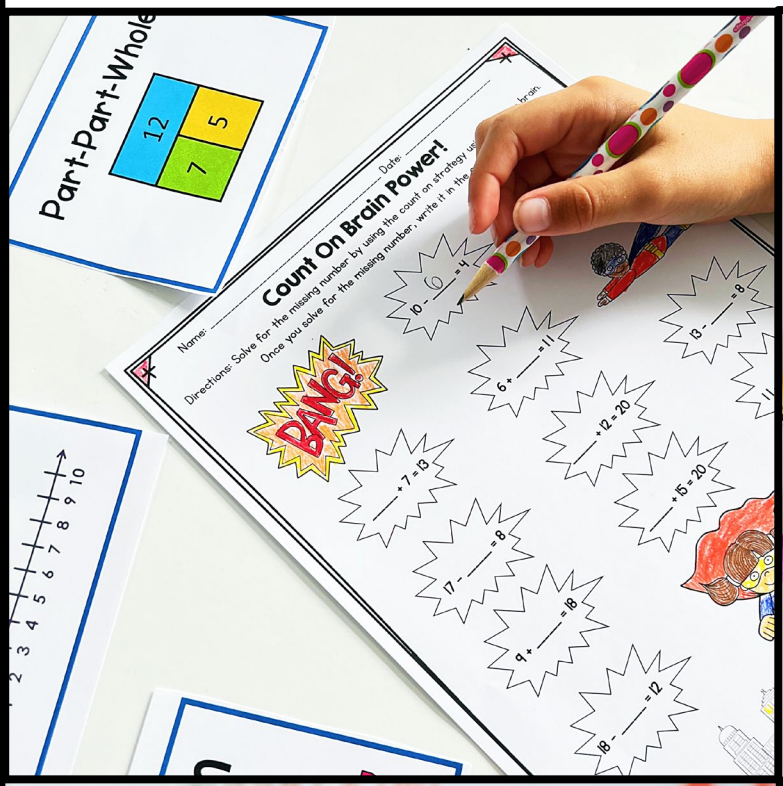
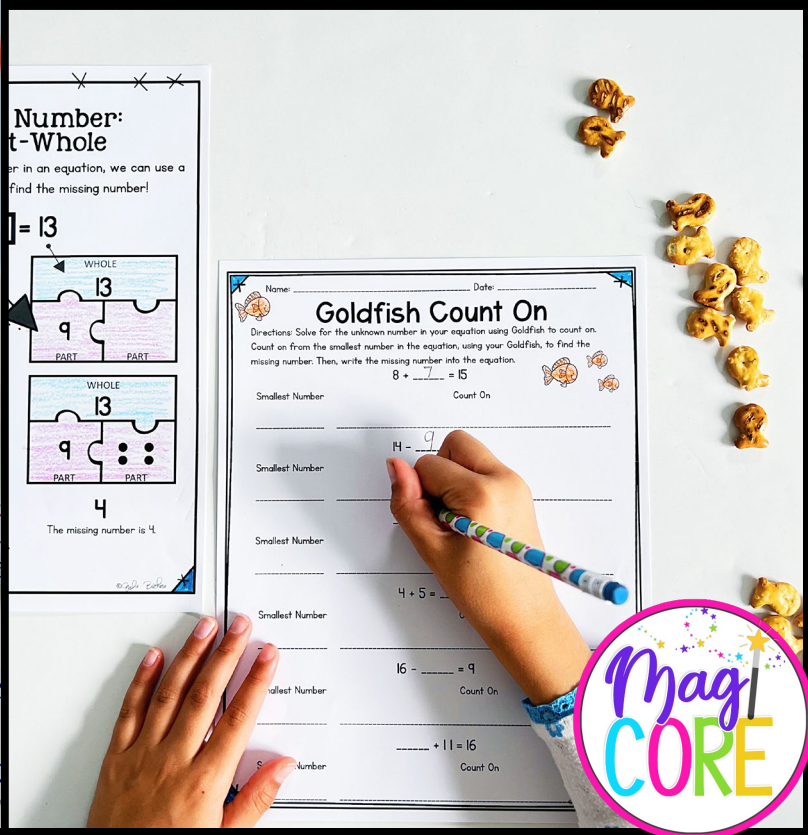
UNKNOWN NUMBER





Make Learning Fun!
Original song and video to introduce and reinforce the skill.


Find the Unknown: Count On
Name:
Date:

e can use a
mber!

PART

PART

mber is 4.

Name: _____ Date: _____

Goldfish Count On

Directions: Solve for the unknown number in your equation using Goldfish to count on. Count on from the smallest number in the equation, using your Goldfish, to find the missing number. Then, write the missing number into the equation.

8 + _____ = 15

Smallest Number Count On

_____ _____

14 - _____ = 5

Smallest Number Count On

_____ _____

_____ + 9 = 17

Smallest Number Count On

_____ _____

4 + 5 = _____

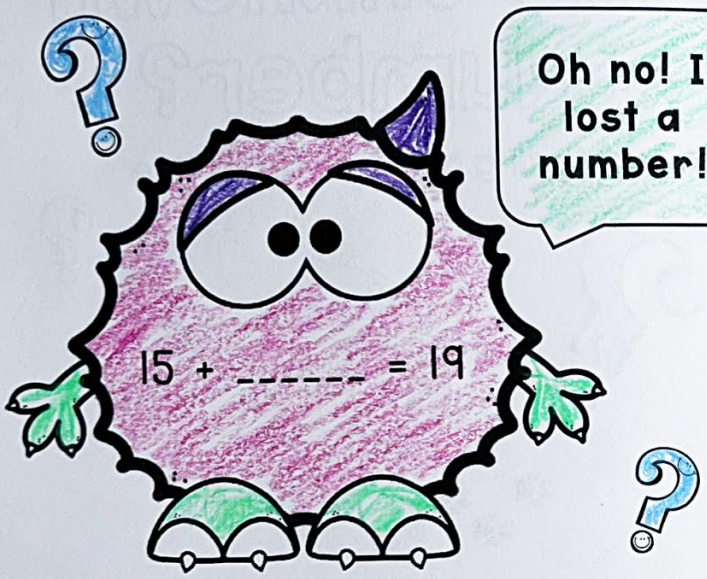
Smallest Number Count On

_____ _____

Smallest Number

_____ _____

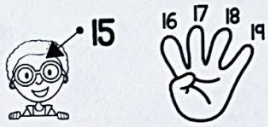
Sometimes in math, equations lose one of their numbers!



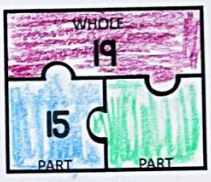
These equations need YOUR help to find their unknown numbers!

As a number detective, you have 3 strategies you can use to help the equations find their missing number!

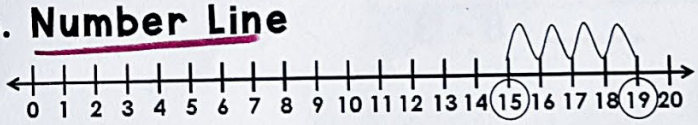
1. **Count On**



2. **Part-Part-Whole**



3. **Number Line**



These equations need YOUR help to find t r unknown numbe

UNKNOWN NUMBER

1. Pedagogy
2. Lesson Plans
3. Vocabulary Cards
4. Unknown Number: Song & Video
5. Anchor Chart: Count On
6. Goldfish Count On
7. Find the Unknown: Count On
8. Count On Brain Power
9. Anchor Chart: Part-Part-Whole
10. Part-Part-Whole Mat
11. Part-Part-Whole Puzzle Addition
12. Part-Part-Whole Subtraction
13. Anchor Chart: Number Line
14. Number Line Mat
15. Number Line Addition
16. Number Line Subtraction
17. Crack the Code
18. Mini book: Can you find the unknown number?
19. Unknown Number Detective Game
20. Problem Solver
21. Quiz
22. Unknown Number Word Problem Cards

Unknown Number

Solving for the unknown number in an equation can oftentimes be one of the most challenging units in first grade math. While students are used to solving a typical equation (ex. 5 + 4 = _), the concept of solving for a missing part (ex. 12 + _ = 6) is much more abstract for them. Understanding how to solve for the unknown number in an equation is a vital skill in developing a student's algebraic thinking, as well as their ability to use mathematical critical thinking. Because the concept of solving for the unknown number is so challenging, the best approach is to provide students with ample opportunity to practice, as well as a variety of strategies to choose from. For this reason, the unit focuses on teaching various ways to solve for the missing number in an equation.

