Just in Time Quick Check

Standard of Learning 1.CE.1

Strand: Computation and Estimation

Standard of Learning 1.CE.1

The student will recall with automaticity addition and subtraction facts within 10 and represent, solve, and justify solutions to single-step problems, including those in context, using addition and subtraction with whole numbers within 20.

Students will demonstrate the following Knowledge and Skills:

a) Recognize and describe with fluency part-part-whole relationships for numbers up to 10 in a variety of configurations.

b) Demonstrate fluency with addition and subtraction within 10 by applying reasoning strategies (e.g., count on/count back, one more/one less, doubles, make ten).

c) Recall with automaticity addition and subtraction facts within 10.

d) Investigate, recognize, and describe part-part-whole relationships for numbers up to 20 in a variety of configurations (e.g., beaded racks, double ten frames).

e) Solve addition and subtraction problems within 20 using various strategies (e.g., inverse relationships: if 9 + 3 = 12 then 12 - 3 = 9; decomposition using known sums/differences: 9 + 7 can be thought of as 9 decomposed into 2 and 7, then use doubles, 7 + 7 = 14; 14 + 2 = 16 or decompose the 7 into 1 and 6; make a ten: 1 + 9 = 10; 10 + 6 = 16).

f) Represent, solve, and justify solutions to single-step addition and subtraction problems (join, separate, and part-part-whole) within 20, including those in context, using words, objects, drawings, or numbers.

g) Determine the unknown whole number that will result in a sum or difference of 10 or 20 (e.g., 14 - __ = 10 or 15 + __ = 20).

h) Identify and use (+) as a symbol for addition and (-) as a symbol for subtraction.

i) Describe the equal symbol (=) as a balance representing an equivalent relationship between expressions on either side of the equal symbol (e.g., 6 and 1 is the same as 4 and 3; 6 + 1 is balanced with 4 + 3; 6 + 1 = 4 + 3).

j) Use concrete materials to model, identify, and justify when two expressions are not equal (e.g., 10 - 3 is not equal to 3 + 5).

k) Use concrete materials to model an equation that represents the relationship of two expressions of equal value.

l) Write an equation that could be used to represent the solution to an oral, written, or picture problem.

Just in Time Quick Check

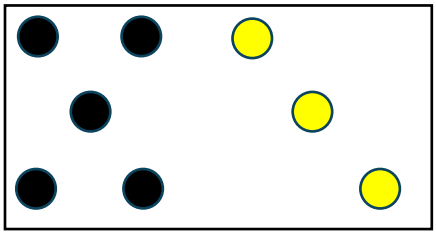
Just in Time Quick Check Teacher Notes

Supporting and Prerequisite SOL: K.CE.1, 1.PS.1, 1.PFA.1

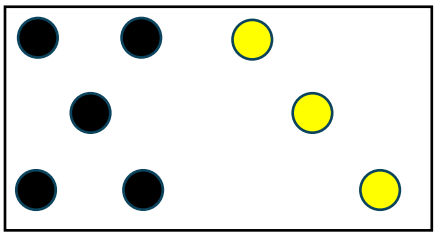
Just in Time Quick Check 1.CE.1

*Note to teachers: Have students share their strategies orally or in writing to determine how they solved each problem in #3 and #6.

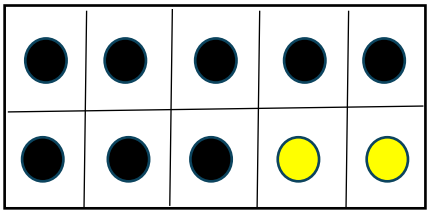
1. What is one addition number sentence you can create to go with the picture? Write the number sentence.



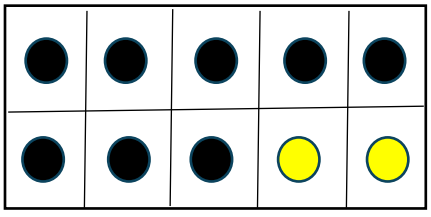
What is one subtraction number sentence you can create to go with the picture? Write the number sentence.



2. What is one addition number sentence you can create to go with the picture? Write the number sentence.



What is one subtraction number sentence you can create to go with the picture? Write the number sentence.



