Kenmore-Town of Tonawanda UFSD

We educate, prepare, and inspire all students to achieve their highest potential

Grade 1 Module 4
Parent Handbook

The materials contained within this packet have been taken from the Great Minds curriculum Eureka Math.

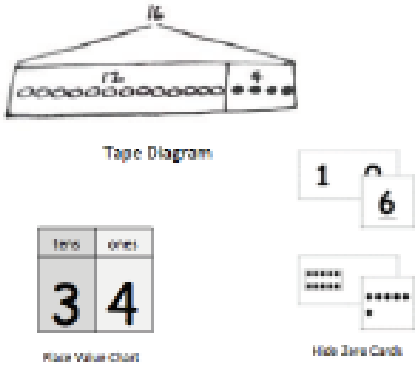
Eureka Math™ Tips for Parents

Grade 1
Module 4

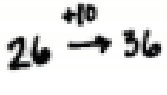
Place Value, Comparison, Addition and Subtraction to 40

In this 35-day module, students will study, organize, and manipulate numbers within 40. They will compare number quantities, using the symbols for greater and less than (>, <). Students will work with adding and subtracting tens and will begin to add two-digit numbers.

Some ways to show two-digit numerals:



Some ways to indicate addition with groups of 10:



Arrow Notation


Quick Ten

What Came Before this Module: Students worked with non-standard units to measure objects, and to compare and order objects by length.

What Comes After this Module: In this geometric module, we will review basic shapes, use them to create composite shapes, and discuss ideas like "whole", "half" and "fourths".

Key Words and Ideas in this Module:

Greater than - shown by the symbol >, e.g. 10 > 4

Less than - shown by the symbol <, e.g. 4 < 10

Place value - quantity represented by a digit in a particular place within a number, e.g. the "1" in the number 17 represents a ten

Familiar terms from past modules:

- Equal - e.g. 2 + 6 = 4 + 4
- Ones
- Tens
- Numerals

Some tools/representations we will use:

- Arrow notation
- Hundreds chart
- Place value chart
- Rekenrek
- Number bonds
- Tape diagram

How you can help at home:

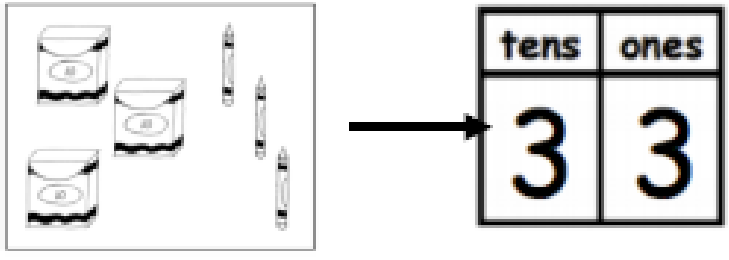
- Continue to practice counting up to 40 or beyond
- Continue to ask your student to compare two different quantities, using the language "greater than" and "less than"
- Begin to ask questions such as "What does the 2 represent in the number 29?"

Key Common Core Standards:

- *Represent and solve problems using addition and subtraction*
- *Extend the counting sequence to 40* (In first grade, we will eventually count to 120)
- *Understand place value*
  - Understand that the two digits of a two-digit number represent amounts of tens and ones.
  - Compare two two-digit numbers based on meaning of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.
- *Use place value understanding and properties of operations to add and subtract.*

Prepared by Erin Schweng, Math Coach

The place value chart at this point in 1st grade consists of two boxes; the one on the left labeled "tens" and the one on the right labeled "ones".



Place Value Chart

Students will be asked initially to match a number of objects with the correct representation on the place value chart. Later,

Spotlight on Math Models:

Place Value Chart

You will see this mathematical representation throughout the grades in *A Story of Units*.

