General Information

Lesson Parts & Duration

Total Duration: 2 to 2 ½ hours

- Segment 1: Using Drawings to Solve Addition Word Problems- Unknown Total (45-60 Minutes)
- Segment 2: Solving Addition Word Problems Step by Step – Unknown Part (45-60 Minutes)
- Segment 3: Group Work and Presentation of Solving Word Problems (60 Minutes)

Subject(s)

- Operations & Algebraic Thinking: Addition within 100, Drawing Pictures to Solve Word Problems, Tape Diagrams, Explaining Strategies Used (2.OA.1)

Objective

- Students will use drawings to help solve an addition word problem.
- Students will draw tape diagrams to solve an addition word problem.
- Students will explain how they solved the addition word problem.
- Students will read word problems and determine important information.
- Students will determine the missing information they need to find to solve a word problem.
- Students will draw pictures/tape diagrams to solve the word problem.
- Students will write an equation to solve the word problem.
- Students will explain their thinking and strategies they used to solve the word problem.
- Students will work collaboratively in groups to write a word problem and solve a word problem.

Materials

- blank paper (4-5 pieces per student to copy the handouts if you do not copy them)
- pencils, crayons/colored pencils
- document camera or whiteboard
- **Optional Printable Student Resources:** "Exit Slips" (page 19) (1 copy per student), "Solving Word Problems" Class Practice and Partner Practice for Segment 1 (pages 20-21), "Solving Word Problems" Class Practice and Partner Practice for Segment 2 (pages 22-23)
- **Optional Printable Teacher Resources:** "Steps to Solve a Word Problem" (page 24) (1 copy for display), "Break Up Your Day" brain/movement break ideas (page 25)

Instructional Setting

- Students should be seated so that they can easily work with a partner.

Throughout these lessons, you will find:

- ***Scripted Text*** indicates things that need to be said directly. Bullets starting with a **"T"** followed by *italicized type* indicate scripted text
- **Clarifiers** within scripted text are in orange
- **Teacher Directions** indicate things you should be doing
- **Side notes** provide helpful hints, ELL strategies, differentiation and information
- **Break Up Your Day** (Brain/Movement Breaks) are in green boxes (at the end)

Remember!

Quality over quantity. All components do not have to be accomplished; lessons may be ended at any time and resumed later.

Instructional Plan: Segment 1: 45 minutes

Subject

- Using Drawings to Solve Addition Word Problems- Unknown Total

Objective

- Students will use drawings to help solve an addition word problem.
- Students will draw tape diagrams to solve an addition word problem.
- Students will explain how they solved the addition word problem.

Materials

- blank paper
- pencil & crayons/colored pencils
- document camera or whiteboard
- **Optional:** printable "Exit Slips" (page 19) (1 copy per student)
- **Optional Printable Student Resources:** "Solving Word Problems (Class Practice)" (page 20) (1 copy per student), "Solving Word Problems (Partner Practice)" (page 21) (1 copy per student)
- **Optional Printable Teacher Resources:** "Steps to Solve a Word Problem" (page 24) (1 copy for display)

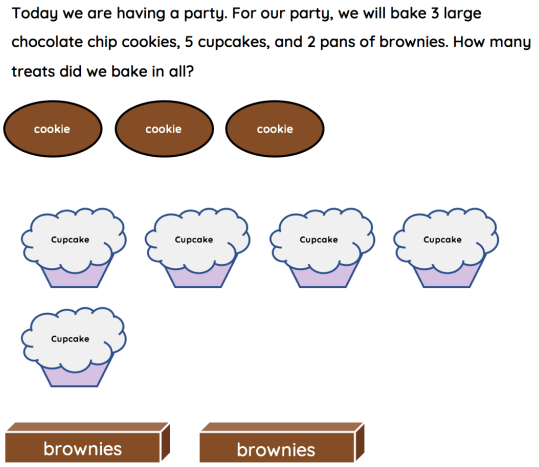
Introduction

T *I love baked treats.*
T *I like to bake cakes, cupcakes, pies, and cookies.*
T *Have any of you ever baked before?*
T *Raise your hand if you have ever helped someone to bake a cake, cupcakes, pies, cookies, or other treats.*
T *Many times, if you are having a party you may bake several different kinds of treats.*
T *Let's pretend we are having a party.*
T *For our party let's bake some cookies, cupcakes, and brownies.*

Pass out 1 half sheet of blank paper per student.

Whole Group Setting up the Paper

T *Here is our problem: "Today we are having a party. For our party, we will bake 3 large chocolate chip cookies, 5 cupcakes with sprinkles, and 2 brownies. How many treats did we bake in all?"* Write problem on the board so that students can see the important information.
T *On your paper, I would like you to draw pictures to help us to solve a baking problem.*



Give students a few minutes to complete their drawings. Monitor and provide assistance as needed.

T *Now that you have created drawings to match our problem, please share what you drew with a partner either next to or near you.*
T *Did you draw the same thing as your partner?*
T *With your partner explain what you need to do to find the answer to our problem.*
T *Remember it is asking us how many treats we baked in all.*

Give students a few minutes to share their drawings. Monitor and provide assistance as needed.

T *Who would like to come up and share their drawing with the class and explain how you would solve the problem? I need 3 volunteers.* Call on 3 students to come up and share.

T *The rest of you need to listen carefully to see if my 3 volunteers have the same ideas and drawings or if they are different.*

Allow students to share their drawings and ideas. If students have different ideas or if they are incorrect, nicely clear up any misconceptions.

T *Those were some great drawings and ideas.*

T *So, the answer to our question: "How many treats did we bake in all?" was 10, because 3 cookies + 5 cupcakes + 2 pans of brownies= 10 treats.*

T *Now, since you are all 2nd graders I am sure that you have started adding larger numbers than 3, 5, and 2.*

T *And it would be silly to just bake 3 cookies, 5 cupcakes, and 2 brownies.*

T *Whenever I have baked, I bake much larger quantities.*

T *So, a more realistic word problem about baking for a party would be something like: "Today we are having a party. For our party, we will bake 32 large chocolate chip cookies, 12 cupcakes, and 24 brownies. How many treats did we bake in all?"*

T *I don't know about you, but that sounds like a lot to draw!*

T *Drawing pictures to solve problems was a useful strategy for us to use as Kindergarteners and 1st graders, but as 2nd graders we have some much more challenging math problems.*

T *This means we will need to find a new method of illustrating the problem so that we can see it visually.*

T *This new strategy is using something called, "tape diagrams" or "bar models."*

T *Tape diagrams help us to see a visual model that uses rectangles.*

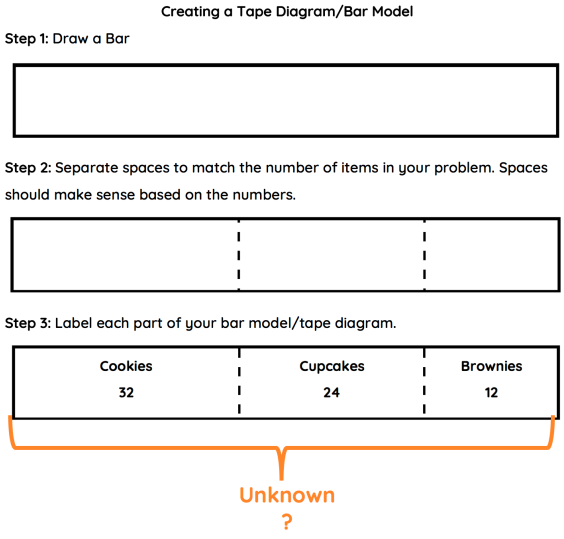
T *Let me show you how using a tape diagram can help us to visually see our problem.*

T *The first step is to draw one long bar.* See example & model so students can follow.