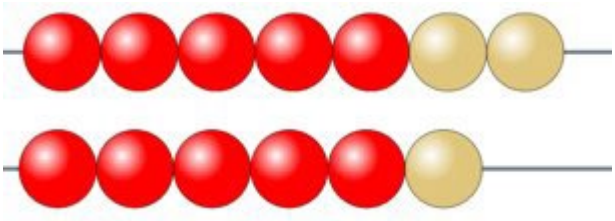
3. Determine each sum or difference.
    a) 5 + 1 =

    b) 8 – 2 =

    c) 4 + 4 =

    d) 9 – 4 =

4. What is one addition sentence you can create to go with the picture? Write the number sentence.



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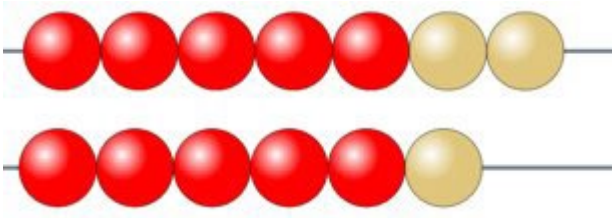
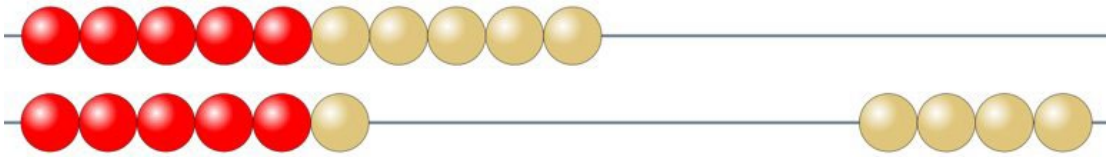
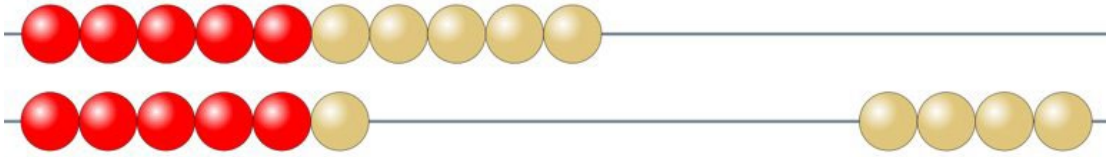


5. What is one addition sentence you can create to go with the picture? Write the number sentence.



What is one subtraction sentence you can create to go with the picture? Write the number sentence.



6. Determine each sum or difference.

   a) 11 + 7 =

   b) 18 – 9 =

   c) 14 + 4 =

   d) 15 – 5 =

7. Circle the number sentence that could be used to solve this problem.

   Corey has 6 cookies. He gives 4 cookies away. How many cookies does Corey have now?

   6 + 4 = 10 6 – 4 = 2

8. Aniya has 7 chocolate chip cookies and 9 sugar cookies. How many cookies does she have? Draw a picture and write a number sentence to solve the problem.

9. Ellis has 5 dinosaur toys. For his birthday he gets some more. Now he has 11 dinosaur toys. How many dinosaur toys did he get for his birthday? Draw a picture and write a number sentence to solve the problem.

10. Mrs. Smith has 10 stickers. She gives some to Caroline. She has 6 stickers left. How many stickers did Mrs. Smith give to Caroline? Draw a picture and write a number sentence to solve the problem.

