PBS Lesson Series

Math: Grade 1, Lesson 8, *Find the Unknown Number*

Lesson Focus: The purpose of this lesson is for children to solve a problem that has an unknown number at the start. The purpose of this problem is for children to connect this situation to an equation that can be used to solve the problem.
Practice Focus: Students will model addition and or subtraction problems with counters or pictures, relate to an equation with a missing number, and then solve another problem.
Objective: Students will determine the unknown whole number in an addition or subtraction equation relating three whole numbers.
Key Vocabulary:

- **equal sign** (=)
- **equation**

TN Standards: 1.OA.D.8
Teacher Materials:

- Number path
- 10 connecting cubes (optional)
- Paper
- Markers
- Document Camera
- Student Practice Packet

Student Materials:

- Paper and a pencil, and a surface to write on
- Number Path

Teacher Do	Student Do
Opening: (1 min.) **Hello! Welcome to Tennessee's At Home Learning Series for math! Today's lesson is for all our 1st graders out there, though all children are welcome to tune in. This lesson is the eighth in our series.** **My name is ____ and I'm a ____ grade teacher in Tennessee schools! I'm so excited to be your teacher for this lesson! Welcome to my virtual classroom!** **If you didn't see our previous lesson, you can find it on the TN Department of Education's website at www.tn.gov/education. You can still tune in to today's lesson if you haven't seen any of our others. But, it might be more fun if you first go back and watch our other lessons since we'll be talking about things we learned previously.**	Students get materials ready for the lesson: Paper Pencil

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Today we will be learning about how to use addition and subtraction strategies to find the missing number in an equation in mathematics! Before we get started, to participate fully in our lesson today, you will need: ● **Paper** ● **a pencil** ● **number paths** **Ok, let's begin!**	
Intro (3 min.) **To get ready for our lesson today, let's get our workspace ready.** **I am going to lay out some paper and pencil on my writing surface. You lay out your paper and pencil too.** [Pause] **We will also be using a tool today called a number path.** **Before we get started, let's get three number paths ready. You draw your number paths with me. Be sure to save some space in between.** [Teacher models drawing number paths on paper.] 1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 10	Students set up work space with needed items. Students draw three number strips.
Teacher Model (10 min.) Objective #1: Review/Background/Tying to previous learning, Example(s), Guided Practice **For our first set problem, let's practice finding a missing number for a sum or difference up to 10. This will help us prepare for working with equations where there may be unknowns in any position.** [post problem and directions as seen below]	Objective #1: Students will be reviewing using counting on and counted back to find a missing number within 10.

Find the missing number. 8 + _____ = 9 9 - _____ = 7 **Let's take a look at our first problem. The problem states, 8 plus some number equals 9. How can we find the missing number?** [Pause] **Let's count on to find the missing number. What can I add to 8 to get 9?** [Pause] **Did you get 1? That's right!** **Next, let's take a look at 9 minus some number is equal to 7. You may want to count backwards or use your counters to find this missing number.** **I think I will model this number with counting cubes.** [Teacher models laying out 9 cubes, removes 2, 7 remain] **How many cubes did I take away from 9 cubes to get 7 cubes?** [Pause] **That's right…. 2!** <u>Objective 2: Explicit Instruction, Example(s), Guided Practice</u> **Now we are ready to do our second problem. I will read a problem out loud that has a missing number. Our job is to discover what that missing number is.** [Post problem as written Some pies are on the table. Ms. Jan brings 2 more pies. Now there are 8 pies on the table. How many pies did we start with? _____ + 2 = 8] **I am going to read the problem out loud. You read along with me. Remember, we are looking to find the missing number.** [Teacher reads posted problem.] **Some pies are on the table.** **Ms. Jan brings 2 more pies.** **Now there are 8 pies on the table.** **How many pies did we start with?**	Objective #2: Students will be building off of their work within 10 and utilizing addition and subtraction strategies to find a missing number at the start of a problem. Number strips will be introduced.