T *Next, you break you bar up into the correct number of spaces.*

T *In our problem we had 3 parts: cookies, cupcakes, and brownies.*

T *So, I will break the bar into 3 pieces.* See example & model so students can follow.



T *Now here is the important part, the pieces I break the bar into should make sense with the numbers in my problem.*

T *Let me show you what I mean.*

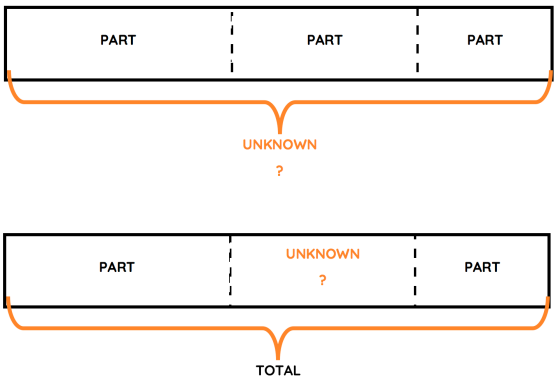
T *Our problem had 32 cookies, 24 cupcakes, and 12 brownies.*

T *32, 24, and 12 are not equal in value so that means the spaces should not all be the same size.*

T *32 is the largest number and should have the largest piece, next is 24, should be smaller than 32, but larger than 12, and last is 12 which should be the smallest piece.*

T *Then I need to label each part.* See example & model so students can follow.

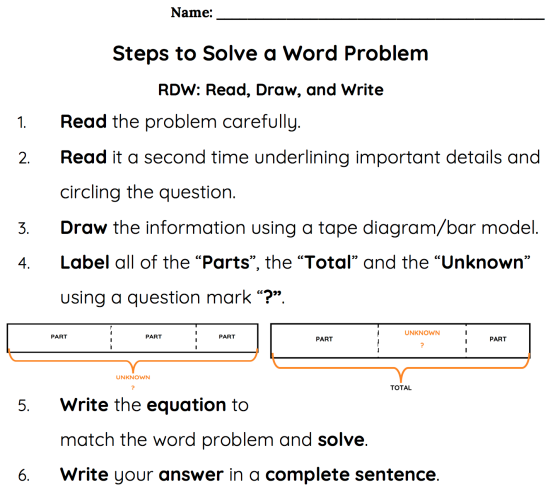
- ***T*** *This is a "part + part + part = total" model.* See example & model so students can follow.
- ***T*** *The unknown in our problem is the total, so below my bar I will draw a bracket and put a question mark.*
- ***T*** *Not all word problems will follow this model of the total being the unknown.*
- ***T*** *Sometimes the total might be known and one of the parts is the unknown.* See example & model so students can follow.
- ***T*** *Either way we always label the parts of our diagram with the correct words and numbers and then identify the unknown by using a question mark.*
- ***T*** *During this lesson we will focus on the total being the unknown.*



Pass out a copy of "Solving Word Problems (Class Practice)" to each student –or– project it so that students can copy on blank paper.

Whole Group Practice

- ***T*** *Now that you have seen the strategy that we will be using, let's practice a few problems.*
- ***T*** *Once everyone has gotten the hang of solving word problems by identifying key information, drawing a tape diagram/bar model to represent the numbers, and finally writing an equation that matches to solve the problem, you will have a chance to solve some problems the same way.*
- ***T*** *Let's start by going through the whole process on a new problem.*
- ***T*** *We are going to follow the RDW process.*
- ***T*** *RDW stands for "Read, Draw, Write."*
- ***T*** *We will always start by reading our problem carefully.*
- ***T*** *Then we will read it a second time and underline important details and circle our question.*
- ***T*** *Next, we will "Draw," in this case we aren't drawing pictures, we are drawing a tape diagram/bar model.*
- ***T*** *Finally, we will "Write," this means we will write the equation and solve for the unknown.*
- ***T*** *Then we will write our final answer in a complete sentence.*



Name: _____

Steps to Solve a Word Problem

RDW: Read, Draw, and Write

1. **Read** the problem carefully.
2. **Read** it a second time underlining important details and circling the question.
3. **Draw** the information using a tape diagram/bar model.
4. **Label** all of the "**Parts**", the "**Total**" and the "**Unknown**" using a question mark "**?**".

5. **Write** the **equation** to match the word problem and **solve**.
6. **Write** your **answer** in a **complete sentence**.

Problem # 1

- ***T*** *We will start by completing problem number 1.*
- ***T*** *First, we will read the problem carefully: "For our party, we will bake 32 large chocolate chip cookies, 12 cupcakes, and 24 brownies. How many treats did we bake in all?"*
- ***T*** *Then we will read it a second time looking for important details.*
- ***T*** *I will stop reading each time I find an important detail and I will underline it.*
- ***T*** *"For our party, we will bake 32 large chocolate chip cookies," I need to under "32 chocolate chip cookies."* See example & model so students can follow.

1. For our party, we will bake **32 large chocolate chip cookies**, **12 cupcakes**, and **24 brownies**. How many treats did we bake in all?

T *"12 cupcakes," stop, I need to underline "12 cupcakes."* See example & model so students can follow.

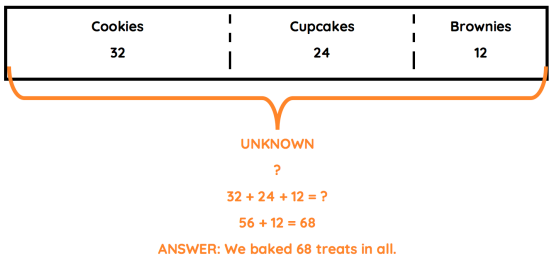
1. For our party, we will bake **32 large chocolate chip cookies**, **12 cupcakes**, and **24 brownies**. How many treats did we bake in all?

T *"and 24 brownies." Stop we need to underline "24 brownies."* See example & model so students can follow.

T *"How many treats did we bake in all?" This is our question so we will circle it.* See example & model so students can follow.

T *Step 2 is to draw.*

T *Using this tape diagram bar, let's decide how many parts there are in our word problem.*



T *Show me with your fingers how many parts there are in this problem.* Answer: 3 parts.

T *Correct, there are 3 parts.*

T *Thumbs up if you think all of the parts should be the same size and thumbs down if you think they should be different sizes.* Answer: Thumbs down, they should be different sizes.

T *32, 12, and 24 have different values, therefore I will make the portions of my bar different sizes.*

T *Next, I have to label each of the 3 parts and the total.*

T *In this case, the total is unknown, so we will indicate that using a "?".*

T *The last thing that we will do is write our equation, "32 + 24 + 12 = ?".*

T *When adding 3 numbers I like to combine 2 numbers, add those, and then add the final number to that.*

T *I will add: "32 + 24= 56" and then "56 + 12 = 68."*

T *Now I have my final answer which is 68.*

T *The final step is to write our answer as a complete sentence.*

T *To do this, I will use words from my question to write a complete sentence containing my answer.*

T *Let me show you what I mean, the question is: "How many treats did we bake in all?".*

T *So, I will say, "We baked 68 treats in all." I am using the words from the end of the question in my answer.*

Problem # 2

T *Problem number 2.*

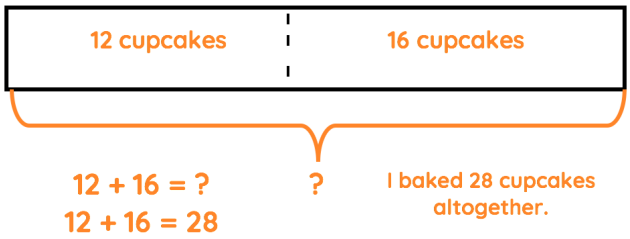
T *First, we will read the problem carefully: "I have 12 cupcakes. I need to bake 16 more. How many cupcakes did I bake altogether?"*

T *Then we will read it a second time looking for important details.*

T *I will stop reading each time I find an important detail and I will underline it.*

T *"I have 12 cupcakes," stop and underline "12 cupcakes."* See example & model so students can follow.

