PBS Lesson Series

Math: Grade 1, Lesson 10, *Find the Unknown Number*

Lesson Focus: The purpose of this lesson is for children to practice finding the missing numbers in addition and subtraction equations using number bonds.
Practice Focus: Students will model addition and/or subtraction problems with number bonds and 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 paths
- Number bonds
- 10 counters
- Paper
- Markers
- Document Camera
- Student Practice Packet

Student Materials:

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

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 tenth 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.** **Today we will be learning about how to use a number bond to find missing numbers in addition and subtraction equations!**	Students get materials ready for the lesson: Paper Pencil Number paths

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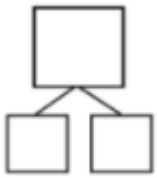
Before we get started, to participate fully in our lesson today, you will need: ● **Paper** ● **a pencil** ● **number paths** **Ok, let's begin!**	
Intro (3 min.) **To get ready for our lesson today, let's get our workspace ready. I am going to lay out some paper and pencil on my writing surface. You 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 3 number paths ready. You draw your number paths along with me. Today our numbers paths will have the numbers 1 through 15. Be sure to save some space in between.** [Teacher models drawing 3 number paths on paper.] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	Students set up work space with needed items. Students draw 3 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 20. This will help us prepare for working with equations with unknowns in any position.** [post problem and directions as seen below] Find the missing number.	Objective #1: Students will be reviewing using counting on and counted back to find a missing number within 20.

1. 11 — _____ = 3

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

2. 10 + _____ = 15



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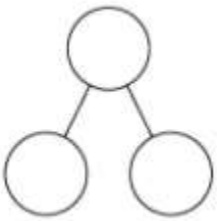

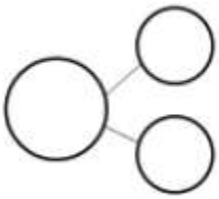

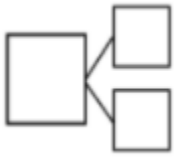

Let's take a look at our first problem. The problem states 11 minus some number equals 3. Let's use our number strip to find the missing number.
[Pause]
Circle the number 11 on your number strip with me because that is the first number in our equation.
[Teacher circles number 11.]
Now we will take hops until we land on the number 3. Make your hops with me.
[Teacher makes 8 hops on the number strip to land on 3.]
[Pause]
How many hops did we take to count back from 11 to 3?
That's right! Did you get 8?
[Pause]
Yes, our missing number is 8 because 11 minus 8 equals 3.

<u>Objective 2: Explicit Instruction, Example(s), Guided Practice</u>

Now we are ready to do our second problem.
Before we find our missing number, let's use a number bond to explore some related facts for the numbers 10 and 15.
[Pause]
You draw a number bond with me.
[Teacher draws empty number bond; prompting student to draw along with him/her].

I will read the problem out loud that has a missing number. Our job is to discover what that missing number is. **We know our first addend is 10. Where should we write 10 in our number bond?** [Pause] **Yes. We will write the 10 in one of the smaller boxes. You write your 10 in your number bond too.** [Pause] [Teacher models writing a 10 in one of the small boxes in the number bond.] **Do we know our other addend?** [Pause] **No, we don't. What should we do?** [Pause] **That's right. We will leave our second smaller box empty because that is our missing number.**	Objective #2: Students will be building off of their work within 20 utilizing addition and subtraction strategies to find a missing number in a problem. Number strips and number bonds will be used.
Where should the 15 go? [Pause] **Did I hear you say at the top of our number bond in the big box?** [Pause] **That's right! The 15 goes in the big box because 15 is the whole number and tells us how many we have in all.** **Now it's time to find our missing number. What related fact can we use to complete our number bond.** [Pause] **Can you tell me a number we can add to 10 to get 15?** [Pause] **Did I hear you say 5? That's right! 10 plus 5 equals 15. 5 is our missing number.** **To check our answer, let's use our number path starting with the number 10. Draw a circle around the number 10. You draw along with me.** [Teacher models drawing a circle around the number 10.] **We could solve this problem by hopping forward to the number 15. How can we hop from 10 to 15?** [Pause] **Use your number strip and draw the hops from 10 to 15.** [Pause] **Raise your hand if you took 5 hops.** [Pause] [Teacher models drawing 5 single hops from 10 to 15.] **Now raise your hand if you took one big hop from 10 to 15.**	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 strip and a number bond.

[Pause] **Let's see what that model would look like.** [Teacher models drawing one big hop of size 5 from 10 to 15.] **Wonderful work! You just learned that you can use related facts or friendly numbers, like the number 5 and 10, to find missing numbers.**	
<u>Guided Practice</u> (13 min.) [I do – A think aloud where the student works alongside the teacher] **Now let's use what we know about friendly numbers to do our next missing number problem.** [Teacher posts problem on board and reads aloud] **Rich has 8 candies.** **He finds more candy in his pocket.** **Now he has 13 candies.** **How many candies did he find?** **8 + _____ = 13** **Ok! You can get your number path ready and follow along with me.** [Pause] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 **This time, I will start on my number strip at 8. You follow along with me.** [Teacher circle 8 on the number strip] **Since we are using friendly numbers, I am going to look for a friendly number between 8 and 13. Can you help me find a friendly number?** [Pause] **Did I hear you say 10? That's right. I will take one big hop from 8 to 10 because 10 is a friendly number.** [Teacher models drawing 1 big hop from 8 to 10]. **I also know 8+2=10, so this big hop is the same as 2 smaller hops.** [Teacher writes the number 2 above the arrow representing the hop].	Students will listen to the teacher do a think aloud solving a problem from the start of the problem by finding the solution using the number strip strategy.