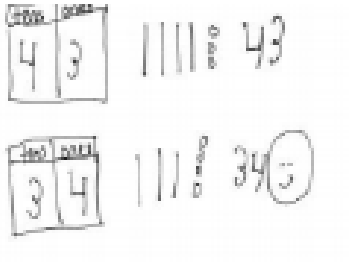
A Story of Units has several key mathematical tools that will be used throughout a student's elementary years.

The place value chart is a graphic organizer that students can use to see the coherence of place value and operations between different units. Use of the place value chart begins in Grade 1 as students learn about tens and ones, and continues through the use of decimals in Grade 5. The place value chart is a flexible tool. Young students can place chips on the chart, and physically move them as they bundle and group numbers. Older students can quickly create their own place value charts to illustrate their thinking for a problem and show their understanding of more complex numbers.

In first grade, students use the chart extensively as they work to build their understanding of numbers up to 100, and will often be asked to use the chart to illustrate what each numeral in a digit represents.

Sample Problem from Module 4
(Example taken from Lesson 3):

Sue is writing the number 34 on a place value chart. She can't remember if she has 4 tens and 3 ones or 3 tens and 4 ones. Use a place value chart to show how many tens and ones are in 34. Use a drawing and words to explain this to Sue.



This sample solution shows both a correctly filled-in place value chart as well as a drawing illustrating the difference between 34 and 43.

Grade 1 • Module 4

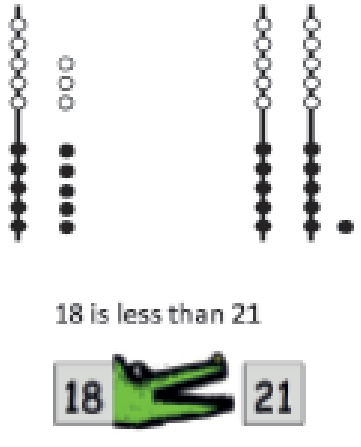
Place Value, Comparison, Addition and Subtraction to 40

OVERVIEW

Module 4 builds upon Module 2's work with place value within 20, now focusing on the role of place value in the addition and subtraction of numbers to 40.

The module opens with Topic A, where students study, organize, and manipulate numbers within 40. Having worked with creating a ten and some ones in Module 2, students now recognize multiple tens and ones. Students use fingers, linking cubes, dimes, and pennies to represent numbers to 40 in various ways—from all ones to tens and ones (**1.NBT.2**). They use a place value chart to organize units. The topic closes with the identification of 1 more, 1 less, 10 more, and 10 less as students learn to add or subtract *like* units (**1.NBT.5**).

In Topic B, students compare quantities and begin using the symbols for *greater than* (>) and *less than* (<) (**1.NBT.3**). Students demonstrate their understanding of place value when they recognize that 18 is less than 21 since 2 tens already have a greater value than 1 ten 8 ones. To support understanding, the first lesson in the topic focuses on identifying the greater or lesser amount. With this understanding, students label each of the quantities being compared and compare from left to right. Finally, students are introduced to the mathematical symbols using the story of the alligator whose hungry mouth always opens toward the greater number. The abstract symbols are introduced after the conceptual foundation has been laid.



Topic C focuses on addition and subtraction of tens (**1.NBT.4**, **1.NBT.6**). Having used concrete models in Topic A to represent 10 more and 10 less, students now recognize that just as 3 + 1 = 4, 3 tens + 1 ten = 4 tens. With this understanding, students add and subtract a multiple of 10 from another multiple of 10. The topic closes with the addition of multiples of 10 to numbers less than 40 (e.g., 12 + 30).

In Topic D, students use familiar strategies to add two-digit and single-digit numbers within 40. Students apply the Level 2 strategy of counting on and use the Level 3 strategy of making ten, this time making *the next ten* (**1.NBT.4**). For instance, when adding 28 + 5, students break 5 into 2 and 3 so that 28 and 2 can make *the next ten*, which is 30, or 3 tens, and then add 3 to make 33. The topic closes with students sharing and critiquing peer strategies.