2. I have **12 cupcakes**. I need to bake **16 more**. How many cupcakes did I bake altogether?



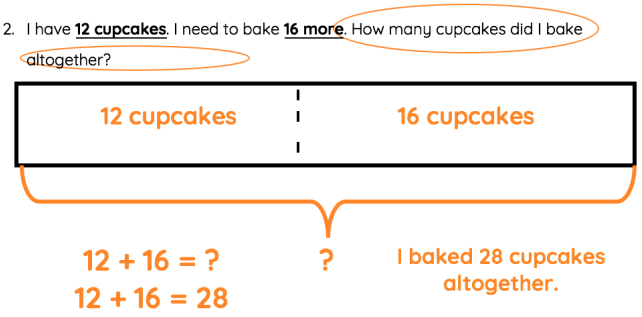
T *"I need to bake 16 more." Stop and underline "16 more."* See example & model so students can follow.

T *"How many cupcakes did I bake altogether?" This is our question so we will circle it.* See example & model so students can follow.

T *Step 2 is to draw.*

T *Using this tape diagram bar, let's decide how many parts there are in our word problem.*

- **T** *Show me with your fingers how many parts there are in this problem.* Answer: 2 parts.
- **T** *Correct, there are 2 parts.*
- **T** *Thumbs up if you think all of the parts should be the same size and thumbs down if you think they should be different sizes.* Answer: Thumbs down, they should be different sizes.
- **T** *12 and 16 have different values, therefore I will make the portions of my bar different sizes.*



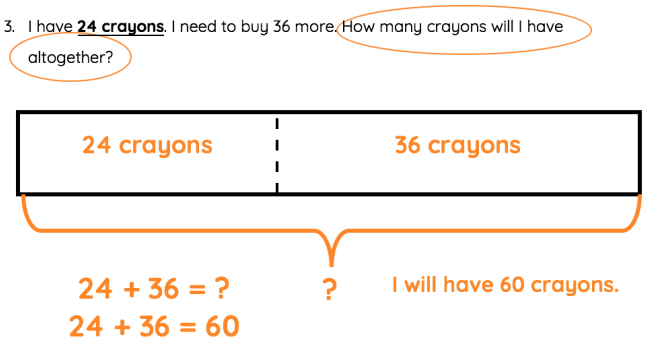
- **T** *Next, I have to label each of the 2 parts and the total.*
- **T** *In this case, the total is unknown, so we will indicate that using a "?".*
- **T** *The last thing that we will do is write our equation, "12 + 16 = ?".*
- **T** *I will add: "12 + 16 = 28."*
- **T** *Now I have my final answer which is 28.*
- **T** *The final step is to write our answer as a complete sentence.*
- **T** *To do this, I will use words from my question to write a complete sentence containing my answer.*
- **T** *Let me show you what I mean, the question is: "How many cupcakes did I bake altogether?".*
- **T** *So, I will say, "I baked 28 cupcakes altogether." I am using the words from the end of the question in my answer.*

Problem # 3

- **T** *Now I will let you try each step and then we will check to see if you are correct as we go.*
- **T** *First, you need to read the problem carefully.*
- **T** *Then read a second time and underline the important details and circle the question.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

- **T** *You should have underlined: "24 crayons" and "36 more."*
- **T** *Then circled the question which is: "How many crayons will I have altogether?"*
- **T** *Give me a thumbs up if you got that step right!* Scan the room to get an idea of who is understanding and who may need more support later.
- **T** *Step 2 is to draw.*
- **T** *Using this tape diagram bar, decide how many parts there are in our word problem.*
- **T** *Divide the tape diagram up and label all of the parts.*



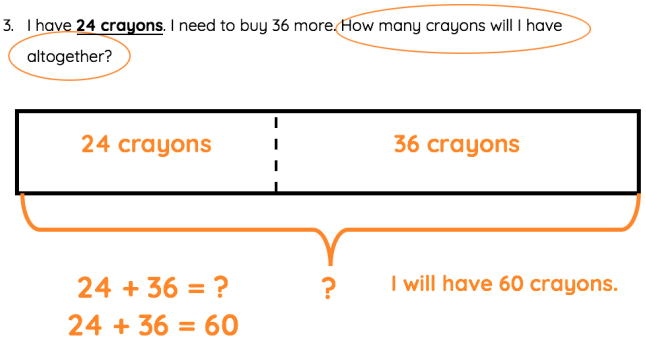
Give students about a minute to complete this step. Monitor and provide assistance as needed.

- **T** *Show me with your fingers how many parts there are in this problem.* Answer: 2 parts.
- **T** *Correct, there are 2 parts.*
- **T** *Thumbs up if you think all of the parts should be the same size and thumbs down if you think they should be different sizes.* Answer: Thumbs down, they should be different sizes.
- **T** *You should have labeled the first part "24 crayons," the second part is "36 crayons.*
- **T** *In this case, the total is unknown, so we will indicate that using a "?".*

T *The last thing that we will do is write our equation.*

T *Please write out the equation and solve.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.



T *Our equation is: "24 + 36 = ?".*

T *I will add: "24 + 36 = 60."*

T *Now I have my final answer which is "60".*

T *Final step, write your answer in a complete sentence.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

T *To do this, you should have used words from the question to write a complete sentence containing your answer.*

T *The question is: "How many crayons will I have altogether?".*

T *So, I will say, "I will have 60 crayons altogether." I am using the words from the end of the question in my answer.*

Problem # 4

T *Last problem, again, I will let you try each step and then we will check to see if you were correct as we go.*

T *First, you need to read the problem carefully.*

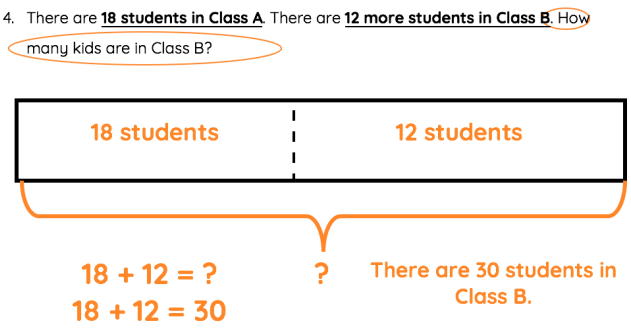
T *Then read a second time and underline the important details and circle the question.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

T *You should have underlined: "18 students in Class A" and "12 more students in Class B."*

T *Then circled the question which is: "How many kids are in class B?"*

T *Give me a thumbs up if you got that step right!* Scan the room to get an idea of who is understanding and who may need more support later.



T *Step 2 is to draw.*

T *Using this tape diagram bar, decide how many parts there are in our word problem.*

T *Divide the tape diagram up and label all of the parts.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

T *Show me with your fingers how many parts there are in this problem.* Answer: 2 parts.

T *Correct, there are 2 parts.*

T *Thumbs up if you think all of the parts should be the same size and thumbs down if you think they should be different sizes.* Answer: Thumbs down, they should be different sizes.