The first strategy that will be highlighted is the "Count On" approach. Students will learn how to count on from a part of the equation using manipulatives first, and then mental math to solve for the unknown number. Then, the unit will move to focus on the "Part-Part-Whole" model. In light of the complexity of the concept, the part-part-whole portion of the unit will be broken up between addition equations and subtraction equations. After, the final strategy highlighted will be the "Number Line." Again, this strategy will provide an opportunity to solve addition equations one day and subtraction the next. It is important to provide students with many approaches to solving for the unknown number because you never know which strategy they might take to. Students should understand the various strategies they can use to solve for the unknown in an equation and be able to successfully implement the strategy of their choice.

Unknown Number

Day 1: Introduce finding the unknown number and counting on strategy.

Mini Lesson: Introduce the purpose of the lesson today: to find the unknown number using "counting on."

- Show students the unknown number unit vocabulary cards. Tell the students the meaning of each term.
- Watch the Unknown Number Song.
- Introduce the "Counting On" anchor chart, while also modeling the strategy. Model with the addition equation on the chart, as well as a subtraction equation. Ex. 10 - ___ = 3
    - The reason we use the "start at the smallest number and count up" approach when counting on to solve for an unknown in addition and subtraction equations is because addition is typically easier for students.
- Model how to solve unknown number equations, both addition and subtraction, using counting on with manipulatives. Be sure to stress that, no matter the equation (subtraction or addition), they need to start at the smallest number and count on from there.
- *Teacher note: counting on is an important strategy to teach and will work well for some students. However, the strategy becomes challenging with larger numbers, for this reason, encourage students to eventually adopt and embrace the strategies they will learn later in the unit.*

Guided Practice: Hand out the Goldfish unknown number boards to students. Introduce the fun manipulative of Goldfish! Tell students that they need to use the Goldfish as their manipulative to count on to solve their unknown number equations.

Independent Practice: Students work on their Find the Unknown: Count On worksheets using manipulatives as aids. You can let them keep using Goldfish here or switch to another manipulative.

Day 2: Finding the unknown number using the counting on strategy

Mini Lesson: Introduce the purpose of the lesson today: to find the unknown number using counting on.

- Review the unknown number vocabulary cards.
- Watch and sing the Unknown Number Song.
- Review the "Counting On" anchor chart and have a few students demonstrate how to count on mentally to solve for the missing number.

Guided Practice: Write several equations up on the board and have students solve them using the counting on strategy. Ask students to share out their answers.

Independent Practice: Students work on mental counting with their Count On Brain Power worksheets.

Day 3: Finding the unknown number using the Part-Part-Whole strategy for addition

Mini Lesson: Introduce the purpose of the lesson today: to find the unknown number using part-part-whole for addition equations.

- Review unknown number unit vocabulary cards and the Unknown Number Song.
- Introduce a new strategy for solving for an unknown number. Introduce the "Part-Part-Whole" anchor chart.
- Model solving for the unknown number in addition equations using manipulatives and a part-part-whole mat. Model, as well, by using your pencil to make circles instead of manipulatives.
- Be sure to highlight how to take the elements of an equation and plug them into the part-part-whole mat. Show how to identify the "part" and how to identify the "whole."

Guided Practice: Print off and laminate a Part-Part-Whole mat for each student to use throughout the unit. Write several missing number equations on the board and have students use their part-part-whole mats and manipulatives to solve for the unknown number.

Independent Practice: Students work on their part-part-whole addition cut-and-paste worksheet.

Day 4: Finding the unknown number using the Part-Part-Whole strategy for subtraction

Mini Lesson: Introduce the purpose of the lesson today: to find the unknown number using part-part-whole for subtraction equations.

- Review unknown number unit vocabulary cards and the Unknown Number Song.
- Review the "Part-Part-Whole" anchor chart and explain that you will be using it to solve subtraction equations.
- Model solving for the unknown number in subtraction equations using manipulatives and your part-part-whole mat. Model, as well, by using your pencil to make circles instead of manipulatives. Again, this can be tricky, so be sure to highlight how in subtraction equations we plug the largest number into the whole part of the mat and solve for the missing part.

Guided Practice: You might need to spend a good portion of the lesson in guided practice, as solving for an unknown number in a subtraction equation can be very challenging. Write several missing number equations on the board and have students use manipulatives and their part-part-whole mats to solve for the unknown number.

Independent Practice: Students complete the part-part-whole subtraction worksheet.

Day 5: Finding the unknown number using a number line for addition

Mini Lesson: Introduce the purpose of the lesson today: to find the unknown number using a number line for addition equations.

- Review unknown number unit vocabulary cards and the Unknown Number Song.
- Introduce the "Number Line" anchor chart.
- Model solving for the unknown number in addition equations using the number line.

Guided Practice: Print and laminate number lines for each student to use. Write several missing number equations on the board and have students use their number lines to solve for the unknown number. Ask some students to share out and discuss how they found their answer.

Independent Practice: Students complete the number line addition worksheet.

Day 6: Finding the unknown number using the number line for subtraction

Mini Lesson: Introduce the purpose of the lesson today: to find the unknown number using a number line for subtraction equations.

- Review unknown number unit vocabulary cards and the Unknown Number Song.
- Review the "Number Line" anchor chart.
- Discuss the difference in the direction you use when doing subtraction on a number line.
- Model solving for the unknown number in subtraction equations using the number line.

Guided Practice: Write several missing number equations on the board and have students use their number lines to solve for the unknown number. Ask some students to share out and discuss how they found their answer.

Independent Practice: Students work on the number line subtraction worksheet.

Day 7: Finding the unknown number using a strategy of choice for addition and subtraction

Mini Lesson: Introduce the purpose of the lesson today: to find the unknown number using a strategy of choice for addition and subtraction equations.

- Review the unknown number unit vocabulary cards, the Unknown Number Song, and the 3 strategy anchor charts.
- Ask a few students to come up and model how to solve using count on, part-part-whole, and a number line for a missing number addition equation and a missing number subtraction equation.

Guided Practice: Introduce the activity "Crack the Code". For this activity, you will work whole group to solve several missing number equations, both addition and subtraction, using a strategy of choice. With each missing number identified, you will add that number to a code. Once the code is complete, you will check to see if it is correct using your answer sheet. If it is correct, the class wins!

Independent Practice: Students will work in pairs or small groups to play "Crack the Code" with a new code. Once student pairs/groups finish their code, have them check their answers with you. If they are correct, they can win a little prize. This can be something small, ex. a pencil, a piece of candy, a sticker, etc. if they are incorrect, have them go back and keep trying.

Day 8: Review all the strategies used to solve for the unknown number.

Mini Lesson: Introduce the purpose of the lesson today: to find the unknown number using a strategy of choice.

- Review the unknown number unit vocabulary, the Unknown Number Song, and all three anchor charts: Counting On, Part-Part-Whole, and Number Line.
- Discuss all the strategies students have learned for solving for the unknown number in an equation.

Guided Practice: Introduce the review mini book and share with students how it will help them practice all 3 strategies and help them decide which strategy they prefer.

Independent Practice: Students work on completing their review mini books.

Day 9: Review all the strategies used to solve for the unknown number.

Mini Lesson: Introduce the purpose of the lesson today: to find the unknown number using a strategy of choice.

- Review the unknown number unit vocabulary, the Unknown Number Song, and all three strategies: Counting On, Part-Part-Whole, and Number Line.
- Review student mini books.

