INSTITUTE for LEARNING

SOAR Intervention Checklist

GRADES
1 to 3

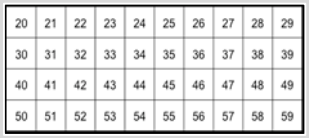
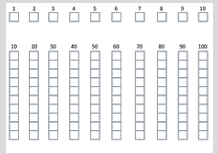
Number and Operations in Base Ten: Place Value

INSTITUTE for LEARNING

Student Name: _____ Grade: _____ Teacher Name: _____

Administration Date/Administrator Initials: Date 1: _____ /_____ Date 2: _____ /_____ Date 3: _____/_____

Category I: Understanding, Reasoning with, and Using Numbers Within a Hundred

Category I	Recognizes Numbers and Understands Magnitude of Number		Recognizes Patterns and Relationships			
	1. Tell me about the number you see below. 27	2. Tell me what you know about these numbers. 43 34	3. Study how the numbers are organized in the table below.  	4. Study the numbers below and tell me what you notice. 33, 43, 53, 63	5. Study the diagram below. What does the diagram show? 	*To look across all 10 items of Category I, affix page 2 of the Category I checklist here.*
Recognizes and Makes Use of Structure of Number	___ Recognizes and reads number(s) accurately. ___ Represents the number accurately using place value (shows 2 tens and 7 ones). ___ Represents the number accurately but without using place value (shows 27 using all ones).	____Recognizes and reads number(s) accurately. ___ Identifies in which number a common digit has a greater magnitude (4 in 43 is greater than the 4 in 34).	___ References number(s) accurately. ___ Identifies the 0-9 pattern in the ones place. ___ Identifies the 0-9 pattern in the tens. ___ Identifies a pattern that is not related to place value. *(e.g., The ones place stays the same in each column, or both the tens and the ones change by 1 as you move diagonally.)* _____ _____ _____	___ References number(s) accurately. ___ Identifies and explains the 0-9 pattern in the tens. ___ Extends the -10 pattern. ___ Extends the +10 pattern.	___ References number(s) accurately. ___ Indicates 10 units of ones. ___ Indicates 10 units of tens. ___ Indicates 10 ones is 10. ___ Indicates 10 tens is 100.	
Provides Explanation	___ States the magnitude of the digits in the number by place value position (2 in 23 is 20 and the 3 in 23 is 3).	___ States the magnitude of a common digit in two different numbers (4 in 43 is 40 and 4 in 34 is 4).	___ States the digit in the ones place is increasing by 1 or it is like counting by ones. ___ States the digit in the tens place is increasing by 1 ten or it is like counting by tens.	___ Explains the digit in the tens place changes because it is increasing by 1 ten or +10. ___ Explains the digit in the tens place increases by 1, does not reference 1 ten. ___ Explains how and why the number extends the +10 pattern *(e.g., 73 is 10 more than 63 or that they added 10 to 63 to arrive at 73).* ___ Explains how and why the number extends the -10 pattern *(e.g., 23 is 10 less than 33 or that they took 10 away from 33 to arrive at 23).*	___ Explains that the number of ones and the number of tens is the same, there are 10 ones and 10 tens.	

Category I: Understanding, Reasoning with, and Using Numbers Within a Hundred *(continued)*

Category I

Reasoning About Place Value and Magnitude of Numbers

6. We are going to be using the diagrams on this page to answer several questions about numbers.

7. Put the numbers below in order from least to greatest.

75, 45, 8, 72

8. Solve each equation in your head.

25 + 9 = _____
32 + 60 = _____
21 + 49 = _____

9. Solve each equation in your head.

70 – 10 = _____
50 – 20 = _____
80 – 50 = _____

Note: Student explanations will reveal if an understanding of the structure of number and/or magnitude of number was used or not used to calculate solutions; therefore there are no specific indicators listed in the *Provides Explanations* section of the checklist.

Recognizes and Makes Use of Structure of Number

___ Identifies a number that comes between two benchmark numbers (Items A-B).
___ Identifies the relative magnitude of a number in comparison to two benchmark numbers (Items C-D).
___ Determines the two nearest benchmark tens *(40 and 50)* for the given number (Item E).
___ Determines two numbers that are not the nearest tens for the given number *(e.g., says 46 and 47)* (Item E).
___ Determines "benchmarks" that 10 more and 10 less than the given number *(e.g., says 35 and 55)* (Item E).