T *You should have label the first part "18 students" and the second part "12 students."*

T *The total is unknown so you should have shown this with a "?".*

T *The last thing that we will do is write our equation.*

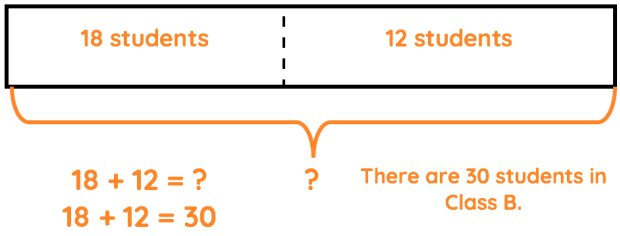
T *Please write out the equation and solve.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

- ***T*** *Our equation is: "18 + 12 = ?".*
- ***T*** *Let's add: "18 + 12 = 30."*
- ***T*** *Now I have my final answer which is 30.*
- ***T*** *Final step, write you answer in a complete sentence.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

4. There are **18 students in Class A**. There are **12 more students in Class B**. How many kids are in Class B?



- ***T*** *To do this, you should have used words from the question to write a complete sentence containing your answer.*
- ***T*** *The question is: "How many kids are in Class B?".*
- ***T*** *So, I will say, "There are 30 students or kids in Class B." I am using the words from the end of the question in my answer.*

Make sure to "Break Up Your Day!"

Now is a great time to take a break and get students re-energized.

See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 25)

Partner Practice

Pass out the "Solving Word Problems (Partner Practice)" to each student –or– project it for students to copy on blank paper.

- ***T*** *Now that we have practiced 4 problems together as a class, I think you are all ready to try some similar problems with a partner.*
- ***T*** *Please use the paper we did together as a guide to help you follow all of the steps: RDW: Read, Draw, and Write.*
- ***T*** *When I say go, you will get up and find a partner who was born in the same month as you.*
- ***T*** *If you can't find a partner I will pair you up with another student.*
- ***T*** *Ready, Go! Don't forget to take your paper and pencil with you.*

Pair up any student who doesn't have a partner.

Allow students about 15-20 minutes to complete this sheet with a partner. Either pull a small group of students who are struggling, or monitor and provide assistance as needed.

Differentiation:

Support: Pull small group aside to work through problems together. Make the numbers in the problems smaller, or have them only complete half of the problems.

Enrichment: Give students who need an additional challenge more problems containing larger numbers.

ELL:

Pair student(s) with a partner. Word problems will be difficult to understand. You may need to provide more pictures to go with the word problem for the student to understand vocabulary, especially nouns.

Optional Assessment Component "Exit Slips"

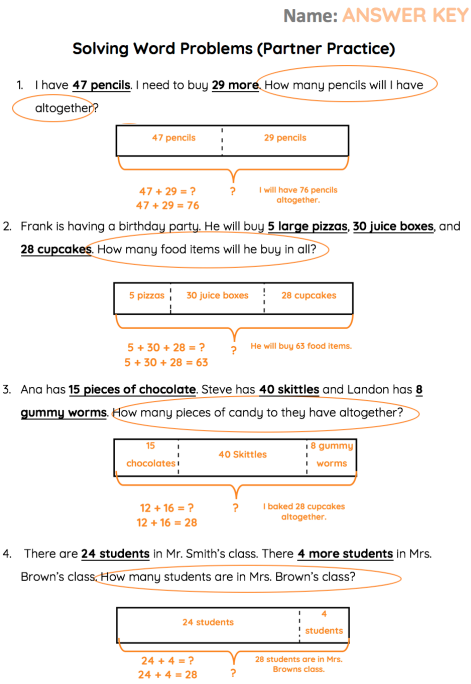
***You may use the exit slip at the end of this lesson as a quick assessment of student understanding. Either print them out (page 19), or simply have students copy the problems on a half sheet of paper.**

- ***T*** *Now it is time to show your teacher what you have learned.*
- ***T*** *But first let's turn and tell the person next to us how to make a tape diagram to solve an addition problem.*

Give a few minutes for students to review. If you hear many incorrect response please review quickly before having students complete their exit slips.

- ***T*** *You will solve 1 word problem independently the same way that you solved the problems with the whole class, and with your partner.*
- ***T*** *Remember to RDW: Read, Draw, and Write.*
- ***T*** *You need to underline important details, circle the question, create a tape diagram, write an equation, solve, and finally write your answer as a complete sentence.*
- ***T*** *Once you have finished please bring me your paper.*

Collect "Exit Slips" and leave for the teacher. Answer found below.



Name: ANSWER KEY

Solving Word Problems (Partner Practice)

1. I have **47 pencils**. I need to buy **29 more**. How many pencils will I have altogether?

47 pencils | 29 pencils

47 + 29 = ?
47 + 29 = 76

? — I will have 76 pencils altogether.

2. Frank is having a birthday party. He will buy **5 large pizzas**, **30 juice boxes**, and **28 cupcakes**. How many food items will he buy in all?

5 pizzas | 30 juice boxes | 28 cupcakes

5 + 30 + 28 = ?
5 + 30 + 28 = 63

? — He will buy 63 food items.

3. Ana has **15 pieces of chocolate**. Steve has **40 skittles** and Landon has **8 gummy worms**. How many pieces of candy to they have altogether?

15 chocolates | 40 Skittles | 8 gummy worms

12 + 16 = ?
12 + 16 = 28

? — I baked 28 cupcakes altogether.

4. There are **24 students** in Mr. Smith's class. There **4 more students** in Mrs. Brown's class. How many students are in Mrs. Brown's class?

24 students | 4 students

24 + 4 = ?
24 + 4 = 28

? — 28 students are in Mrs. Browns class.

Make sure to "Break Up Your Day!"

Now is a great time to take a break and get students re-energized.

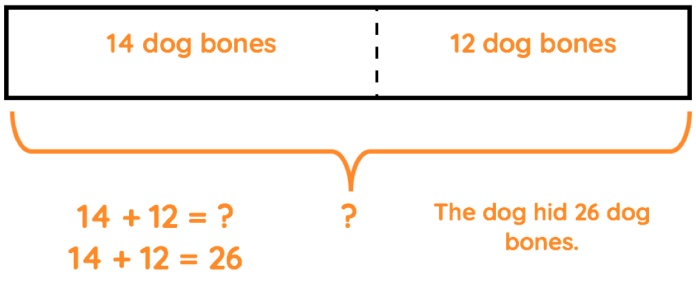
See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 25)

Name: ANSWER KEY Date: _____

Exit Slip: Segment 1

Addition Word Problems Using Tape Diagrams

1. The dog hid 14 bones under the porch. Then the fog hid 12 more bones in the garden. How many bones did he hide altogether?



Instructional Plan: Segment 2: 60 minutes

Subject

- Solving Addition Word Problems Step by Step- Unknown Part

Objective

- Students will read word problems and determine important information.
- Students will determine the missing information they need to find to solve the word problems.
- Students will draw pictures/tape diagrams to solve the word problems.
- Students will write an equation to solve the word problems.
- Students will explain their thinking and strategies they used to solve the word problem.

Materials

- blank paper
- pencil & crayons/colored pencils
- document camera or whiteboard
- **Optional:** printable "Exit Slip" (page 19) (1 copy per student)
- **Optional Printable Student Resources:** "Solving Word Problems (Class Practice)" (page 22) (1 copy per student), "Solving Word Problems (Partner Practice)" (page 23) (1 copy per student)
- **Optional Printable Teacher Resources:** "Steps to Solve a Word Problem" (page 24) (1 copy for display)

It would be helpful for students to have the two sheets they used in segment 1 as a reminder of what to do in this lesson.