Guided Practice: Introduce the Unknown Number Detective Game. In this game, students will work in pairs to place the correct missing number in the correct equation. Print and laminate this game to use as a center. Students are free to use whatever strategy they choose to solve for the missing number. Give the students time to engage in this game before transitioning to independent practice.

Independent Practice: Students complete the problem solvers.

Day 10: Solve for the unknown number

Mini Lesson: Introduce the purpose of the lesson today: to find the unknown number using a strategy of choice.

- Review the unknown number unit vocabulary, the Unknown Number Song, and all three strategies: Counting On, Part-Part-Whole, and Number Line.

Guided Practice: Optional to have students play the partner game from the day before, the Unknown Number Detective Game, as a review.

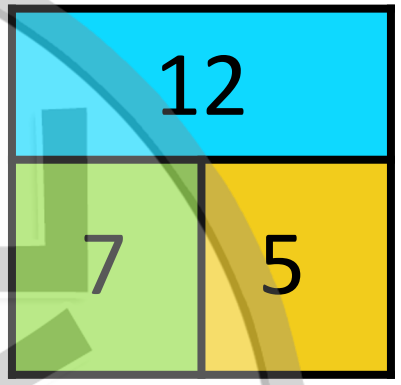
Independent Practice: Finding the Unknown Number Quiz

***BONUS Activity:** Unknown Number Word Problem Card Deck

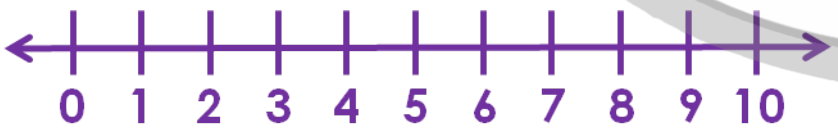
Unknown Number

$12 - \square = 7$

Part-Part-Whole



Number Line



Solving for an Unknown Number

CHORUS
When your solving for an unknown number there are 3 strategies

You can
Count on (4x)

Or you can use
Part, Part, Whole (4x)

Or you can
Seek that number you wish to find, when you use the number line. 2x

INTERLUDE

VERSE
When you
(Count on)
Put the smallest number in your head.
(Count on)
Count up to the biggest number (That's the whole!)
(Count on)
Stop when you get to the biggest number.
(Count on)
The number you counted is the missing number.
(Count on)
The number you counted is the missing number.

When you use
Part, part, whole (4x)

Point to your part.
Then point to your whole.
Use your counters to find the missing part.
Counters can be coins.
Counters can be shapes.
Counters can be anything whatever it takes.

Seek that number you wish to find, when you use the number line. (2x)

Circle the part on the number line and then circle the whole.
Start at your part and jump up the number line until you reach the whole.
Count how many jumps you made to find the missing number.
Seek that number you wish to find when you use the number line.

CHORUS
When your solving for an unknown number there are 3 strategies

You can
Count on (4x)

Or you can use
Part, Part, Whole (4x)

Or you can
Seek that number you wish to find, when you use the number line. 2x

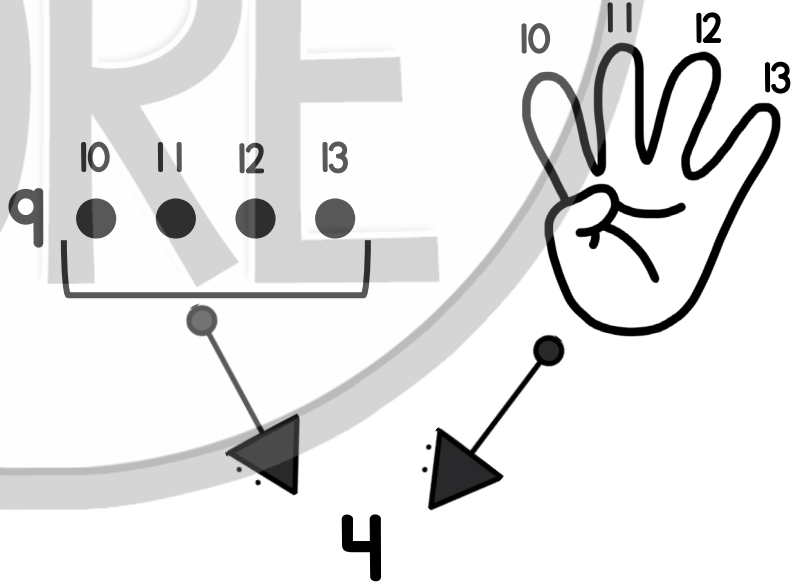
Unknown Number: Count On

When we have an unknown number in an equation, we can Count On to find the missing number!

$$9 + \square = 13$$

1. Put the smallest number in your head.

2. Count up to the biggest number, the whole.



3. Stop when you get to the biggest number. The number you counted is the missing number.

4

The missing number is 4.

$$9 + \boxed{4} = 13$$ ✓

Name: _____ Date: _____

Find the Unknown: Count On

Directions: Solve for the missing number by using the count on strategy with manipulatives.

Once you solve for the missing number, write it in the equation.

8 + _____ = 15

Count On

_____

10 - _____ = 4

Count On

_____

14 + _____ = 18

Count On

_____

13 - _____ = 2

Count On

_____

_____ + 5 = 16

Count On

_____

19 - _____ = 13

Count On

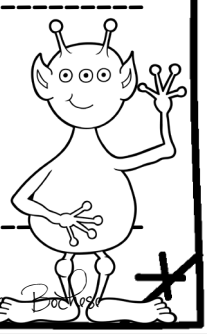
_____

_____ + 7 = 15

Count On

_____

3 = 12 - _____



Name: _____ Date: _____

Count On Brain Power!

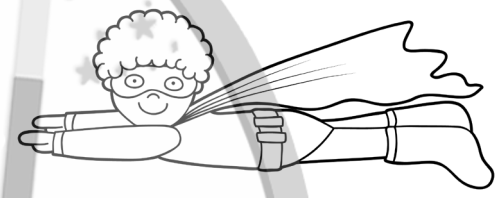
Directions: Solve for the missing number by using the count on strategy using just your brain. Once you solve for the missing number, write it in the equation.

10 - _____ = 4

14 + _____ = 18

_____ + 7 = 13

6 + _____ = 11



17 - _____ = 8

_____ + 12 = 20

13 - _____ = 8

9 + _____ = 18

_____ + 15 = 20

11 - _____ = 2

18 - _____ = 12

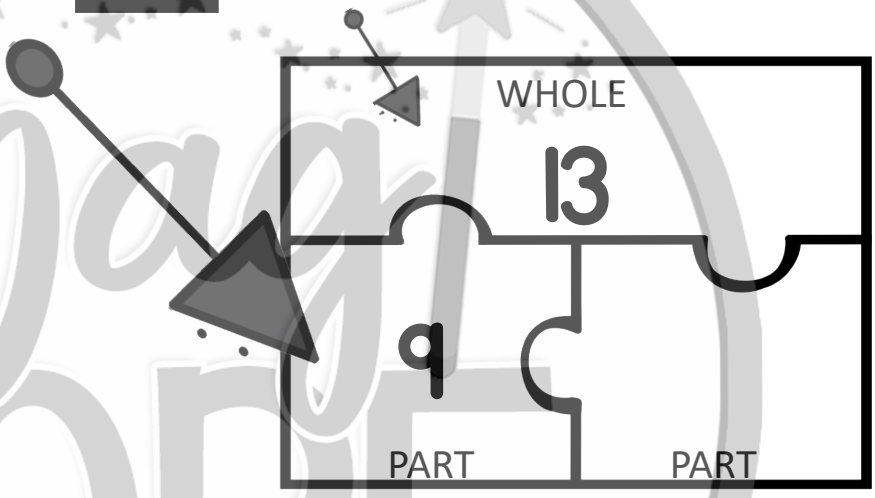
8 + _____ = 15

Unknown Number: Part-Part-Whole

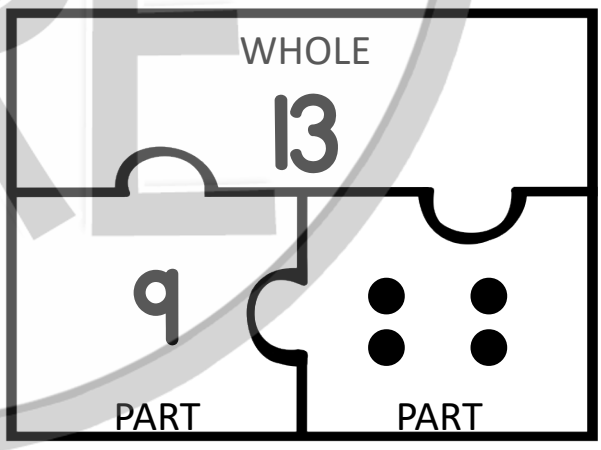
When we have an unknown number in an equation, we can use a Part-Part-Whole model to find the missing number!