In Topic E, students consider new ways to represent larger quantities when approaching *put together/take apart with total or addend unknown* and *add to with result or change unknown* word problems. Students begin labeling drawings with numerals and eventually move to tape diagrams to represent the problems pictorially (**1.OA.1**). Throughout this topic, students continue developing their skills with adding single-digit and double-digit numbers (introduced in Topic D) during fluency activities.

The module closes with Topic F, focusing on adding like place value units as students add two-digit numbers. The topic begins with interpreting two-digit numbers in varied combinations of tens and ones (e.g., 34 = 34 ones = 3 tens 4 ones = 2 tens 14 ones = 1 ten 24 ones). This flexibility in representing a given number prepares students for addition with regrouping (e.g., 12 + 8 = 1 ten 10 ones = 2 tens or 18 + 16 = 2 tens 14 ones = 3 tens 4 ones). To close the module, students add pairs of numbers with varied sums in the ones place to support flexibility in thinking.

Terminology

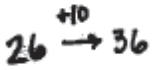
New or Recently Introduced Terms

- > (greater than)
- < (less than)
- Place value (quantity represented by a digit in a particular place within a number)

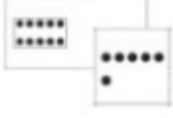
Familiar Terms and Symbols

- = (equal)
- Numerals
- Ones
- Tens

Suggested Tools and Representations

- Arrow notation 

- Comparison symbols: >, <, =
- Dime
- Hide Zero cards

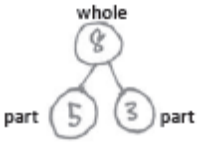


- Hundred chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

Hundred Chart to 40

- Number bond



Number Bond

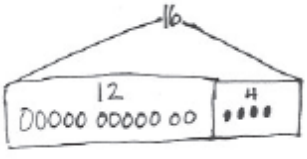
- Penny
- Place value chart

tens	ones
3	4

- Quick Ten

- Rekenrek

- Tape diagram



Grade 1 Module 4 Topic A

Tens and Ones

Focus Standards:

1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
a. 10 can be thought of as a bundle of ten ones—called a "ten."
c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

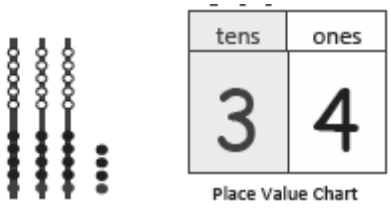
Instructional Days Recommended: 6

Module 4 builds on students' work with teen numbers to now work within 40. Working within 40 helps students focus on the units, tens and ones, which can be easily modeled pictorially and concretely with these smaller numbers. The smaller numbers also allow students to count all while having an important experience with its inefficiency. Students' innate ability to subitize to 4 keeps the numbers friendly when adding and subtracting tens for the first time and managing the new, complex task of considering both tens and ones when adding. Through their work within 40, students develop essential skills and concepts that generalize easily to numbers to 100 in Module 6.

In Lesson 1, students are presented with a collection of 20 to 40 items. They discuss and decide how to count the items and then compare the efficiency of counting individual ones with counting tens and ones. Through this exploration, students come to understand the utility of ten as a unit, both as a method for counting and for efficiently recording a given number (**1.NBT.1**, **1.NBT.2**). Students keep their own set of 40 linking cubes, organized as a kit of 4 ten-sticks, to use as they progress through the module.

In Lesson 2, students represent and decompose two-digit numbers as tens and ones and record their findings on a place value chart, supported by the familiar Hide Zero cards. Students share thoughts such as, "The 3 in 34 stands for 3 tens. And, the 4 in 34 is just 4 ones!" Up to this point, students have worked with representations of ten where 10 ones are clearly visible (e.g., as two 5-groups). While the digit 3 in 34 may appear less than the digit 4, its value

is determined by its position. Use of the place value chart represents students' first experience with this additional layer of abstraction.