_____ + 2 = 8 **Let's go back to the problem. Do you think we will solve this problem in a different way?** [Pause] **Yes. This problem is different from the ones we worked before because the missing number is at the start of the problem.** **How might we use our number path to help us get started?** [Pause] **We know there are at least 2 pies already on the table.** **We also know we have to add some pies to the number of pies on the table until we have a total of 8 pies.** **Watch as I model the problem.** **I will start on my number path at 2. You follow along with me.** [Teacher places finger/pen on 2] **Next, I will count until I have 8 total pies.** [Teacher models counting up from 2 to 8; drawing "hops/arrows" as he/she moves from 2 to 8.] **How hops/jumps did you make?** [Pause] **6! We made 6 jumps. That means there were 6 pies on the table to start.** **Great Job!**	Tying the learning together: Students will listen to the teacher do a think aloud solving a problem from the start of the problem through finding the solution using a number path for the first time.
<u>Guided Practice</u> (13 min.) [I do – A think aloud where the student works alongside the teacher] **Let's use the same problem but this time let's use subtraction to solve the problem.** [Teacher rereads problem] **Some pies are on the table.** **Ms. Jan brings 2 more pies.** **Now there are 8 pies on the table.** **How many pies did we start with?** **8 - 2 = _____** **This time, I will start on my number path at 8. You follow along with me.** [Teacher places finger/pen on 8] **Next, I will count back 2 pies from 8.** [Teacher models counting back 2 hops from 8; drawing "hops/arrows" as he/she moves from 8 back 2 hops.]	Students will listen to the teacher do a think aloud solving a problem from the start of the problem through finding the solution using a number path strategy.

Where did we land? [Pause] **6! When we hopped back 2, we landed on 6. That means there were 6 pies on the table to start.** **Great Job!** [Teacher fills in blank 8 - + 2 = 6] [We do - Intentional pauses for student to do work and then receive answers along the way] **Great! We are ready for our next problem. This time I would like you to use your number path with me.** [Teacher posts problem as written] Find the missing number. _____ + 3 = 7 1 2 3 4 5 6 7 8 9 10 **How do we find the missing number in the problem?** [Pause] **Our equation is some number plus 3 is equal to 7.** **Just like before, we can find the missing number by counting on or counting back.** **To count on, let's start on 3 and show our hops until we get to 7. You use your number path to show your hops.** [Teacher models hopping from 3 to 7 on number path] **How many hops did you draw?** [Pause] **Did you get 4?** **Wonderful job counting on to find the missing number.** **Now, let's see what our model would look like by counting back.** **To count back, where should we start?** [Pause] **Did I hear you say 7?** **Let's count back 3 hops from 7. You draw your hops along with me.** [Teacher models starting at 7 and draws counting back 3 hops] **When we counted back three hops, where did we land?** [Pause]	Students will follow along with the teacher to model a problem from the start of the problem through finding the solution.

Did you get 4? **Fantastic job counting back to find the missing number.** **Number paths are quite fun, aren't they? They let us have a choice of counting on or counting back to find missing numbers.** **For our next problem, you choose which way you like the best.** [You do - The student independently working and then the teacher showing their work and answer.] **For problem #3, you will be doing a missing number problem all by yourself. Follow along as I read the problem.** [Teacher posts problem as written _____ + 2 = 8] **_____ + 2 = 8** **Use your number strip to find the missing number.** **Remember, you can count on or you can count back.** [Teacher pauses to allow students time to model on their own.] **Are you ready?** **Hop on one foot if you counted on.** [Pause] **Clap your hands if you counted back.** [Pause] **Alright. That was fun!** **Did you get 6 as your missing number?** [Pause] [Teacher writes 6 + _____ = 8. Then 6 + 2 = 8] **Did you get your addition equation to be 6 plus 2 equals 8?** **You're right! Keep up the good work!** [Additional problems if needed] _____ + 1 - 5 _____ + 7 = 9	Students will solve a problem independently from the start of the problem through finding the solution. Teacher will share solution.

Independent Practice (3 min.)

Great work! Today, we reviewed how to find a missing number in an addition problem. I hope you're seeing some connections to our counting on and counting back strategies that we used last week! You sure did a great job! After the video, you will have some problems to practice on your own. Good luck and do your best! I will show you the independent practice problems now, or you can find them in the student practice for this lesson posted on our website, www.tn.gov/education.

[Teacher shows student practice page under document camera or camera zooms in on student practice page.]

1. ___ + 3 = 9

1	2	3	4	5	6	7	8	9	10

2. ___ + 6 = 8

1	2	3	4	5	6	7	8	9	10

3. ___ + 5 = 10

1	2	3	4	5	6	7	8	9	10

Closing (1 min.)

I enjoyed reviewing how to find a missing number in an equation with you! Thank you for inviting me into your home. I look forward to seeing you in our next lesson in Tennessee's At Home Learning Series! Bye!