$9 + \square = 13$

1. Identify your WHOLE and your PART.



2. Use manipulatives or your pencil to solve for the missing part.



4

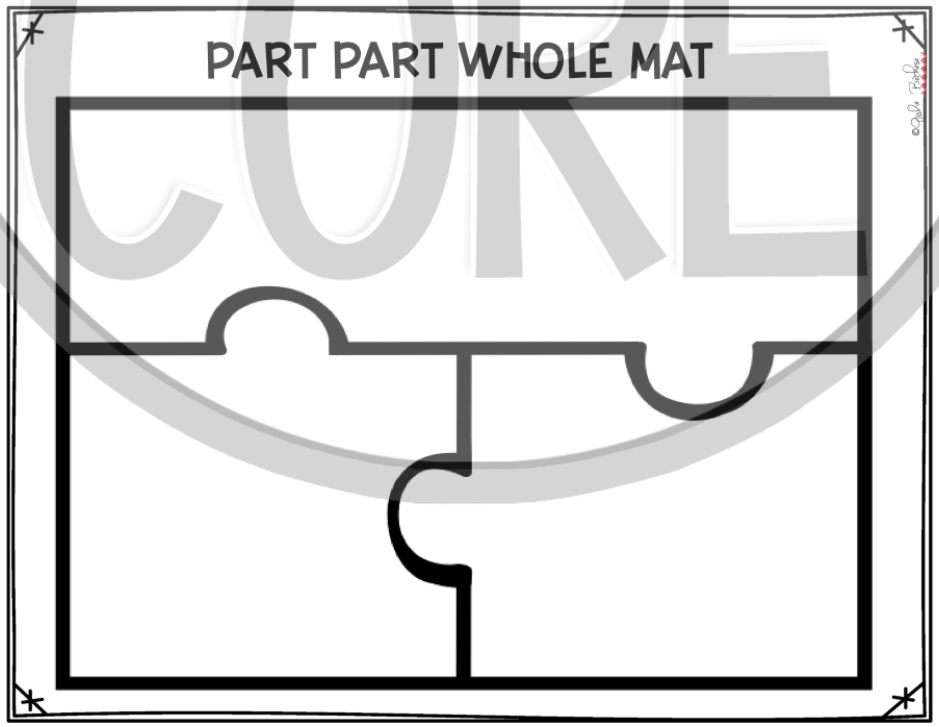
The missing number is 4.

$9 + \boxed{4} = 13$ ✓

PART-PART-WHOLE MAT

Directions:

Print out, cut in half, and laminate a Part-Part-Whole Mat for each student to use throughout the unit. You can have students keep these in their math journals/folders to use the rest of the year, or have a class set that you keep and pass out when necessary.

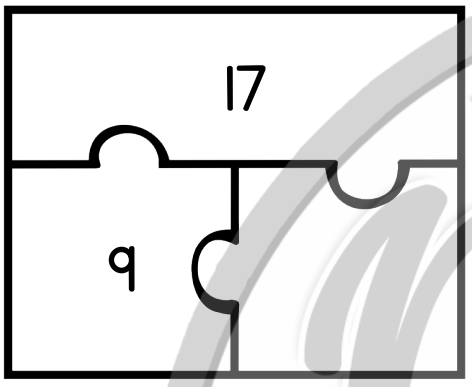


Name: _____ Date: _____

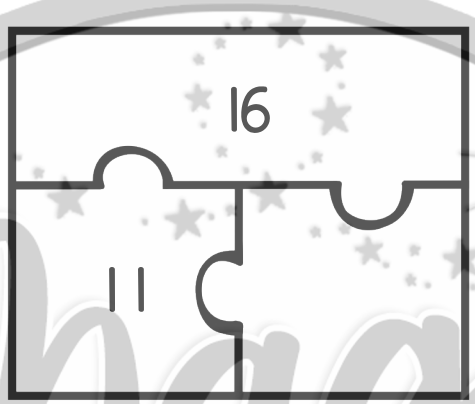
Part-Part-Whole Addition

Directions: Solve for the missing number by completing the Part-Part-Whole puzzle. Once you have found the missing number, cut out the correct part and glue it into the Part-Part-Whole puzzle.