Introduction

T *Today we will be continuing to practice solving addition word problems using tape diagrams and equations.*

T *We will also continue to practice examining a word problem carefully to identify all of the important details needed to solve the problem.*

T *Let's review.*

T *Please turn and tell a partner sitting next to or near you what you remember from our last lesson, what were the steps to follow.*

T *Hint: "RDW."*

Provide students a few minutes to review with a partner. Monitor and provide assistance as needed

T *Let's see if you were correct.*

T *These are our steps to follow when solving a word problem.* Either write on the board or display the steps somewhere for students to reference.

T *Read the problem carefully.*

T *Read it a second time underlining important details and circling the question.*

T *Draw the information using a tape diagram/bar model.*

T *Label all of the "Parts", the "Total" and the "Unknown" using a question mark "?".*

T *Write the equation to match the word problem and solve.*

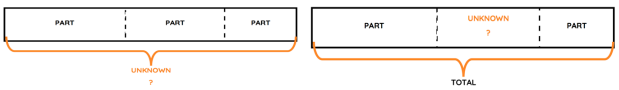
T *Write your answer in a complete sentence.*

Name: _____

Steps to Solve a Word Problem

RDW: Read, Draw, and Write

1. **Read** the problem carefully.
2. **Read** it a second time underlining important details and circling the question.
3. **Draw** the information using a tape diagram/bar model.
4. **Label** all of the "**Parts**", the "**Total**" and the "**Unknown**" using a question mark "**?**".



5. **Write** the **equation** to match the word problem and **solve**.
6. **Write** your **answer** in a **complete sentence**.

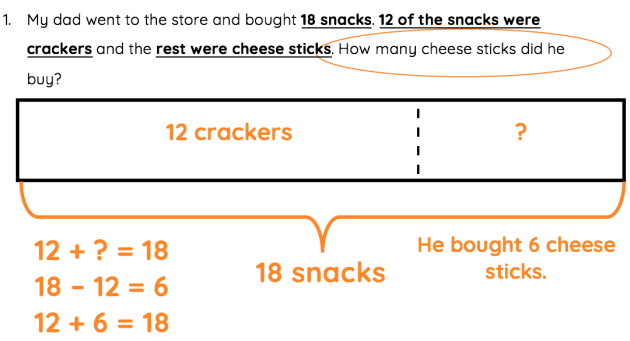
Pass out 1 "Solving Addition Word Problems" sheet to each student –or- project it for students to copy on blank paper.

Whole Group Setting up the Paper

T *Using the steps we just reviewed, let's see if you can help me to solve this first problem.*
T *This time we will be working to solve for an unknown part, not for an unknown total.*

Problem # 1

T *We will start by completing problem number 1.*
T *First, we will read the problem carefully: "My dad went to the store and bought 18 snacks. 12 of the snacks were crackers and the rest were cheese sticks. How many cheese sticks did he buy?"*
T *Then we will read it a second time looking for important details.*
T *I will stop reading each time I find an important detail and I will underline it.*
T *"My dad went to the store and bought 18 snacks." Let's stop and underline "18 snacks."* See example & model so students can follow.
T *"12 of the snacks were crackers," stop and underline "12 of the snacks were crackers."* See example & model so students can follow.
T *"and the rest were cheese sticks." Stop and underline "rest were cheese sticks."* See example & model so students can follow.
T *"How many cheese sticks did he buy?" Circle this because it is our question.* See example & model so students can follow.



T *Step 2 is to draw.*
T *This time we will draw a tape diagram bar, let's decide how many parts there are in our word problem.*
T *Show me with your fingers how many parts there are in this problem.* Answer: 2 parts.
T *Correct, there are 2 parts.*
T *Thumbs up if you think all of the parts should be the same size and thumbs down if you think they should be different sizes.* Answer: Thumbs down, they should be different sizes.
T *The total of this problem is 18, and I know that 12 is one of my parts, 12 + 12 is not 18, so they need to be different sizes.*
T *Next, I have to label each of the 2 parts and the total.*
T *The total is "18 snacks",*
T *The first part is "12 crackers" and the second part is unknown so we will indicate that using a "?".*
T *The last thing that we will do is write our equation, "12 + ? = 18".*
T *This is a bit trickier than that when we are finding an unknown total.*
T *There are two ways to look at this problem.*
T *I can use the opposite of addition, which is subtraction to find the unknown part.*
T *So, I would take my total which is 18 and subtract the part I know from it, so "18 – 12."*
T *The answer to "18 – 12 = 6."*
T *The other way to think about it is: 12 plus what number would give you 18?*
T *"12 + 6 = 18."*
T *Now I have my final answer which is 6.*
T *The final step is to write our answer as a complete sentence.*
T *To do this, I will use words from my question to write a complete sentence containing my answer.*
T *Let me show you what I mean, the question is: "How many cheese sticks did he buy?".*

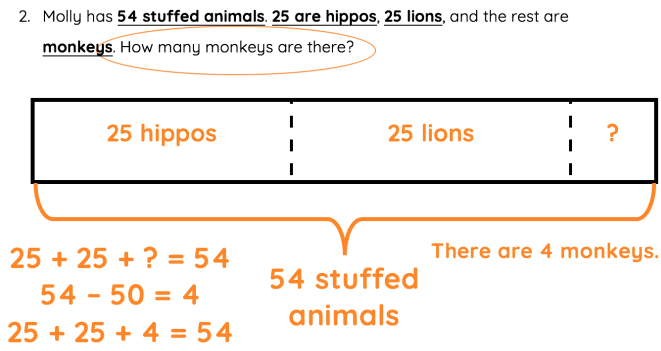
T *So, I will say, "He bought 6 cheese sticks." I am using the words from the end of the question in my answer.*

Problem # 2

T *Now I will let you try each step first and then we will check to see if you did it correctly.*
T *First, you need to read the problem carefully.*
T *Then read a second time and underline the important details and circle the question.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

T *You should have underlined: "54 stuffed animals," "25 are hippos," "25 are lions," and "monkeys."*
T *Then circled the question which is: "How many monkeys are there?"*
T *Give me a thumbs up if you got that step right!* Scan the room to get an idea of who is understanding and who may need more support later.



T *Step 2 is to draw.*
T *Using this tape diagram bar, decide how many parts there are in our word problem.*
T *Divide the tape diagram up and label all of the parts.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

T *Show me with your fingers how many parts there are in this problem.* Answer: 3 parts.
T *Correct, there are 3 parts.*
T *Thumbs up if you think all of the parts should be the same size and thumbs down if you think they should be different sizes.* Answer: Thumbs down, they should be different sizes.
T *You should have label the first part "25 are hippos," the second part "25 are lions," and the third part is unknown.*
T *Since it is unknown you should have shown this with a "?".*
T *Finally, the total is "54 stuffed animals," which you should have written below the bar.*
T *The last thing that we will do is write our equation.*
T *Please write out the equation and solve.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

T *This one is a bit trickier like the last one.*
T *We know the answer, but we are missing one of the parts.*
T *Our equation is: "25 + 25 + ? = 54."*
T *To solve this, you can either take the answer and subtract the part you know from it, so: "54 – 25 -25= 4".*
T *Or you need to ask yourself, 25 plus 25, plus what number equals 54, which is 4.*
T *So, "25 + 25 + 4 = 54."*
T *Now I have my final answer which is 4.*
T *Final step, write you answer in a complete sentence.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

T *To do this, you should have used words from the question to write a complete sentence containing your answer.*

- ***T*** *The question is: "How many monkeys are there?".*
- ***T*** *So, I will say, "There are 4 monkeys." I am using the words from the end of the question in my answer.*

Make sure to "Break Up Your Day!"

Now is a great time to take a break and get students re-energized.