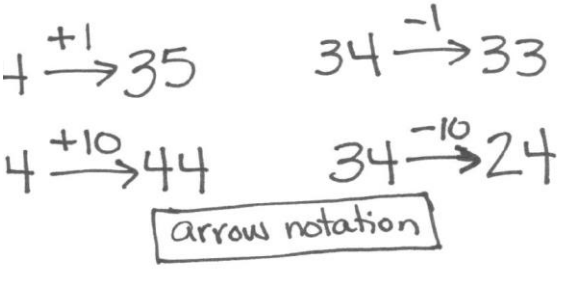


tens	ones
3	4

Place Value Chart

Lesson 3 allows students to explore two-digit numbers as tens and ones, as well as just ones. Students use their fingers to represent *bundled* tens and *unbundled* ones by clasping and unclasping their fingers. For example, students model 34 with 3 students showing their hands clasped to make a ten and a fourth student showing 4 fingers to represent 4 ones. Taking student understanding of place value a step further, Lesson 4 asks students to decompose and compose two-digit numbers as addition equations. Students develop an understanding that "34 is the same as 30 + 4" as they move between writing the number when given the equations and writing the *equations* when given a number. Throughout these lessons, students use concrete objects and/or drawings to support their understanding and explain their thinking.

Topic A concludes with Lessons 5 and 6, where students use materials and drawings to find 10 more, 10 less, 1 more, and 1 less than a given number (**1.NBT.5**). In Lesson 5, students use the familiar linking cubes (organized into tens) and 5-group columns. They engage in conversation about patterns they observe: "I see that 10 less than 34 is just 1 less ten, so it must be 24." Students represent how the number changed using arrow notation, or *the arrow way,* as shown to the right. Lesson 6 then introduces the dime and penny as representations of ten and one, respectively. Students make the connection between the familiar representations of tens and ones to the dime and the penny and work to find 10 more, 10 less, 1 more, and 1 less.



**The sample homework responses contained in this manual are intended to provide insight into the skills expected of students and instructional strategies used in Eureka Math.*

Lesson 1

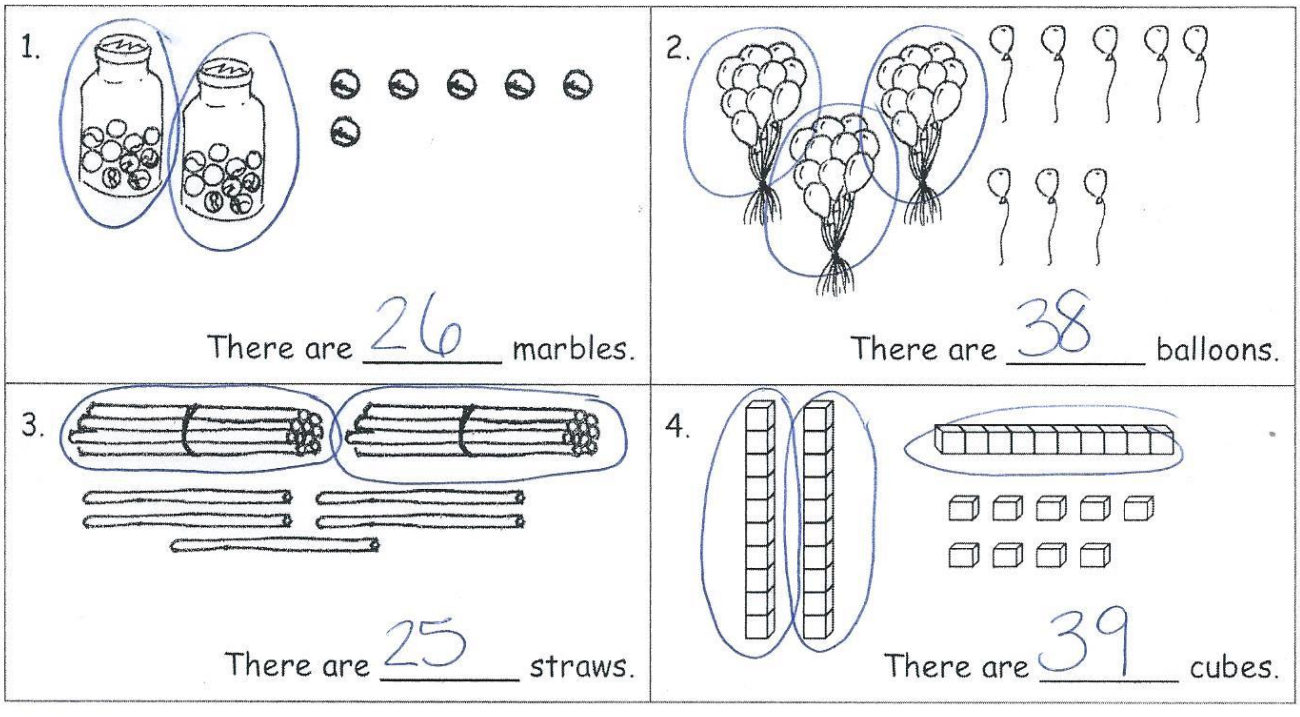
Objective: Compare the efficiency of counting by ones and counting by tens.