___ Determines the order of all of the numbers.
___ Compares some numbers but does not order all of the numbers.
  ___ Identifies the number that is greatest.
  ___ Identifies the number that is least.

___ Determines sums accurately.

___ Uses a strategy based on the structure of number (check all that apply).
  ___ Counts on by tens and/or ones.
  ___ Decomposes the addends into tens and ones, adds the tens and ones separately, and then combines the amounts.
  ___ Moves an amount from one addend to another to make it easier to work with the number and then adds.
  ___ Increases or decreases an addend to make it easier to work with the number, adds the amounts, and then compensates for the original increase or decrease (compensation).
  ___ Other _____

___ Determines differences accurately.

___ Uses a strategy based on the structure of number (check all that apply).
  ___ Counts on by tens.
  ___ Counts back by tens.
  ___ Uses a known fact and references place value *(e.g., 50 – 20 is like 5 tens – 2 tens = 3 tens, or 30, because I know 5 – 2 = 3).*
  ___ Uses a known fact but does not reference place value *(e.g., 50 – 20 is like 5 – 2 = 3, with a zero, so 30).*
  ___ Other _____

Provides Explanation

___ Expresses reasoning about the magnitude of the benchmark numbers to identify the number *(e.g., says 23 is greater than 20 and because it is 3 more but is less than 30).*
___ Expresses reasoning about the magnitude of each of the numbers *(e.g., says 15 is 5 more than 10 and 5 less than 20, so it is right in the middle).*
___ Expresses reasoning about tens and ones to explain the benchmark numbers *(e.g., 45 is between 40 and 50 because 5 more is 50 and 5 less is 40).*

___ Expresses reasoning about tens and ones to compare and/or order the numbers.
___ Expresses an understanding of the number sequence, may reference number lines and/or hundreds charts *(e.g., I know that 75 comes after 72 on the number line, or 8 is closer to 0 on the number line, or 45 is in the middle of the hundreds chart).*

___ Uses a standard algorithm for addition on paper or mentally *(a CCSS Grade 3 expectation)* and
  ___ references place value while working or in explanation.
  ___ does not reference place value while working or in explanation.

___ Uses a standard algorithm for addition on paper or mentally *(a CCSS Grade 3 expectation)* and
  ___ references place value while working or in explanation.
  ___ does not reference place value while working or in explanation.

Category II: Understanding, Reasoning with, and Using Numbers within a Thousand

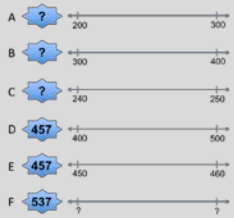
Category II	Recognize Number and Magnitude of Number		Recognize Pattern and Relationship			
	10. What is this number? 145	11. Tell me what you know about these numbers. 435 543 354	12. Study the table. Tell me what you notice about how the numbers are organized in this table.  270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309	13. There are two sets of numbers below. We are going to talk about each set of numbers. Study the first set of numbers. A. 233, 243, 253, 263 B. 342, 442, 542, 642	14. Study the numbers below and think about how the numbers are related. 1 10 100	*To look across all 12 items of Category II, affix page 2 of the Category II checklist here.*
Recognizes and Makes Use of Structure of Number	___ Recognizes and reads number(s) accurately. ___ Represents the number accurately using place value *(shows 1 hundred, 4 tens, and 5 ones).* ___ Represents the number accurately but without tending to place value *(shows 14 tens and 5 ones, or 145 ones).*	___ Recognizes and reads number(s) accurately. ___ Identifies the number that is greatest by comparing the digits in the hundreds place *(5 is greater than 4 or 3, so 5 hundreds is greater than 4 hundreds or 3 hundreds).*	___ References number(s) accurately. ___ Identifies the 0-9 pattern in the ones place. ___ Identifies the 0-9 pattern in the tens place. ___ Identifies the change in the hundreds place. ___ Indicates that there would be a 0-9 pattern in the hundreds place if the table continued. ___ Identifies a pattern but does not relate pattern and place value _____ _____.	___ References number(s) accurately. ___ Identifies the 0-9 pattern in the tens place (Item A). ___ Extends the -10 pattern (Item A). ___ Extends the +10 pattern (Item A). ___ Identifies the 0-9 pattern in the hundreds place (Item B). ___ Extends the -100 pattern (Item B). ___ Extends the +100 pattern (Item B).	___ References number(s) accurately. ___ Indicates meaning of 1 as 1 one, 1 ten, and 1 hundred.	
Provides Explanation	___ States the magnitude of the digits in the number by place value position *(1 is 100, 4 is 40, and 5 is 5).* ___ Relates the model (diagram or blocks) to the place value of the digits in the number.	___ States the changing magnitude of a common digit in three different numbers *(3 tells us 30 in 435, 3 in 543, and 300 in 354).*	___ States the digit in the ones place is increasing by 1 or it is like counting by ones. ___ States the digit in the tens place is increasing by 1 ten or it is like counting by tens.	___ Explains the digit in the tens place changes because it is increasing by 1 ten or +10. ___ Explains the digit in the tens place increases by 1, does not reference 1 ten. ___ Explains the extension of the +10 pattern. ___ Explains the extension of the -10 pattern. ___ Explains the digit in the hundreds place changes because it is increasing by 1 hundred or +100. ___ Explains the digit in the hundreds place increases by 1, does not reference 1 hundred. ___ Explains the extension of the +100 pattern. ___ Explains the extension of the -100 pattern.	___ Explains that 10 ones are needed for a ten. ___ Explains that 10 tens are needed for a hundred.	

