![IM K–5 Math™ logo]

Assessment : End-of-Unit Assessment

Teacher Instructions

Give students access to base-ten blocks.

Problem 1

Students add and subtract multiples of 10 and 100 from three-digit numbers. Students may select A if they mistakenly add 30 instead of subtracting 30. Students may not select C if they have difficulty with adding the first 10 which makes a new hundred. Students who select D or E have likely made an arithmetic error in subtracting or adding. The standard calls for doing these calculations mentally. Students may make drawings or other calculations but if they do not perform well on this item they may profit from more practice adding and subtracting multiples of 10 and 100 mentally.

Statement

Select **2** expressions with the same value as $135 + 200$.

A. $305 - 30$

B. $235 + 100$

C. $295 + 40$

D. $385 - 60$

E. $935 - 700$

Solution

["B", "C"]

Aligned Standards

2.NBT.B.8

Problem 2

Students find a sum of 4 two-digit numbers. Adding the tens will show that A is not correct and looking at the ones shows that B is not correct. The numbers are chosen to fit into two friendly pairs, $93 + 7$ and $48 + 32$. Students who select an incorrect answer have either made a calculation error or possibly estimated inaccurately. For example, a student might reason that 93 is close to 100 and then looking at the other numbers could lead to an estimate of 190.

Statement

Select the value of $93 + 48 + 7 + 32$.

A. 160

B. 170

C.   180

D.   190

Solution

C

Aligned Standards

2.NBT.B.6

Problem 3

Students find how much needs to be added to a number to reach 1,000. The problems are scaffolded so that each problem can be used to help find the answer to the next problem. Students may find the answers in a variety of ways including mental math, drawing a picture, or using properties of addition and subtraction.

Statement

Find the number that makes each equation true.

A. $800 + \underline{\hspace{1.5cm}} = 1{,}000$

B. $\underline{\hspace{1.5cm}} + 750 = 1{,}000$

C. $748 + \underline{\hspace{1.5cm}} = 1{,}000$

Solution

A. 200

B. 250

C. 252

Aligned Standards

2.NBT.B.7

Problem 4

Students explain why an adding on strategy works to calculate a difference. In this particular case, the adding on method works well because each sum is friendly, first making a ten and then a hundred. Subtracting, on the other hand, would require decomposing both a hundred and a ten.

Statement

To find the value of $500 - 389$, Kiran writes these three equations.

$389 + 1 = 390$

$390 + 10 = 400$

$400 + 100 = 500$

Kiran says this shows $500 - 389 = 111$. Do you agree with Kiran? Explain or show your reasoning.

Solution

Kiran's equations show that $389 + 111 = 500$ so $500 - 389 = 111$. Kiran adds on to 389 to get 500 rather than taking away 389 from 500.

Aligned Standards

2.NBT.B.9

Problem 5

Students find sums of three-digit numbers. The first sum can be found adding by place value with no regrouping. The third sum introduces a new hundred while the second sum has a new ten and a new hundred. Students who are only able to find the first sum correctly probably need more practice with regrouping.

Statement

Find the value of each sum. Show your thinking. Use base-ten blocks if it helps.

1. $537 + 312$
2. $428 + 175$
3. $566 + 273$

Solution

A. 849. I added by place value, ones, tens, and hundreds.
B. 603. I made a new ten from 8 and 5 and there were 3 ones. Then I made a new hundred from all of the tens. That gave me 6 hundreds and 3 ones.
C. 839. I made a hundred from the 6 tens and 7 tens and had 3 more tens. I added that 100 to the 500 and 200 to get 800 and then I also had 9 ones.

Aligned Standards

2.NBT.B.7

Problem 6

Students find differences of three-digit numbers. The first difference can be found with no regrouping. The second problem requires regrouping a ten, if students subtract by place value. The third problem requires regrouping twice unless students see a different way to solve the problem, such as adding on.

Statement

Find the value of each difference. Show your thinking. Use base-ten blocks if it helps.

1. $528 - 315$

2. $471 - 124$

3. $600 - 594$

Solution

A. 213. I subtracted by place value, hundreds from hundreds, tens from tens, ones from ones.

B. 347. I broke one of the tens in 471 into ten ones and then subtracted by place value.

C. 6. I added on to 594 to get 600.

Aligned Standards

2.NBT.B.7

Problem 7

Students explain why a compensation strategy for subtraction works in a situation where subtracting by place value would require decomposing both a ten and a hundred. They then find the value of the difference and another difference with the same decomposition structure. Students can find the difference any way they choose and do not need to use Clare's strategy. Thinking strategically about which strategy to use is a sign of fluency. This is not an expectation for these problems in grade 2 but some students may be using different strategies appropriate to the numbers in a given problem.

Statement

Clare says that to find the value of $863 - 286$ she can subtract 300 and then add 14.

1. Explain why Clare's method works.

2. What is the value of $863 - 286$?

3. Find the value of $253 - 75$. Show your thinking.

Solution

1. Subtracting 300 and then adding back 14 is the same as subtracting 14 fewer and 14 fewer than 300 is 286.

2. Sample response:

   577

   $863 - 300 = 563$

   $563 + 14 = 577$

3. 178

   $253 - 100 = 153$

   $153 + 25 = 178$

Aligned Standards

2.NBT.B.7, 2.NBT.B.9