Homework Key

1. Groups of 10 circled; 26
2. Groups of 10 circled; 38
3. Groups of 10 circled; 25
4. Groups of 10 circled; 39
5. Groups of 10 circled; 20 and 7 is 27; 27
6. Groups of 10 circled; 10 and 10 is 20; 20
7. Groups of 10 circled; 20 and 4 is 24; 24
8. Groups of 10 circled; 30 and 6 is 36; 36
9. Groups of 10 circled; 10 and 7 is 17; 17
10. Groups of 10 circled; 20 and 3 is 23; 23
11. Picture of 10 and 8 drawn; 8
12. Picture of 10 more and 3 more drawn; 33

Homework Sample

Circle groups of 10. Write the number to show the total amount of objects.



Lesson 2

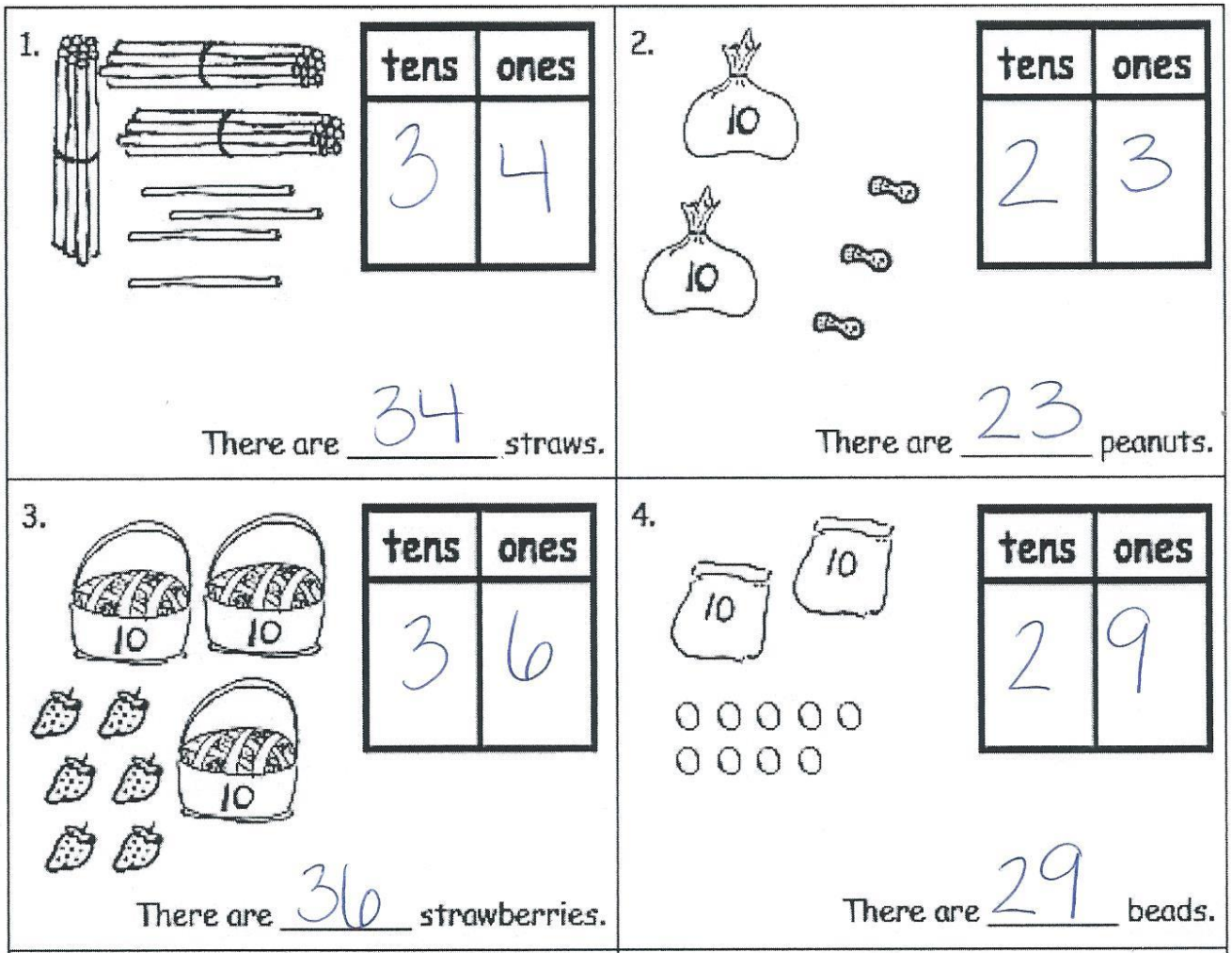
Objective: Use the place value chart to record and name tens and ones within a two-digit number.