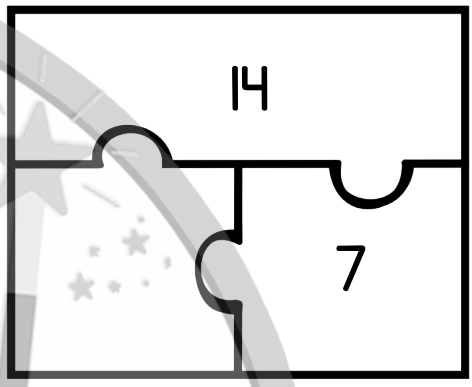
9 + _____ = 17



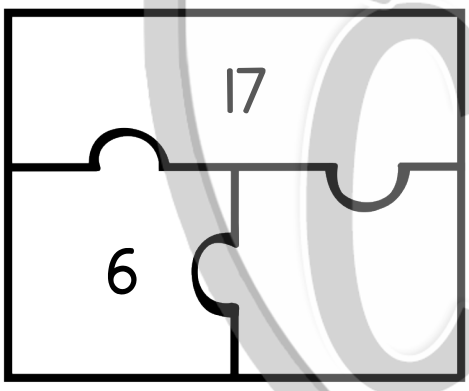
11 + _____ = 16



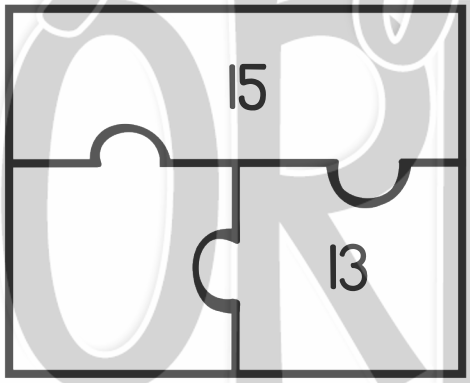
_____ + 7 = 14



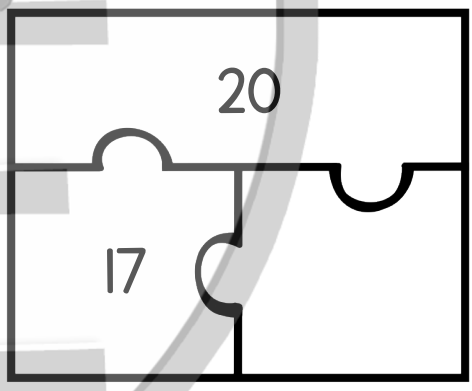
6 + _____ = 17



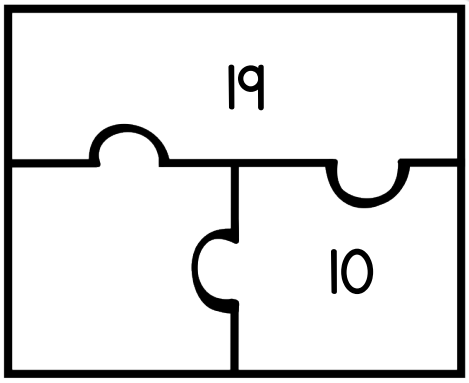
_____ + 13 = 15



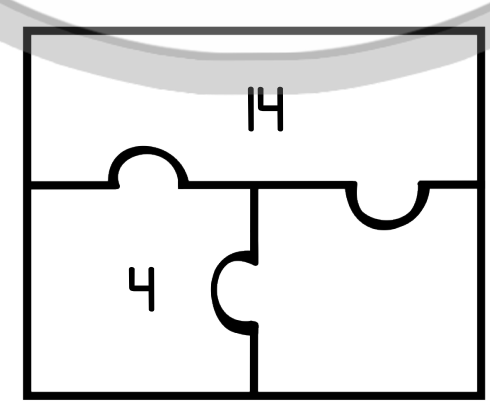
17 + _____ = 20



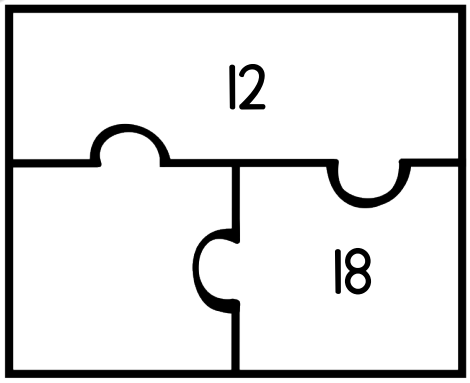
_____ + 10 = 19



4 + _____ = 14

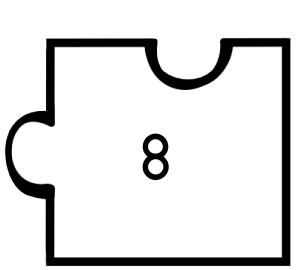


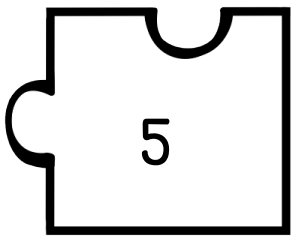
_____ + 12 = 18

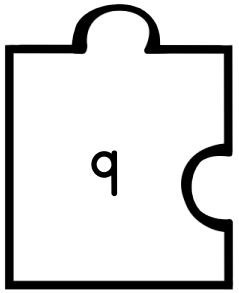


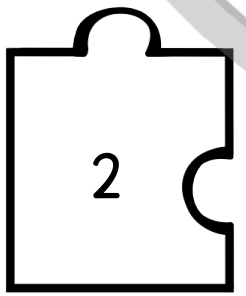
Directions:

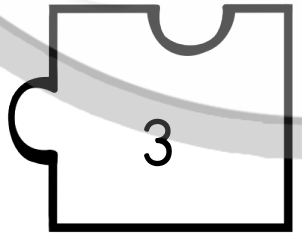
After you have solved for the missing part, cut out the part and glue it into the correct part-part-whole puzzle.











Directions:

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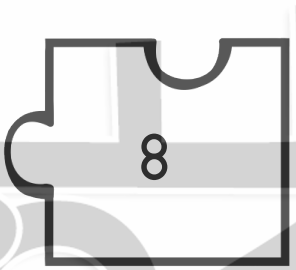
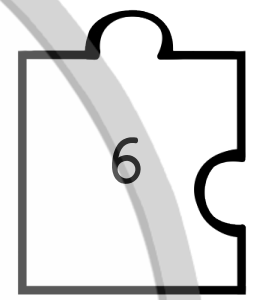
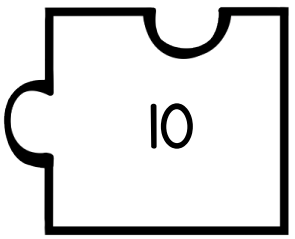
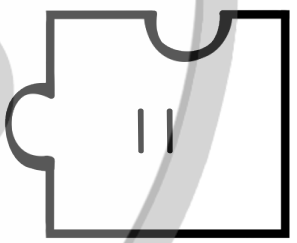
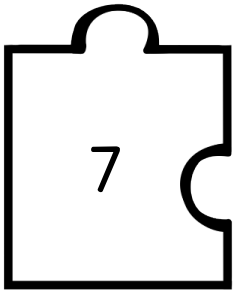
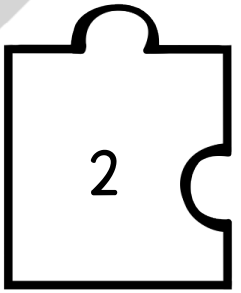


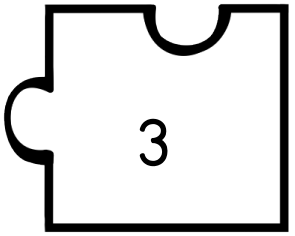










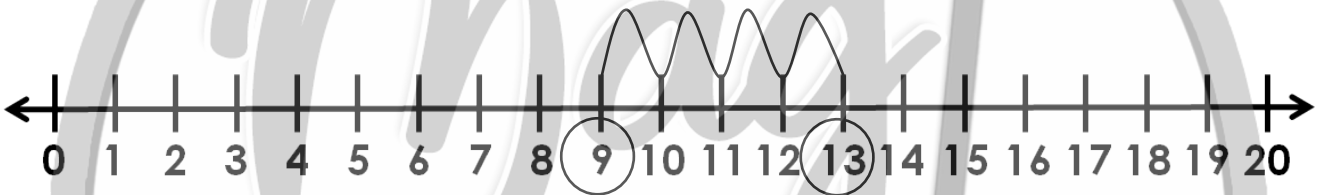


Unknown Number: Number Line

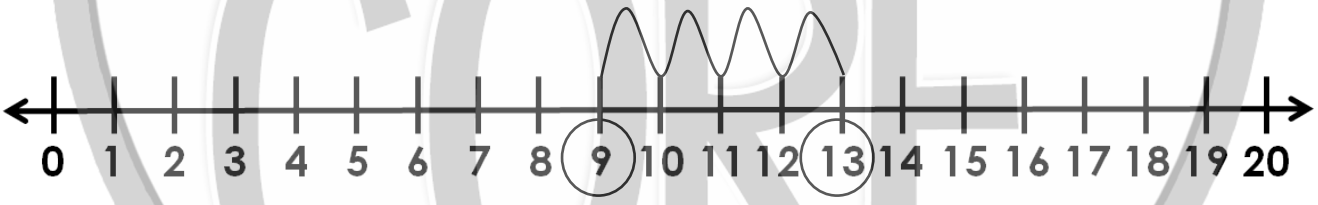
When we have an unknown number in an equation, we can use a Number Line to find the missing number!

$$9 + \square = 13$$

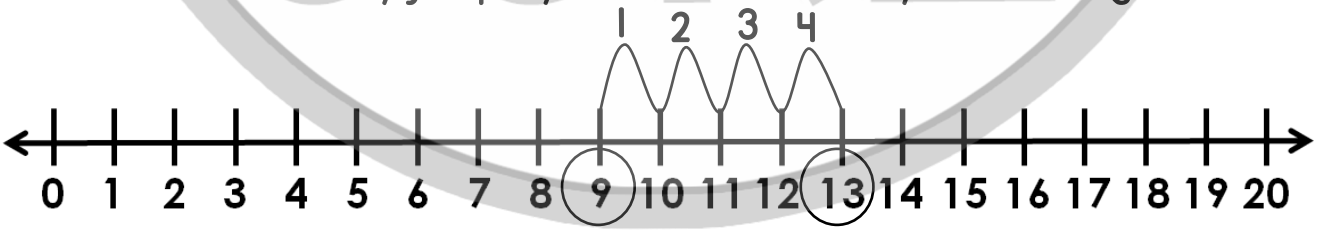
1. Identify the part and whole you know, and circle them on the number line.