11. Determine each missing number.

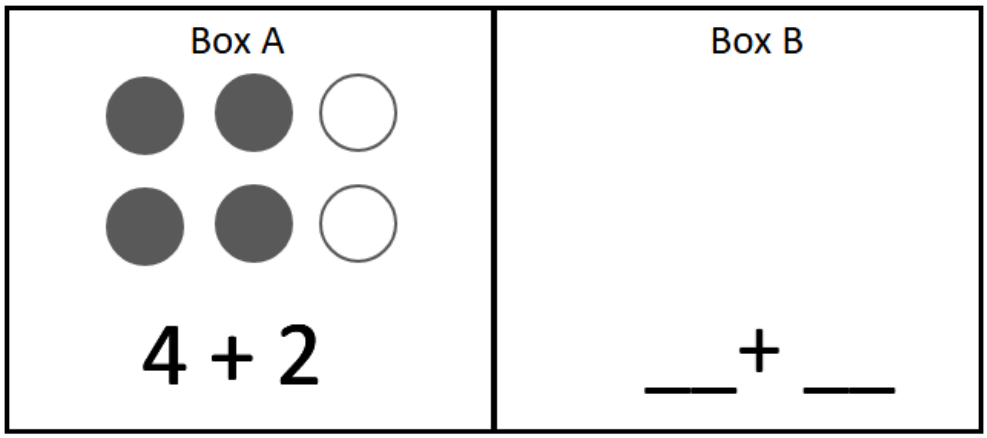
a) 6 + _____ = 10

b) 2 + _____ = 10

c) _____ + 15 = 20

d) 9 + _____ = 20

12. The counters in Box A show the combination of four plus two. Draw a different combination of counters in Box B that is equal to the number of counters in Box A. Write an addition statement to represent the counters in Box B.



13. Circle “is equal to” or “is not equal to” to describe the relationship between these expressions.

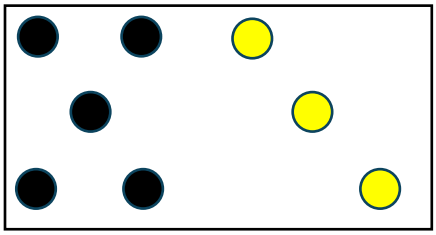
a)	7 + 1	is equal to is not equal to	0 + 8
b)	6 + 3	is equal to is not equal to	5 + 4
c)	1 + 4	is equal to is not equal to	2 + 3
d)	2 + 5	is equal to is not equal to	7 + 1

1.CE.1 Just in Time Quick Check Teacher Notes

Common Errors/Misconceptions and their Possible Indications

*Note to teachers: Have students share their strategies orally or in writing to determine how they solved each problem in #3 and #6.

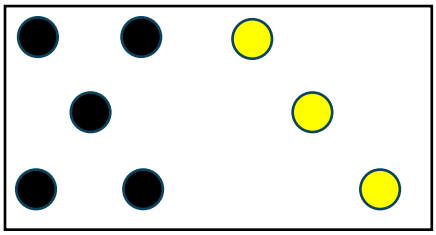
1. What is one addition number sentence you can create to go with the picture? Write the number sentence.



Some students will struggle to solve the number sentence they write because of a counting on error. They may immediately see the 5 dots, but then think/say 5, 6, and 7 for the yellow dots, resulting in the total being one short. These students will benefit from number sense routines that allow students to solve problems in multiple ways and share their thinking with their peers. In addition, these opportunities may introduce students to more efficient strategies, which may enhance their ability to flexibly compose/decompose numbers to 10 and build greater fluency.

Some students may resort to counting each dot and will make an error in their count. They may miscount by either double counting a dot, resulting in having one too many, or skipping over a dot, resulting in having too few. Students struggling with one-to-one correspondence will need additional opportunities to count various quantities of objects. When they are struggling to count accurately, it may be helpful to provide a ten frame or a number path to keep counters organized and assist in developing one-to-one correspondence.

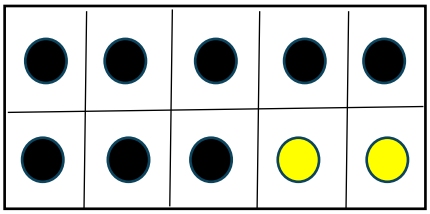
What is one subtraction number sentence you can create to go with the picture? Write the number sentence.



Some students may have a misconception about what the whole is in the number sentence when subtracting. They may write 5 – 3 = 2 because they see the five black dots and the three yellow dots. This indicates that students do not realize the whole is 8 and that 5 and 3 are the parts that can be subtracted from 8. Students would benefit from additional opportunities to solve

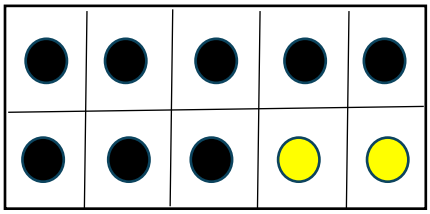
problems in context and work with a part-part-whole mat to physically move cubes to separate the parts from the whole. In addition, the use of number routines (e.g., number talks) that use dot cards and/or ten frames (with two colors) will support the development of fluency with numbers to ten.