See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 25)

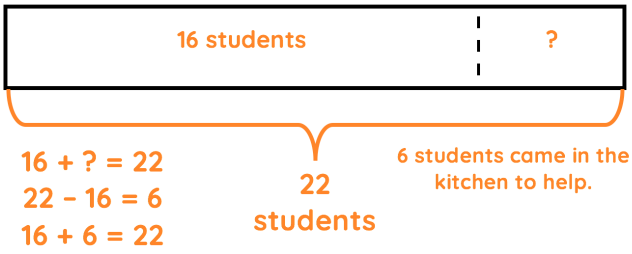
Problem # 3

- ***T*** *Now I will let you try each step and then we will check to see if you are correct as we go.*
- ***T*** *First, you need to read the problem carefully.*
- ***T*** *Then read a second time and underline the important details and circle the question.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

- ***T*** *You should have underlined: "16 students" and "22 students."*
- ***T*** *Then circled the question which is: "How many more students came in the kitchen to help?"*
- ***T*** *Give me a thumbs up if you got that step right!* Scan the room to get an idea of who is understanding and who may need more support later.
- ***T*** *Step 2 is to draw.*
- ***T*** *Using this tape diagram bar, decide how many parts there are in our word problem.*
- ***T*** *Divide the tape diagram up and label all of the parts.*

3. There are **16 students** in the kitchen baking. Some more students came in the kitchen to help. Now there are **22 students baking** in the kitchen. How many more students came in the kitchen to help?



Give students about a minute to complete this step. Monitor and provide assistance as needed.

- ***T*** *Show me with your fingers how many parts there are in this problem.* Answer: 2 parts.
- ***T*** *Correct, there are 2 parts.*
- ***T*** *Thumbs up if you think all of the parts should be the same size and thumbs down if you think they should be different sizes.* Answer: Thumbs down, they should be different sizes.
- ***T*** *You should have label the first part "16 students," the second part is unknown.*
- ***T*** *Since it is unknown you should have shown this with a "?".*
- ***T*** *Finally, the total is 22 students, which you should have written below the bar.*
- ***T*** *The last thing that we will do is write our equation.*
- ***T*** *Please write out the equation and solve.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

- ***T*** *This one is a bit trickier.*
- ***T*** *We know the answer, but we are missing one of the parts.*
- ***T*** *Our equation is: "16 + ? = 22".*
- ***T*** *To solve this you can either take the answer and subtract the part you know from it, so: "22-16= 6".*
- ***T*** *Or you need to ask yourself, 16 plus what number equals 22, which is 6.*
- ***T*** *So, "16 + 6 = 22."*

T *Now I have my final answer which is 22.*
T *Final step, write you answer in a complete sentence.*

Give students about a minute to complete this step. Monitor and provide assistance as needed.

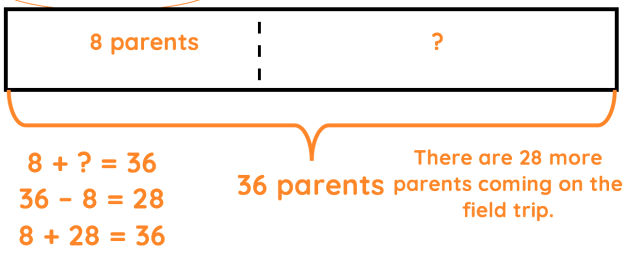
T *To do this, you should have used words from the question to write a complete sentence containing your answer.*
T *The question is: "How many more students came into the kitchen to help?".*
T *So, I will say, "6 more students came in the kitchen to help." I am using the words from the end of the question in my answer.*

Problem # 4

T *This is the last problem we will do together as a group.*
T *This time I would like you to try to follow the steps and solve the problem by yourself.*
T *Then we will discuss our answers.*

Give students time to complete this problem. Monitor and provide assistance as needed.

4. There are **8 parents** coming on the field trip from Mr. Smith's classroom. There are some more parents coming from the other 2nd grade classroom. There will be **36 parents coming** on the 2nd grade field trip in total. How many more parents are coming?



8 + ? = 36
36 – 8 = 28
8 + 28 = 36

There are 28 more parents coming on the field trip.

T *Now I would like 3 brave volunteers to come up and be the teacher and walk us through the problem and how you solved it.* **Call on 3 students to come up and share.**

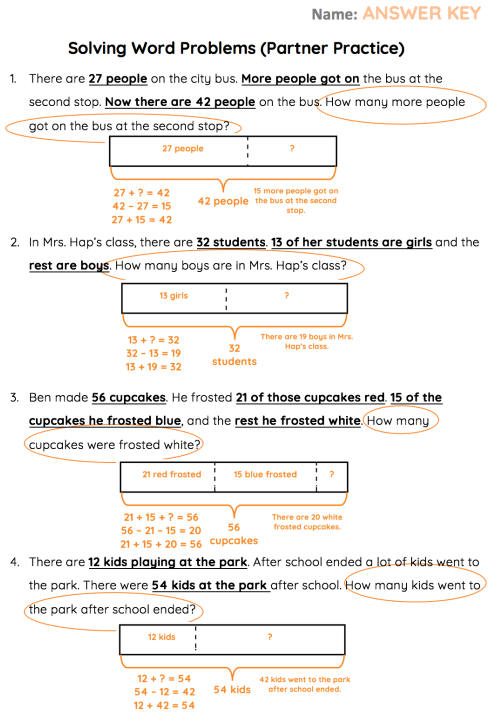
Allow students to share their tape diagrams and explain how they solved the problem. If students have different ideas or if they are incorrect, nicely clear up any misconceptions.

Partner Practice

Pass out the "Solving Word Problems (Partner Practice)" to each student –or– project it for students to copy on blank paper.

T *Now that we have practiced 4 problems together as a class, I think you are all ready to try some similar problems with a partner.*
T *Please use the paper we did together as a guide to help you follow all of the steps: RDW: Read, Draw, and Write.*
T *When I say go, you will get up and find a partner who was born in the same month as you.*
T *If you can't find a partner I will pair you up with another student.*
T *Ready, Go! Don't forget to take your paper and pencil with you.* Pair up any student who doesn't have a partner.

Allow students about 15-20 minutes to complete this sheet with a partner. Answers found on next page.



Name: ANSWER KEY

Solving Word Problems (Partner Practice)

1. There are **27 people** on the city bus. **More people got on** the bus at the second stop. **Now there are 42 people** on the bus. How many more people got on the bus at the second stop?

27 people | ?
27 + ? = 42
42 – 27 = 15
27 + 15 = 42
42 people
15 more people got on the bus at the second stop.

2. In Mrs. Hap's class, there are **32 students**. **13 of her students are girls** and the **rest are boys**. How many boys are in Mrs. Hap's class?

13 girls | ?
13 + ? = 32
32 – 13 = 19
13 + 19 = 32
32 students
There are 19 boys in Mrs. Hap's class.

3. Ben made **56 cupcakes**. He frosted **21 of those cupcakes red**. **15 of the cupcakes he frosted blue**, and the **rest he frosted white**. How many cupcakes were frosted white?

21 red frosted | 15 blue frosted | ?
21 + 15 + ? = 56
56 – 21 – 15 = 20
21 + 15 + 20 = 56
56 cupcakes
There are 20 white frosted cupcakes.

4. There are **12 kids playing at the park**. After school ended a lot of kids went to the park. There were **54 kids at the park** after school. How many kids went to the park after school ended?

12 kids | ?
12 + ? = 54
54 – 12 = 42
12 + 42 = 54
54 kids
42 kids went to the park after school ended.