Next, I will take another big hop from 10 to 13 because I know Rich has 13 candies. [Teacher models drawing one big hop from 10 to 13.] **This big hop is the same as 3 smaller hops.** [Teacher models counting 1-2-3 on number strip while pointing to hops 10-to-11, 11-to-12, and 12-to-13.] [Teacher writes the number 3 above the arrow representing the hop.] **Great! How will we use our number path model to find the missing number?** [Pause] **I know! I can add my two hops together.** [Teacher writes 2 + 3 above the model to illustrate adding the two hops together] **I know 2 and 3 more make 5 so we made 5 hops from 8 to 13.** [Teacher fills in equation 8 + ___5____ = 13] **That means Rich found 5 candies.** [We do - Intentional pauses for student to do work and then receive answers along the way] **Great! We are ready for our next problem.** [Teacher posts problem as written] **7 ducks swim in the pond.** **Some more ducks join them.** **Now there are 12 ducks swimming in the pond.** **How many ducks joined them?** **7 + _____ = 12]** 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 **What tools can we use to help us find the missing number?** [Pause] **Yes! We can use our number path to help us find the missing number.** **How many ducks were on the pond to start with?** [Pause] **Yes. There were 7 ducks swimming in the pond. I am going to draw a circle around the number 7 on my number path. You draw a circle around the number 7 on your number path too.** [Teacher circles the number 7 on the number path]	Students will follow along with the teacher to model a problem from the start of the problem through finding the solution.

What happens to the number of ducks on the pond when others join them? [Pause] **That's right. The number of ducks gets larger because more ducks are joining them.** **Can you help me find a friendly number between 7 and 12?** [Pause] **Did you say 10?** [Pause] **Yes! 10 is a friendly number we can use to help us find the missing number. Let's draw a hop from 7 to 10. You draw your hop on your number strip.** [Teacher draws hop from 7 to 10] **What number can we write to label our hop?** [Pause] **Yes. We can write 3.** [Teacher writes the number 3 above the arrow for the hop] **Now we want to hop from our friendly number of 10 to 12. You draw you hop along with me.** [Teacher draws a hop from 10 to 12] **Let's see if we can label our hop from 10 to 12.** [Pause] **That's right. We will write the number 2 on our hop.** [Teacher confirms hop is size 2 counting aloud " 1 -2" by counting from 10-to-11, then from 11-to-12] **How can we use our model to find the missing number?** [Pause] **Let's add up our hops. 3 + 2 is five. That means the missing number is 5. Can you count with me to show the missing number is 5?** [Teacher begins by pointing at the number 7 and counts one unit at a time to confirm the two big hops of size 3 and size 2 are 5 hops together] **Fantastic. We now know 5 ducks joined 7 ducks on the pond.** [You do - The student independently working and then the teacher showing their work and answer.] **For the last problem, you will be using friendly numbers to find a missing number problem all by yourself. Follow along as I read the problem.** [Teacher posts problem as written] **6 small dogs play ball.** **Some big dogs join them.**	Students will solve a problem independently from the start of the problem through finding the solution. Teacher will share solution.

Now there are 11 dogs playing altogether.
How many big dogs joined them.

6 + _____ = 11

Use your number path to find the missing number. Remember, you are looking for a friendly number.
[Teacher pauses to allow students time to model on their own.]

Are you ready?
Did you find 10 to be the friendly number between 6 and 11?
[Pause]
Me too! I bet I can draw my model to look like yours.
[Teacher draws model. Draw circle around 6. Draw one big hop from 6 to 10. Draw one big hop from 10 to 11.]
How did I do?
[Pause]
What's that? Did you say I have something missing from my model?
[Pause]
Oh yeah! I need to label my hops. Thank you for reminding me.
[Teacher labels first hop with the number 4. Teacher labels second hop with the number 1]
Now, that looks better!

Did you get 5 as your missing number?
[Pause]
How did you know?
[Pause]
Yes! We can add our hops. Four plus one equals 5.
[Teacher writes 4 + 1 = 5]
That means our missing number is 5! 6 plus 5 equals 11.
[Teacher writes 6 + __5___ =11]
So, we know 5 big dogs joined 6 small dogs to give us 11 dogs in all.

[Additional problems if needed]

Kim buys 2 ice cream cones.
Then she buys some more to share with her friends.
Now she has 13 ice cream cones.
How many ice cream cones did Kim buy?

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

There are 5 birds in the tree.
Some more birds flew in the tree.
Now there are 14 birds in the tree.
How many birds flew in the tree?

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Independent Practice (3 min.)

Great work! Today, we reviewed how to find a missing number using addition and subtraction. 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 practicing 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. 9 + __ = 14

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

2. ___ + 6 = 14

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

3. ___ + 5 = 15

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Closing (1 min.) **I enjoyed reviewing how to use friendly numbers 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!**	