2. What is one addition number sentence you can create to go with the picture? Write the number sentence.



Some students may struggle when writing an addition number sentence that matches the ten frame, indicating that they do not yet have a sense of part-part-whole (8 + 2 = 10). These students will benefit from opportunities to build numbers to ten using two-color counters and recording a number sentence that could be used to describe their representation. They could use ten frames with two-colored counters or cube trains with two different colors, record their representation, and then write addition sentences that could describe their drawing.

What is one subtraction number sentence you can create to go with the picture? Write the number sentence.



Some students may struggle to keep the whole in mind when writing a subtraction number sentence, writing 8 – 2 = 6 because they see the eight black dots and the two yellow dots. They may not realize that the total is 10 and that 8 and 2 are the parts that can be subtracted from 10. Students may need opportunities to work on a part-part-whole mat to physically move cubes and separate the parts from the whole. Providing additional opportunities for students to solve problems in context with manipulatives and discussing with peers the part-part-whole relationship will support further development of fluency with numbers to ten.

Some students may not have developed an understanding of subtraction and may choose to add the number, writing 8 + 2 = 10. They may be more comfortable with addition but need additional support when it comes to subtraction. Using the part-part-whole mat with counters or cubes allows for the opportunity to manipulate counters to represent the action in problems and match the number sentence to the model. Through number talks and looking at relationships among fact families,

students can better understand how addition and subtraction are related, helping to support their development of fact fluency.

Some students may struggle with the symbols for addition and subtraction. Symbols only have meaning for students when they are associated with the reality they represent. The number combinations and relationships that students need to understand can best be learned through experiences that include counting, comparing, composing, and decomposing groups of objects.

3. Determine each sum or difference.

   a) 5 + 1 =

   Students may rely on counting all or drawing a representation of both five and one to determine the sum. An efficient strategy for this problem would be to start with 5 and to count on 1 more. Exposure to a variety of strategies and practice selecting when a strategy is appropriate helps students develop flexibility with number combinations.

   b) 8 – 2 =

   Students may rely on drawing a representation of 8, crossing out two items, and recounting what remains to determine the difference. While this shows an understanding of the concept of subtraction, students should be encouraged to use more efficient strategies. An efficient strategy for this problem would be counting back where students start at 8 and count back 2 (7, 6). Students may make errors when counting back and include the 8 in their count, (8, 7) resulting in the incorrect difference of 7.

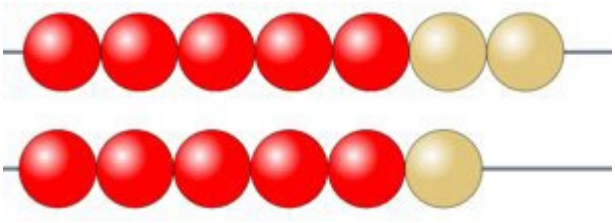
   c) 4 + 4 =

   Students who count on or count all may find the sum, but they may be more likely to miscount than students who are able to apply an efficient strategy using facts with which they are fluent. An efficient strategy for this problem would be doubles. Exposure to a variety of strategies and practice using those strategies helps students develop flexibility with number combinations that will be a helpful foundation for computation with larger numbers.

   d) 9 – 4 =

   Students may rely only on the counting back strategy, solving this by starting at 9 and counting back 4 (8, 7, 6, 5) but may miscount and/or include the 9 in their counting, thus determining the difference to be 6. These students would benefit from practice in the use and selection of strategies that may be more efficient. An efficient strategy for this problem would be using related facts and thinking "4 plus what number makes 9?" to solve this subtraction fact.

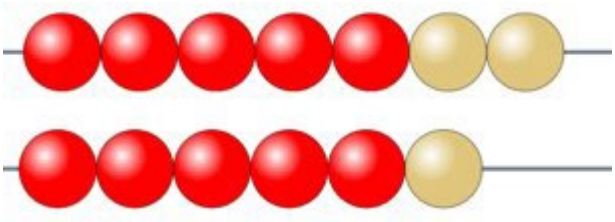
4. What is one addition sentence you can create to go with the picture? Write the number sentence.