Differentiation:

Support: Pull small group aside to work through problems together or pair up students to work together.
Enrichment: Give students who need an additional challenge more problems containing larger numbers.

Optional Assessment Component "Exit Slips"

***You may use the exit slip at the end of this lesson as a quick assessment of student understanding. Either print them out (page 19), or simply have students copy the problems on a half sheet of paper.**

- ***T*** *Now it is time to show your teacher what you have learned.*
- ***T*** *But first let's turn and tell the person next to us how to make a tape diagram to solve an addition problem while solving for an unknown part.*

Give a few minutes for students to review. If you hear many incorrect responses please review quickly before having students complete their exit slips.

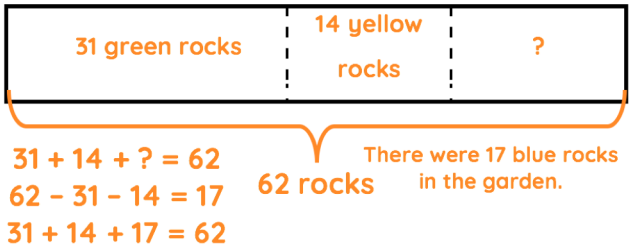
- ***T*** *You will solve 1 word problem independently, the same way that you solved the problems with the whole class, and with your partner.*
- ***T*** *Remember to RDW: Read, Draw, and Write.*
- ***T*** *You need to underline important details, circle the question, create a tape diagram, write an equation, solve, and finally write your answer as a complete sentence.*
- ***T*** *Once you have finished please bring me your paper.*

Collect "Exit Slips" and leave for the teacher. Answer found below.

Name: ANSWER KEY Date: _____

Exit Slip: Segment 2
Addition Word Problems Using Tape Diagrams

1. George was painting 62 rocks for his vegetable garden. He painted 31 rocks green. Then he decided to paint 14 rocks yellow, and painted the rest blue. How many blue rocks were there in the garden?



31 + 14 + ? = 62
62 – 31 – 14 = 17
31 + 14 + 17 = 62

There were 17 blue rocks in the garden.

Make sure to "Break Up Your Day!"

Now is a great time to take a break and get students re-energized.
See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 25)

Instructional Plan: Segment 3: 30-45 minutes

Subject

- Group Work and Presentation of Solving Word Problems

Objective

- Students will read word problems and determine important information.
- Students will determine the missing information they need to find to solve word problems.
- Students will draw pictures/tape diagrams to solve the word problems.
- Students will write an equation to solve the word problems.
- Students will explain their thinking and strategies they used to solve the word problems.
- Students will work collaboratively in groups to write a word problem and solve a word problem.

Materials

- large blank paper (poster sized)
- pencil & crayons/colored pencils
- markers
- document camera or whiteboard
- **Optional Printable Student Resources:** "Steps to Solve a Word Problem" (page 24) (1 copy per student – or- per group)

Have poster or large construction paper ready for students.

Introduction

T *You have spent the last few lessons learning about how to solve addition word problems using tape diagrams/bar models.*

T *You have solved for an unknown total, as well as an unknown part.*

T *You have written out equations and solved them.*

T *And you have written out your answers in a complete sentence.*

T *You have done a lot, and I am almost thinking you are such a pro that you could most likely teach someone else how to do all of these things!*

T *With that said, I am now promoting all of you from 2nd grade students to teachers!*

T *You are now officially going to be "Solving Addition Word Problem Teachers!"*

T *Before we start let's talk about what a teacher's job is; what are all of the things teachers need to do before they teach a lesson, while teaching a lesson, and after they teach a lesson.*

T *Let's make a quick chart so that you fully understand your new role as a teacher.*

T *Take a second and think of what teachers need to do while I draw this chart for us to record our ideas.*

T *Then I will call on students raising their hands quietly to share their ideas for any of the 3 categories: before teaching the lesson, while teaching the lesson, or after teaching the lesson.*

Create a chart similar to the one on the right. On the sample are some suggested ideas. Fill out the chart using your students' ideas. Add on any ideas that you think are missing from what they came up with at the end.

Being a Teacher

Before Teaching a Lesson	While Teaching a Lesson	After Teaching a Lesson
• Plan • Come up with problems to solve • Come up with solutions to problems • Make posters of examples	• Make sure to explain everything clearly • Write Neatly so students can read. • Speak Loudly	• Check to see if students understood lesson • Grade papers • Help students who didn't understand

Explaining the Activity and Rules

- ***T*** *I will be putting you into small groups of "teachers."*
- ***T*** *With your fellow teachers your job will be to plan to teach the class, your students, how to solve addition word problems using the steps we have learned and tape diagrams.*
- ***T*** *Your group will be given a large piece of poster paper/construction paper to create a poster to help the class understand what you are teaching.*
- ***T*** *Now, since you will be working as a team of teachers there are some rules that we need to remember to follow.*

Write on the board or project the rules for students to see.

- ***T*** *Rule number 1 is that all teachers in your group must participate; I shouldn't see any teachers in a group just sitting around.*
- ***T*** *Rule number 2 is that all teachers are respectful of other's ideas.*
- ***T*** *This means that if someone has an idea that you either don't like or don't agree with you don't put them down by saying something mean.*

Rules for Working with Other "Teachers"

1. All Teachers participate.
2. All teachers are respectful of other's ideas.
3. Teachers must take turns using the markers.

- ***T*** *Instead you may want to share what your idea would be instead.*
- ***T*** *Then as a group you can make a final decision of which ideas to use.*
- ***T*** *Last rule, rule number 3, teachers must take turns using the markers.*
- ***T*** *This means everyone who wants to get a chance to write on the poster will get a turn.*
- ***T*** *Give me a thumbs up if you understand all of the rules.* Monitor to make sure everyone is understanding and agreeing to the rules.

Creating a Poster

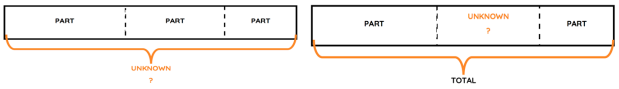
- ***T*** *With your fellow teachers, your job will be to create a word problem similar to the ones we have been practicing.*
- ***T*** *It can either be a problem where the total is unknown or where one of the parts is unknown.*
- ***T*** *Your problem should include 2-3 parts and a total.*
- ***T*** *On your poster, you will first write out your word problem that your group creates.*
- ***T*** *Then, you will solve it just as we have as a class.*
- ***T*** *Identify the important details by underlining them and circle your question.*
- ***T*** *Draw a tape diagram/bar model to represent your problem and label the parts and the total, using a "?" for the unknown.*

Name: _____

Steps to Solve a Word Problem

RDW: Read, Draw, and Write

1. **Read** the problem carefully.
2. **Read** it a second time underlining important details and circling the question.
3. **Draw** the information using a tape diagram/bar model.
4. **Label** all of the "**Parts**", the "**Total**" and the "**Unknown**" using a question mark "**?**".



5. **Write** the **equation** to match the word problem and **solve**.
6. **Write** your **answer** in a **complete sentence**.