Homework Key

1. 3, 4; 34
2. 2, 3; 23
3. 3, 6; 36
4. 2, 9; 29
5. 1, 9; 19
6. 2, 6; 26
7. 2, 4; 24
9. 3, 9; 39
10. 2, 8; 28
11. 2, 3
12. 32
13. 9
14. 40
15. Answers will vary.

Homework Sample

Write the tens and ones and complete the statement.



Lesson 3

Objective: Interpret two-digit numbers as either tens and some ones or as all ones.

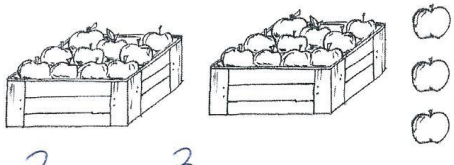
Homework Key

1. 2, 3, 23
2. 3, 6, 36
3. 1, 0, 10
4. 3, 8, 38
5. 29; 29
6. 3, 4; 34
7. 38; 38
8. 39; 39
9. 40; 0, 4
10. Answers will vary.

Homework Sample

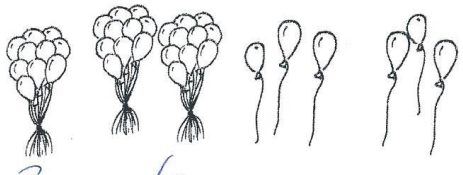
Count as many tens as you can. Complete each statement. Say the numbers and the sentences.

1.



2 tens 3 ones is the same as 23 ones.

2.