Category II: Understanding, Reasoning with, and Using Numbers within a Thousand *(continued)*

Category II

Reasoning with Place Value (Compare, Order, Operate)

15. We are going to be using the diagrams on this page to answer several questions about numbers.



16. Put the numbers below in order from least to greatest.

827, 943, 95, 842, 845

17. Solve the equations as quickly as you can and explain how you arrived at the solutions.

240 + 45 = _____
420 + 170 = _____
380 + 550 = _____

18. Solve the equations as quickly as you can and explain how you arrived at the solutions.

459 – 28 = _____
652 – 210 = _____
478 – 80 = _____
587 – 490 = _____

Note: Student explanations will reveal if an understanding of the structure of number and/or magnitude of number was used or not used to calculate solutions; therefore there are no specific indicators listed in the *Provides Explanations* section of the checklist.

Recognizes and Makes Use of Structure of Number

___ Identifies a number that comes between two benchmark numbers. (Items A-C)
___ Identifies the relative magnitude of a number in comparison to two benchmark numbers. (Items D-E)
___ Determines the two nearest benchmark hundreds *(500 and 600)* for the given number. (Item F)
___ Determines the two nearest benchmark tens *(540 and 560)* for the given number. (Item F)
___ Determines two numbers that are not the nearest hundreds and/or tens for the given number. (Item E)
___ Determines "benchmarks" that are 100 more and less or 10 more and less *(e.g., says 527 and 547 are 10 less and 10 more).* (Item E)

___ Determines the order of all of the numbers.
___ Compares some numbers but does not order all of the numbers.
  ___ Identifies the number that is greatest.
  ___ Identifies the number that is least.

___ Determines sums accurately.

___ Uses a strategy based on the structure of number (check all that apply).
  ___ Counts on by hundreds, tens and/or ones.
  ___ Decomposes the addends into hundreds, tens, and ones, adds amounts separately, and then combines the amounts.
  ___ Moves an amount from one addend to another to make it easier to work with the number and then adds.
  ___ Increases or decreases an addend to make it easier to work with the number, adds the amounts, and then compensates for the original increase or decrease (compensation).
  ___ Other _____

___ Uses a standard algorithm for addition on paper or mentally *(a CCSS Grade 3 expectations)* and
  ___ references place value while working or in explanation.
  ___ does not reference place value while working or in explanation.

___ Determines differences accurately.

___ Uses a strategy based on the structure of number (check all that apply).
  ___ Counts on by hundreds, tens, and/or ones.
  ___ Counts back by hundreds, tens, and/or ones.
  ___ Decomposes the subtrahend and subtracts in steps, may or may not decompose by place value *(e.g., decompose by place value 652 – 210; 652 – 200 = 452, 452 – 21 = 432, 432 – 1 = 431; decompose without place value 478 – 80; 80 is 78 and 2; 478 - 78 = 400, 400 – 2 = 398).*
  ___ Increases or decrease the subtrahend, subtracts, and then adjusts the result to compensate *(e.g., 587 – 49; 587 – 50 = 537, 537 + 1 = 538)* (compensation).
  ___ Other _____

___ Uses a standard algorithm for addition on paper or mentally *(a CCSS Grade 3 standard)* and
  ___ references place value while working or in explanation.
  ___ does not reference place value while working or in explanation.