- ***T*** *Then you will solve your own problem using equations and finally write your answer in a complete sentence.*
- ***T*** *You will use that poster to actually teach the class the steps of how to solve a word problem.*

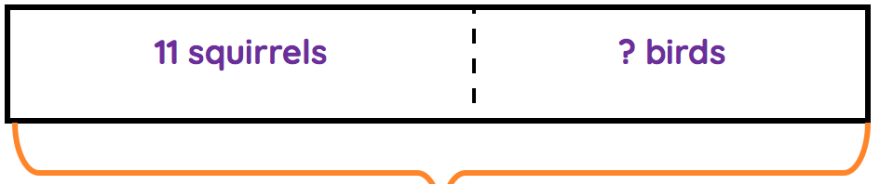
- ***T*** *So, you will also need to decide what you are going to say to the class for your "lesson."*
- ***T*** *You are not going to simply hold up your poster, you need to be able to talk through and explain the whole process.*
- ***T*** *Here is an example of what your poster might look like.* Display sample poster for students to see.
- ***T*** *This is just a basic poster.*
- ***T*** *If you would like to add more details and get creative with it you may.*
- ***T*** *On this example are the things your poster must have on it.*
- ***T*** *I suggest planning out your ideas and writing in pencil first and then tracing over it in marker in case you make a mistake.*

Differentiation:
Support: Put students who struggle in a group with higher students.
Enrichment: Put a group of higher students in one group and give them a harder problem to solve.

ELL:
Put student(s) in a group with a student(s) who can help explain and guide.

HOW TO SOLVE WORD PROBLEMS

There are **11 squirrels** in the tree. Some birds joined the squirrels in the tree. Now there are **20 animals** in the tree. How many birds are in the tree?



20 animals

11 + ? = 20
20 – 11 = 9
11 + 9 = 20

There were 9 birds in the tree.

Put students into groups of 3-4 students. Give each group a piece of large construction paper or poster paper. Make sure each group also has markers. You should either give each student –or- group a "Steps to Solve a Word Problem" paper or project it for the whole class to see while they work.

Provide about 20-30 minutes to create their posters. Monitor to ensure all students are equally participating, being respectful, and taking turns. Provide assistance as needed.

Once most groups have finished, give them a 5 minute warning to finish up. Then if time allows have them "teach" the class how to solve an addition word problem. If time does not allow, collect them and tell the students they can teach their teacher when he/she returns.

Make sure to "Break Up Your Day!"

Now is a great time to take a break and get students re-energized.
See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 25)

Name: _____Date: _____

Exit Slip: Segment 1
Addition Word Problems Using Tape Diagrams

1. The dog hid 14 bones under the porch. Then the fog hid 12 more bones in the garden. How many bones did he hide altogether?

Name: _____Date: _____

Exit Slip: Segment 2
Addition Word Problems Using Tape Diagrams

2. George was painting 62 rocks for his vegetable garden. He painted 31 rocks green. Then he decided to paint 14 rocks yellow, and painted the rest blue. How many blue rocks were there in the garden?

Name: _____

Solving Word Problems (Class Practice)

1. For our party, we will bake 32 large chocolate chip cookies, 12 cupcakes, and 24 brownies. How many treats did we bake in all?

2. I have 12 cupcakes. I need to bake 16 more. How many cupcakes did I bake altogether?

3. I have 24 crayons. I need to buy 36 more. How many crayons will I have altogether?

4. There are 18 students in Class A. There are 12 more students in Class B. How many kids are in Class B?

Name: _____

Solving Word Problems (Partner Practice)

1. I have 47 pencils. I need to buy 29 more. How many pencils will I have altogether?

2. Frank is having a birthday party. He will buy 5 large pizzas, 30 juice boxes, and 28 cupcakes. How many food items will he buy in all?

3. Ana has 15 pieces of chocolate. Steve has 40 Skittles and Landon has 8 gummy worms. How many pieces of candy to they have altogether?

4. There are 24 students in Mr. Smith's class. There 4 more students in Mrs. Brown's class. How many students are in Mrs. Brown's class?

Name: _____

Solving Word Problems (Class Practice)

1. My dad went to the store and bought 18 snacks. 12 of the snacks were crackers and the rest were cheese sticks. How many cheese sticks did he buy?

2. Molly has 54 stuffed animals. 25 are hippos, 25 lions, and the rest are monkeys. How many monkeys are there?

3. There are 16 students in the kitchen baking. Some more students came in the kitchen to help. Now there are 22 students baking in the kitchen. How many more students came in the kitchen to help?

4. There are 8 parents coming on the field trip from Mr. Smith's classroom. There are some more parents coming from the other 2nd grade classroom. There will be 36 parents coming on the 2nd grade field trip in total. How many more parents are coming?

Name: _____

Solving Word Problems (Partner Practice)

1. There are 27 people on the city bus. More people got on the bus at the second stop. Now there are 42 people on the bus. How many more people got on the bus at the second stop?

2. In Mrs. Hap's class there are 32 students. 13 of her students are girls and the rest are boys. How many boys are in Mrs. Hap's class?

3. Ben made 56 cupcakes. He frosted 21 of those cupcakes red. 15 of the cupcakes he frosted blue, and the rest he frosted white. How many cupcakes were frosted white?

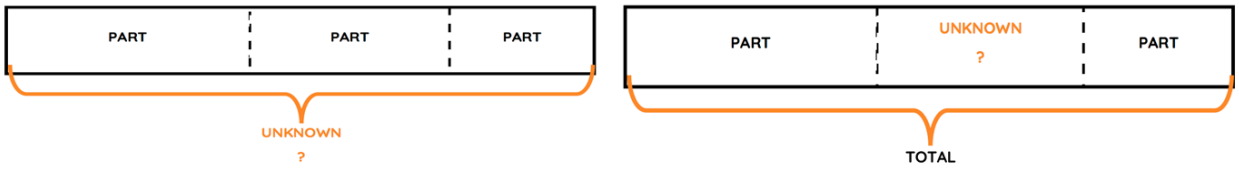
4. There are 12 kids playing at the park. After school ended a lot of kids went to the park. There were 54 kids at the park after school. How many kids went to the park after school ended?

Name: _____

Steps to Solve a Word Problem

RDW: Read, Draw, and Write

1. **Read** the problem carefully.
2. **Read** it a second time underlining important details and circling the question.
3. **Draw** the information using a tape diagram/bar model.
4. **Label** all of the "**Parts**", the "**Total**" and the "**Unknown**" using a question mark "**?**".



5. **Write** the **equation** to match the word problem and **solve**.
6. **Write** your **answer** in a **complete sentence**.

Make sure to "Break Up Your Day!"

These can be used in the middle of a lesson or at the end of your lesson.

Here are a few engaging movement and brain break ideas to get your students moving and ready to refocus!

Break Up Your Day: Guess My Number!

- Begin by showing an example:
- "I am thinking of a number between 1 and 10. Who would like to guess my number" Call on a student.
- When they take a guess, let them know if your number is bigger or smaller than what they guessed (ex: Student guesses 5, your number is 7, so you would say "My number is bigger than 5." Then call on another student to guess).
- Keep giving clues until students guess the number.
- You could play again with the teacher picking the number if students need reinforcement, or you could have a student come up and pick the number (have them tell you what the number is so you can help them).

Break Up Your Day: The Wiggles!

- Let's get our wiggles out before we continue!
- Stand up and shake out your arms (4-5 seconds to shake) Remember! No one should get hurt! …now FREEZE!
- Now shake the wiggles out of your right leg…FREEZE!
- Now shake the wiggles out of your left leg…FREEZE!
- Now shake all the wiggles out of your whole body….FREEZE!

Break Up Your Day: Body Stretches!

10 minutes

FORMATION: Standing at desks

- Have students begin the day with a series of simple activities lasting 30 seconds or more: jumping jacks, knee lifts, flap arms like a bird, hopping, scissors (feet apart then cross in front, feet apart then cross in back)…
- Follow each activity with a basic stretching movement:
- Reach for the sky runner's stretch
- Butterfly stretch (sit with bottom of feet together)
- Knee to chest, rotate ankles, scratch your back

Hold stretches for 10 - 30 seconds. Repeat a different simple activity followed by a new basic stretch as many times as desired.