Some students may struggle when writing an addition number sentence that matches the bead frame. They may see the total of thirteen beads but struggle to write a number sentence that matches the model. These students will benefit from opportunities to build numbers to twenty using a variety of manipulatives (cubes or counters, double ten frames, bead frames, etc.) and recording a number sentence that could be used to describe their representation.

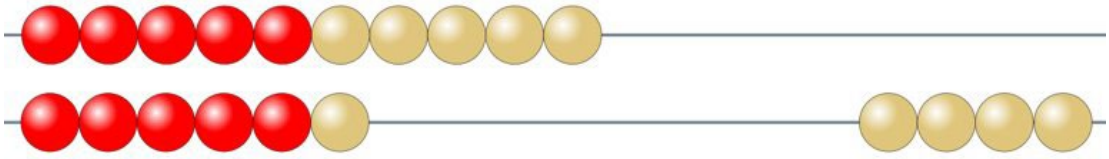
Other students may see two different possible number combinations (ten and three, and seven and six) and struggle to pick one to write. Acknowledge that there are multiple number combinations that could be represented by the bead frame and encourage students to select one number sentence to write, or allow them to write multiple number sentences that could be represented by the model.

What is one subtraction sentence you can create to go with the picture? Write the number sentence.



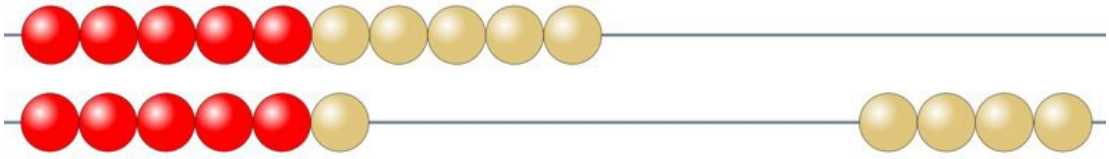
Some students may struggle to keep the whole in mind when writing a subtraction number sentence, writing 10 - 3 = 7 or 7 – 6 = 1 because they see the ten red beads and the three white beads or because they see the seven beads on the top row and the six beads on the bottom row. They do not realize that these are parts that can be subtracted from thirteen. Students may need more work on a part-part-whole mat to physically move cubes and separate the parts from the whole. Providing additional opportunities for students to solve problems in context with manipulatives and discussing with peers the part-part-whole relationship will support further development of fluency with numbers to ten.

5. What is one addition sentence you can create to go with the picture? Write the number sentence.



Some students may struggle when writing an addition number sentence that matches the bead frame. They may see the total of twenty beads but struggle to write a number sentence that matches the model. Other students may see a total of sixteen beads on the left side of the bead frame, but struggle to write an addition number sentence. Number sentences with a sum of twenty or sixteen could both be considered correct for this picture. Students may benefit from additional work with bead frames and other manipulatives to model and record number sentences that could be used to describe their models.

What is one subtraction sentence you can create to go with the picture? Write the number sentence.



Some students may struggle to keep the whole in mind and record 16 – 4 = 12 or 10 – 6 = 4 because they are focusing on the larger part of the image instead of the total. Students making this error would benefit from working with part-part-whole mats, writing both addition and subtraction sentences for a model and discussing the similarities between the addition and subtraction sentences (noting that they both use the same numbers).

6. Determine each sum or difference.
   a) 11 + 7 =

Students may rely only on the counting on strategy, solving this by starting at 11 and counting on 7. Students that rely on the counting on strategy when counting addends larger than three frequently make counting errors or resort to drawing models or tally marks. An efficient strategy for this problem could be compensation, where students change the

problem to 10 + 8 by taking 1 from the 11 and giving it to the 7. Another efficient strategy may involve decomposing the 11 into 10 and 1 and adding 7 + 1 = 8 then using place value understanding to determine the sum to be 18.

b) 18 – 9 =

Students may rely only on the counting back strategy, solving this by starting at 18 and counting back 9 (17, 16, 15, 14, 13, 12, 11, 10, 9). However, some students may miscount and/or include the 18 in their count for an incorrect difference of 10. These students would benefit from practice in the use and selection of strategies that may be more efficient. Efficient strategies for this problem would be using doubles and thinking of the inverse operation of addition (e.g., "9 plus what number equals 18?").

c) 14 + 4 =

Students may rely only on the counting on strategy, solving this by starting at 14 and counting on 4. Students that rely on the counting on strategy when counting addends larger than three frequently make counting errors or resort to drawing models or tally marks. An efficient strategy for this problem could be using doubles and place value, using the knowledge that 4 + 4 = 8 and extending that understanding to determine that 14 + 4 = 18.

d) 15 – 5 =

Students may rely only on the counting back strategy, solving this by starting at 15 and counting back 5. Students that rely on counting back when subtracting numbers greater than three frequently make counting errors. An efficient strategy for this problem could be using place value understanding to recognize that fifteen is ten and five.