Provides Explanation

___ Expresses reasoning about the magnitude of the benchmark numbers to identify a number *(e.g., says 221 is 21 more than 200 and a lot less than 300, or says 241 is just 1 more than 240 and 9 less than 250).*
___ Expresses reasoning about the magnitude of each of the numbers *(e.g., says 457 is closer to 460 than 450 because it is only 3 counts away from 460 and it is 7 counts away from 450).*
___ Expresses reasoning about hundreds and tens to explain the benchmark numbers *(e.g., 537 is between 530 and 540 because it is 7 more than 530 and 3 less than 540).*

___ Expresses reasoning about hundreds, tens, and ones to compare and/or order the numbers.
___ Expresses reasoning about the number sequence (may reference number lines or a number coming before or after another number).

To look across all 12 items of Category II, affix page 3 of the Category II checklist here.

Category II: Understanding, Reasoning with, and Using Numbers within a Thousand *(continued)*

Category II

Reasoning with Place Value (Compare, Order, Operate) (*continued)*

Only ask if the student is in Grade 3 or higher, if student is in Grade 2 end the survey before asking 19.

19. Estimate the sum for the equation, and then calculate to figure out the exact sum.	20. Estimate the difference for the equation, and then calculate to figure out the exact difference.	21. Solve the equations below in your head.
532 + 349 = ____	792 – 349 = ____	2 x 40 = ____ 60 x 3 = ____ 9 x 70 = ____

Note: Student explanations will reveal if an understanding of the structure of number and/or magnitude of number was used or not used to calculate solutions; therefore there are no specific indicators listed in the *Provides Explanations* section of the checklist.

Recognizes and Makes Use of Structure of Number

___ Identifies a reasonable estimate for the sum of two three-digit numbers.
___ Uses accurate reasoning about place value and magnitude when determining an estimate.

___ Determines sums accurately.

___ Uses a strategy based on the structure of number (check all that apply).
- ___ Counts on by hundreds, tens and/or ones.
- ___ Decomposes the addends into hundreds, tens, and ones, adds amounts separately, and then combines the amounts.
- ___ Moves an amount from one addend to another to make it easier to work with the number and then adds.
- ___ Increases or decreases an addend to make an easier to work with number, adds the amounts, and then compensates for the original increase or decrease *(e.g., 532 + 349; 532 + 350 = 882, 882 – 1 = 881)* (compensation).
- ___ Other _____.

___ Identifies a reasonable estimate for the difference of two three-digit numbers.
___ Uses accurate reasoning about place value and magnitude when determining an estimate.

___ Determines differences accurately.

___ Uses a strategy based on the structure of number (check all that apply).
- ___ Counts on by hundreds, tens, and/or ones.
- ___ Counts back by hundreds, tens, and/or ones.
- ___ Decomposes the subtrahend and subtracts in steps, may or may not decompose by place value *(e.g., decompose by place value 792 – 349; 792 – 300 = 492; 492 – 40 = 452; 452 – 9 = 443; decompose without place value 792 – 349; 349 as 342 and 7; 792 – 342 = 450; 450 – 7 = 443).*
- ___ Increases or decrease the subtrahend, subtracts, and then adjusts the result to compensate *(e.g., 587 – 49; 587 – 50 = 537, 537 + 1 = 538)* (compensation).
- ___ Other _____.

___ Determines products accurately.

___ Uses a related operation: addition or repeated addition.

___ Uses a strategy based on the structure of number (check all that apply).
- ___ Counts by tens.
- ___ Uses a known fact and references place value *(e.g., 2 x 40 is like 2 x 4 = 8, so 2 x 4 tens = 8 tens, 80).*
- ___ Uses a known fact but does not reference place value *(e.g., 2 x 40 is like 2 x 4 = 8 but with a zero, so it is 80).*
- ___ Other _____.

Provides Explanation

___ Uses a standard algorithm for addition on paper or mentally *(a CCSS Grade 3 expectation)* and
- ___ references place value while working or in explanation.
- ___ does not reference place value while working or in explanation.

___ Uses a standard algorithm for addition on paper or mentally *(a CCSS Grade 3 expectation)* and
- ___ references place value while working or in explanation.
- ___ does not reference place value while working or in explanation.

___ Uses standard algorithm for multiplication on paper or mentally *(a CCSS Grade 5 expectation)* and
- ___ references place value while working or in explanation.
- ___ does not reference place value while working or in explanation.