2. Start at your part and jump up the number line to your whole.



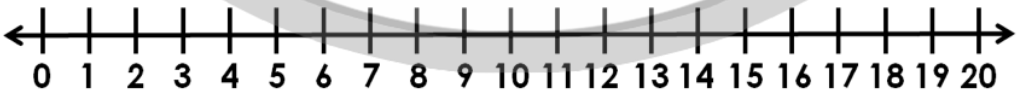
3. Count how many jumps you made. That is your missing number.

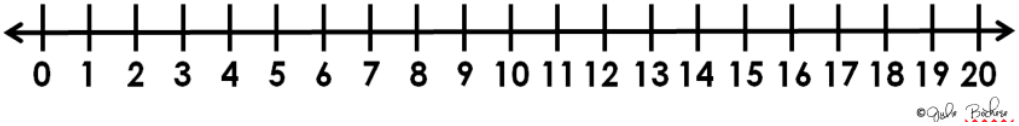


4

The missing number is 4.

$$9 + \boxed{4} = 13$$ ✓





NUMBER LINE MAT

Directions:

Print, cut out, and laminate a Number Line Mat for each student to use throughout the unit.

You can have students keep these in their math journals/folders to use the rest of the year, or have a class set that you keep and pass out when necessary.

NUMBER LINE

NUMBER LINE

NUMBER LINE

NUMBER LINE

Name: _____ Date: _____

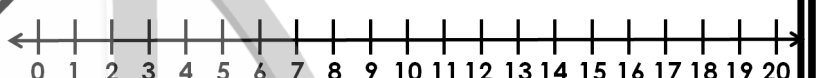
Number Line Addition

Directions: Solve for the missing number by using the number line.

Once you have found the missing number, write it in the equation.

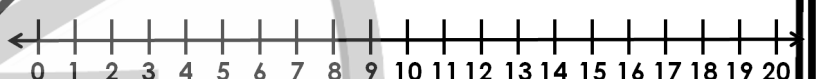
12 + ___ = 19

6 + ___ = 13



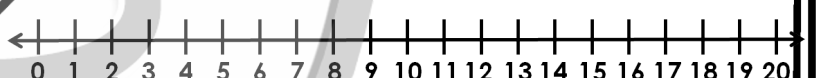
___ + 7 = 15

8 + ___ = 19



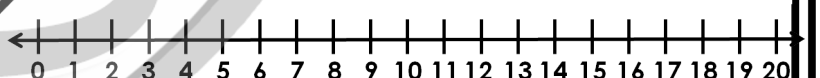
14 + ___ = 18

___ + 13 = 17

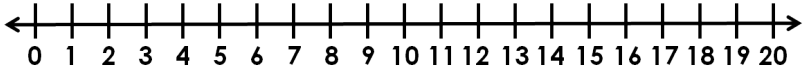


___ + 10 = 15

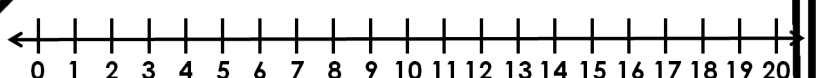
4 + ___ = 12



___ + 9 = 17



5 + ___ = 8

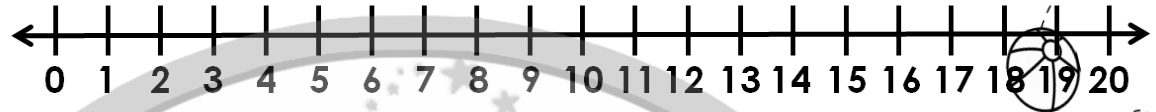


Name: _____ Date: _____

Number Line Subtraction

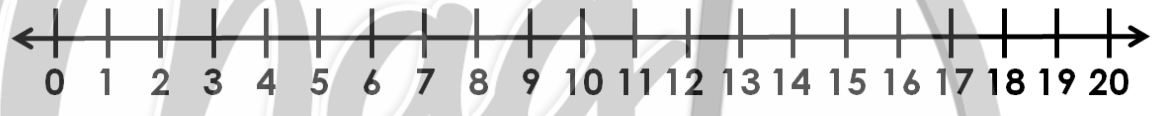
Directions: Solve for the missing number by using the number line.
Once you have found the missing number, write it in the equation.

18 - ___ = 11



13 = 18 - ___

20 - ___ = 4



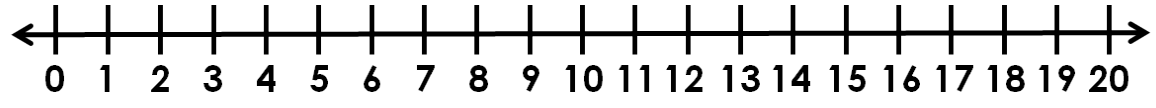
13 - ___ = 9

8 = 17 - ___

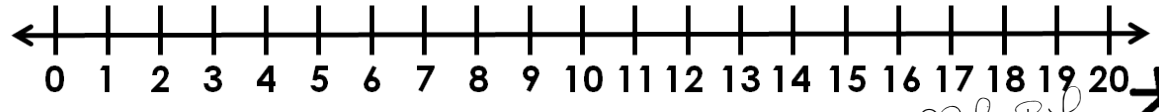
15 - ___ = 4

19 - ___ = 10

16 = 18 - ___



14 - ___ = 5



Crack The Code

For Crack The Code, you will first complete the activity whole-group during guided practice, followed by a small-group activity for the independent practice portion of the lesson. In the whole-group version, students will solve for the missing numbers in 7 equations. These missing numbers will be used for the code. If the missing number sequence is correct, the class wins and has cracked the code. For independent practice, students will complete the same activity with new equations, 10 problems, and a new code to crack. The groups can check with you once they think they have cracked the code. If they are correct, you can reward them with a small prize. If they are incorrect, have them go back and keep trying.

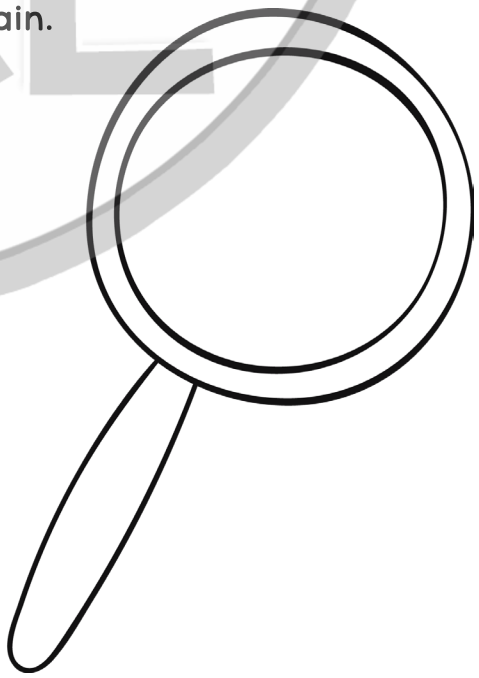
This is a super fun activity for students and makes the challenging task of solving for the unknown number so much more exciting. For strategy, require students to use whatever strategy you feel the class needs more practice with, or you can allow students to use whichever strategy they prefer.

Crack The Code

Whole Group

Whole-Group Directions:

1. To prepare, print and cut out the code answer and tuck it into a folder or envelope. On the front of the envelope write "Top Secret."
2. One at a time, write the code equations 1-7 up on the board and have students solve for the missing number.
3. Ask students to share their answers and write the solved unknown numbers into the code solver boxes.
4. Once you have all 7 equations solved, check and see if your class's code is correct.
5. If it is correct, the class wins. If it is incorrect, have the class work through the incorrect equations again.