7. Circle the number sentence that could be used to solve this problem.

Corey has 6 cookies. He gives 4 cookies away. How many cookies does Corey have now?

6 + 4 = 10 6 – 4 = 2

A common student error is to pull the numbers out of the context and add them (i.e., adding 6 + 4 = 10). This error indicates that the student has not developed an understanding of the context and the action taking place (i.e., giving cookies away means Corey will have fewer cookies). Students would benefit from additional experience with role play and/or modeling what is happening in the story problem.

Students need to make sense of the problem by first discerning the action taking place. Students who do not understand the action in the story may use an operation that will not

correctly solve the problem. Students need to develop a better understanding of the context and would benefit from more experience with the associated different problem types. Refer to the Grade 1 Mathematics Instructional Guide for descriptions and examples of various problem types.

8. Aniya has 7 chocolate chip cookies and 9 sugar cookies. How many cookies does she have? Draw a picture and write a number sentence to solve the problem.

   Students may not understand that the two numbers need to be added. They may say that she has 7 cookies and 9 cookies but do not realize that the question is asking for the sum of those two numbers. Students who use "key words" may be looking for the word altogether, so they know to add in this problem. They may not have fully developed the concept of addition as joining and need more work with a part-part-whole mat. Students may need to develop a better understanding of the context to solve the problem and would benefit from more experience with the associated problem types. Refer to the Grade 1 Mathematics Instructional Guide for descriptions and examples of various problem types.

   Another common error that may occur is miscounting when counting on. Students who count on from 7 (or 9) may miscount and get the wrong number of cookies. Other students may use the fact 7 + 10 = 17 to solve, then forget to take off the one extra they added on to make it easier to add. These students would benefit from composing and decomposing activities that allow them to develop a better sense of number and part-part-whole relationships. Students who may still be using counting on as their sole strategy would benefit from participation in number routines focused on making tens or the use of doubles. For example, when solving 7 + 9, some students might make the numbers 6 + 10 while others might think 7 + 7 + 2 = 14 + 2.

9. Ellis has 5 dinosaur toys. For his birthday he gets some more. Now he has 11 dinosaur toys. How many dinosaur toys did he get for his birthday? Draw a picture and write a number sentence to solve the problem.

   Students who have not made sense of the context in this problem and focus on the word "more," may add the numbers from the story problem, which would create the problem 5 + 11 = 16. In this type of problem (change unknown), students need to find how many more are needed to get to 11. Students who understand the inverse relationship of addition and subtraction will know that 11 is the total and that they can use subtraction to find the answer as 11 - 5 = 6. Students may need to develop a better understanding of the context to solve the problem and would benefit from more experience solving and discussing solution strategies of different problem types. Refer to the Grade 1 Mathematics Instructional Guide for descriptions and examples of various problem types.

   Another common student error is counting up from 5 to 11 and not counting accurately. They may conserve 5 in their head but say 5, 6, 7, 8, 9, 10, and 11, resulting in an answer of 7 instead of 6. Students do not yet understand that they should say 5 (the initial number), 6, 7, 8, 9, 10, and 11,

which results in an answer of 6. These students would benefit from opportunities to model problems with objects to visualize the action and the appropriate quantity.

10. Mrs. Smith has 10 stickers. She gives some to Caroline. She has 6 stickers left. How many stickers did Mrs. Smith give to Caroline? Draw a picture and write a number sentence to solve the problem.

