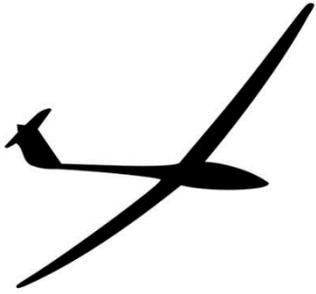
Fill in the blanks on #1 and #2 and then add to find the sum on #3.

1. My glider flew _____ steps on the first flight.

   My glider flew _____ steps on the second flight.

   My glider flew _____ steps all together.

2. My glider flew _____ steps on the first flight.

   My glider flew _____ steps on the second flight.

   My glider flew _____ steps all together.

Now, write a word problem of your own!

3. _____

   _____

   _____