Crack The Code

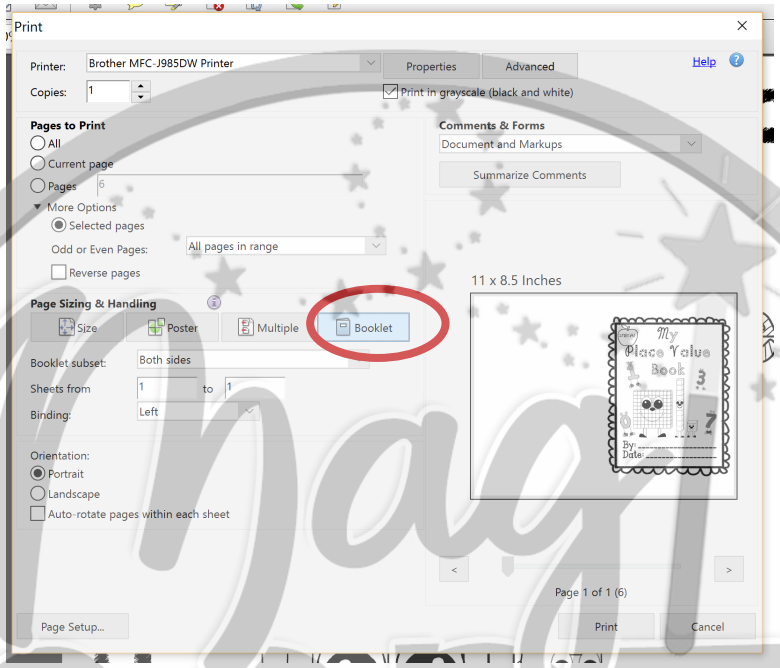
Small Group Equations

1. 18 - _____ = 8
2. 5 + _____ = 11
3. 9 - _____ = 3
4. _____ + 5 = 17
5. 15 - _____ = 2
6. 9 + _____ = 17
7. 20 - _____ = 4
8. _____ + 2 = 20
9. 16 - _____ = 12
10. 17 - _____ = 3

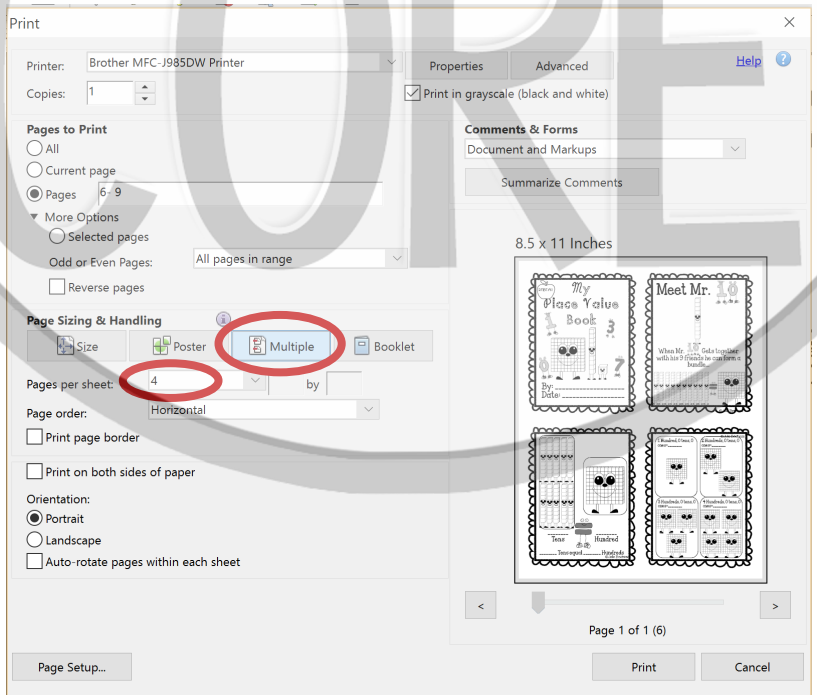
Mini Book Printing Tips

To save paper, you can print using the following options:

Half Page: Select "booklet" under sizing.



Mini Books (4 per page): Select "Multiple" under sizing. Select 4 per sheet.



Print as many pages as you would like to use Number of the Day.

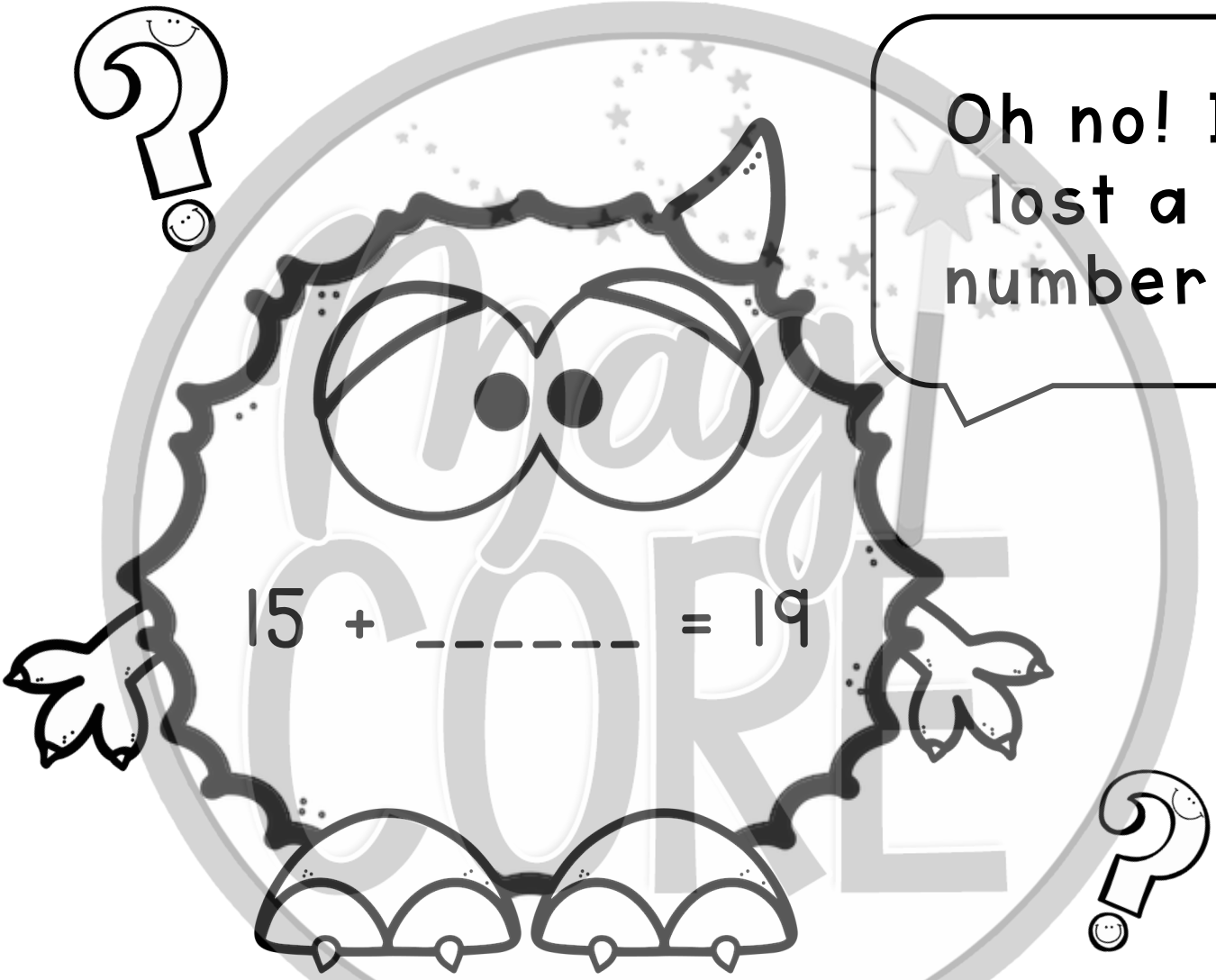
Can you find the Unknown Number?

Missing Number Detective

By: _____

Date: _____

Sometimes in math, equations lose one of their numbers!