This problem has a missing middle part (change unknown). Students may not understand what each number in the story represents, and they may take the two numbers and add them to create 10 + 6 = 16. Students need to understand that 10 is the total and some part of 10 is given away, and 6 is what Mrs. Smith is left with and not what was given away. They must understand that 10 - ___ = 6 can be solved with 10 – 6 = ____ (the number she gave to Caroline) or with 6 + __ = 10 because of the relationship of numbers in a fact family. Students may need to develop a better understanding of the context to solve the problem and would benefit from more experiences with the associated problem types. Refer to the Grade 1 Mathematics Instructional Guide for descriptions and examples of various problem types.

Students who struggle with any of the problem types will benefit from representing the information from the problem with a picture and/or words. This may help students understand the problem presented and the importance of attending to the full context to solve the problem. In addition, a graphic organizer, such as a part-part-whole mat may be a useful tool for many students. For students who have not yet developed fluency with numbers to 10, it may be helpful to provide experiences that focus on composing and decomposing numbers in order to develop greater flexibility with strategies for solving addition and subtraction problems.

11. Determine each missing number.

a) 6 + _____ = 10

b) 2 + _____ = 10

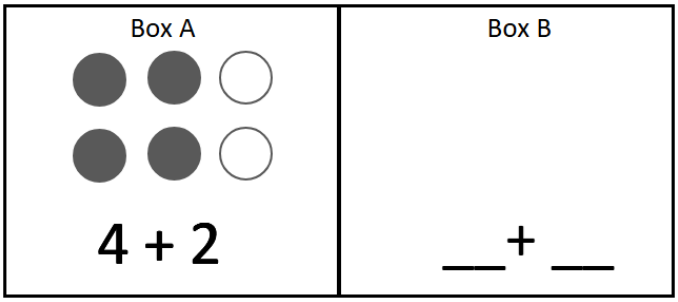
c) _____ + 15 = 20

d) 9 + _____ = 20

Students may struggle with missing addend problems due to the format of the problem. Some students will add the two numbers that are visible in the number sentence, for example, writing 6 + 16 = 10 when presented with 6 + ___ = 10. Students making this error may benefit from additional practice with part-part-whole models with focused discussion on what parts make the whole, as well as which numbers are parts and which number is the whole. Students should also be encouraged to think about addition with focused instruction

on anchoring to ten and twenty. Explore sums of ten by asking "How many more to get to ten?" when working with single digit numbers and "How many more to get to twenty?" when working with teen numbers.

12. The counters in Box A show the combination of four plus two. Draw a different combination of counters in Box B that is equal to the number of counters in Box A. Write an addition statement to represent the counters in Box B.



Students who fail to draw six counters in Box B may be struggling to understand the term "equal" as having equal value. These students may not understand that equality represents a balance and will need opportunities to build equations and develop an understanding of part-whole relationships. The use of a number balance will provide opportunities for these students to develop greater understanding of equality. In this problem, students would place pegs on one side at 4 and 2 (representing Box A) and through exploration determine what two numbers they might place on the other side to equal 6 (i.e., 1 and 5, 3 and 3) to represent Box B. This type of activity can occur at a center where students are building equivalent expressions and writing equations.

13. Circle "is equal to" or "is not equal to" to describe the relationship between these expressions.

a)	7 + 1	is equal to is not equal to	0 + 8
b)	6 + 3	is equal to is not equal to	5 + 4
c)	1 + 4	is equal to is not equal to	2 + 3
d)	2 + 5	is equal to	7 + 1

a)	7 + 1	is equal to is not equal to	0 + 8
		is not equal to	

A common student error when considering equal/not equal statements is to solve the first expression and look for the answer in the second expression. When the total or the sum is not found in the second expression, students may say that the two expressions are not equivalent. For instance, in solving 6 + 3, a student may determine that the sum is 9 and only search for a 9, not recognizing that 5 + 4 is equivalent to 6 + 3; therefore, the answer "is not equal to." For problems such as 2 + 5, students will look for the 7, find it, and therefore say that 2 + 5 "is equal to" 7 + 1 because they ignore the 1 altogether. These common misconceptions are often based on students' overgeneralizing their limited understanding of equality. Students need experience solving grade-appropriate practical problems and comparing the results by writing comparison sentences. An example might include something such as: Susie has 4 red apples and 1 green apple. Henry has 2 red apples and 3 green apples. Do they have an equal number of apples? The equation recording this relationship might look like 4 + 1 = 2 + 3 and could be read as 4 and 1 is equal to 2 and 3.