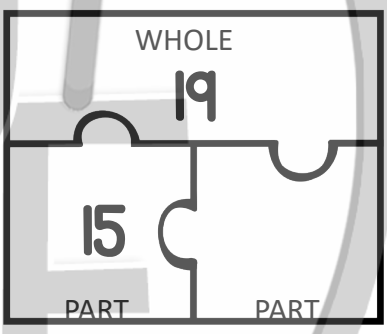


These equations need YOUR help to find their unknown numbers!

As a number detective, you have 3 strategies you can use to help the equations find their missing number!

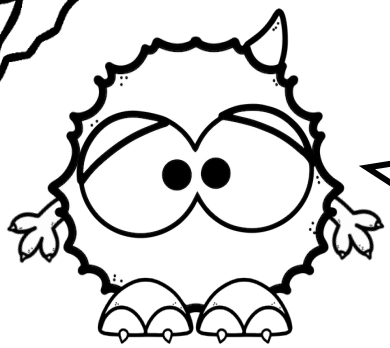
1. Count On

2. Part-Part-Whole



3. Number Line

These equations need YOUR help to find their unknown numbers!



These equations need your help! Use the Count On strategy to find the unknown numbers.

Once you find it, write the missing number in the equation.

16 + _____ = 20

14 - _____ = 5

_____ + 8 = 13

18 - _____ = 15

9 + _____ = 16

12 - _____ = 7

Unknown Number Detective Game

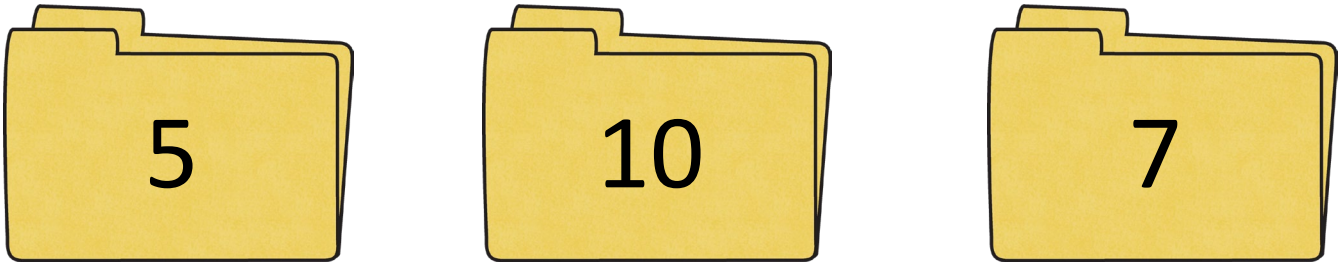
Directions:

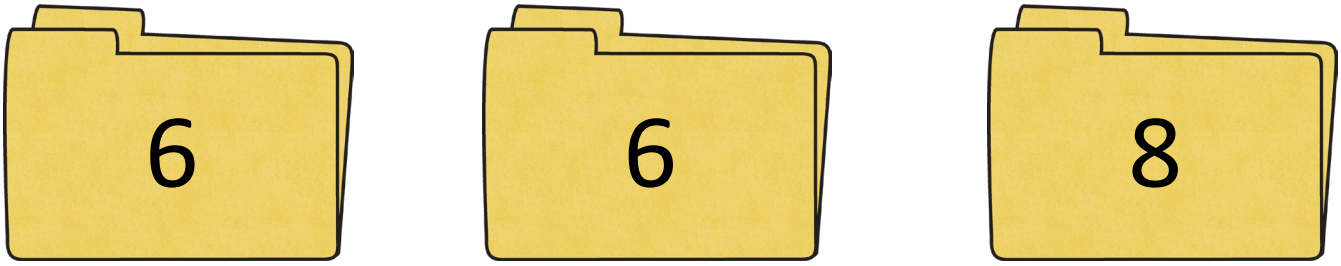
1. Print suitcase cards and file cards.
2. Laminate and cut out.
3. Place the pieces in a gallon-sized bag. You can also include a copy of the part-part-whole mat and a number line in the bag as well.
4. Students solve the unknown number equations. Once they have solved the equation on the briefcase, they find the file that has the matching number on it and place the two together. This game can be played individually or in pairs.

Label

Unknown Number Detective Game

Directions: Solve for the unknown number in the equation. Match the right number on the file with its equation on the briefcase.





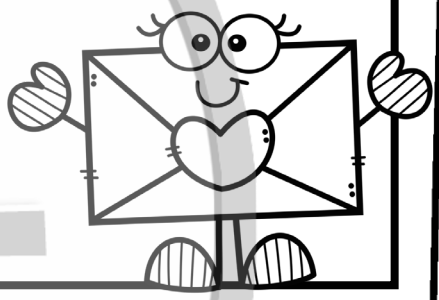
Name: _____ Date: _____

Problem Solver

Solve the word problems. Write the completed equation in the box below.

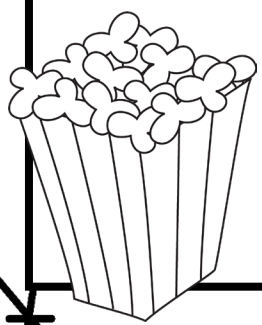
1. Nalda made 18 Valentine's Day cards for her classmates. She gave some of her Valentine's cards out. Now, she has 12 cards left. How many Valentine's Day cards did Nalda give out?

18 - _____ = 12



2. Zack ate 10 pieces of popcorn before the movie started. During the movie, Zack ate some more popcorn. At the end of the movie, Zack had eaten 19 pieces of popcorn. How many pieces of popcorn did Zack eat during the movie? Write the full equation below.

_____ + _____ = _____



Name: _____ Date: _____

Unknown Number Quiz

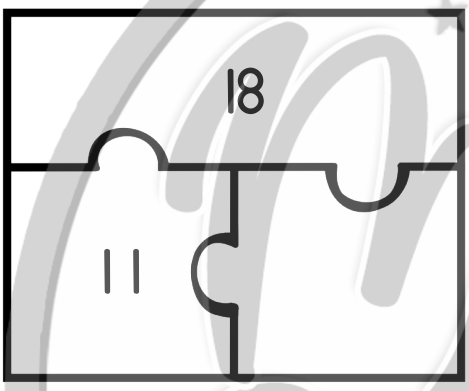
Use the **Count On** strategy to solve for the unknown number in these equations:

1. 14 - _____ = 8

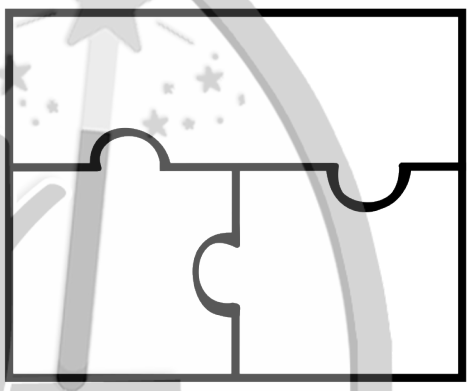
2. 7 + _____ = 17

Use the **Part-Part-Whole** strategy to solve for the unknown number in these equations:

3. 18 - _____ = 11



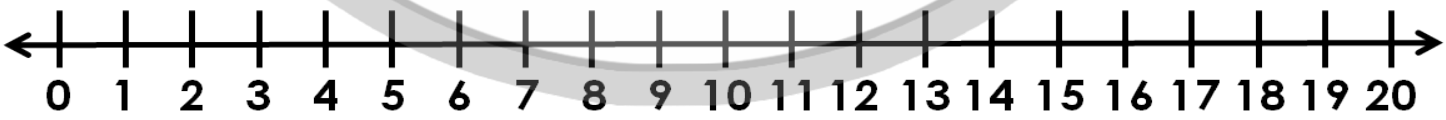
4. 12 + _____ = 16



Use the **Number Line** strategy to solve for the unknown number in these equations:

5. 20 - _____ = 14

6. _____ + 10 = 18



Use **a strategy of choice** to solve for the unknown number in these equations:

7. 14 - _____ = 8

8. 7 + _____ = 17

9. _____ + 6 = 20

10. 11 - _____ = 3