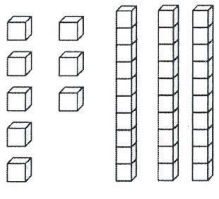


3 tens 6 ones is the same as 36 ones.

3.

1 tens 0 ones is the same as 10 ones.

4.



3 tens 8 ones is the same as 38 ones.

Fill in the missing numbers.

5. 29 → | tens | ones |
|---|---|
| 2 | 9 |

→ 29 ones

Lesson 4

Objective: Write and interpret two-digit numbers as addition sentences that combine tens and ones.

Homework Key

1. 20, 3, 23; 23; 23

2. 20, 4, 24; 24; 24

3. 2, 7; 27

4. 3, 5; 5, 35

5. 2, 4; 4, 24

6. 3, 8; 30, 8, 38

7. 2 more than 10 is 12
.

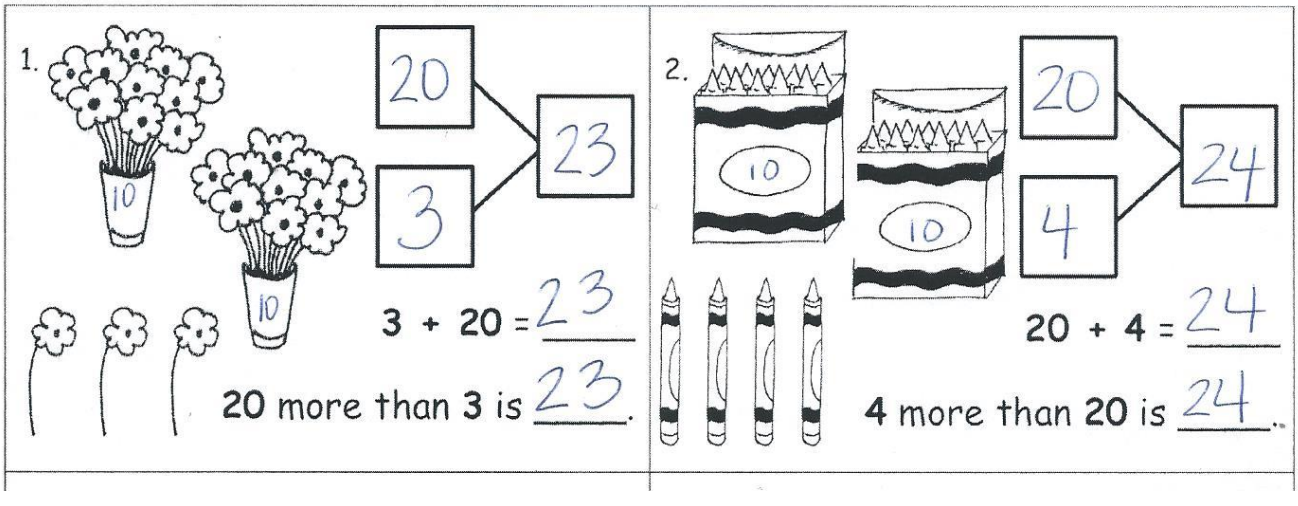
8. 1 and 30 make 31.

9. 20 + 4 = 24

10. 8 + 30 = 38

Homework Sample

Fill in the number bond, or write the tens and ones. Complete the addition sentences.



Lesson 5

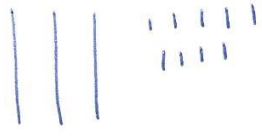
Objective: Identify 10 more, 10 less, 1 more, and 1 less than a two-digit number.

Homework Key

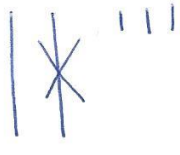
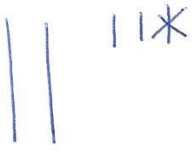
1, 3 quick tens and 9 ones drawn; 39
2. 4 quick tens and 8 ones drawn; 48
3. 3 quick tens and 6 ones drawn; 36
4. 4 quick tens and 5 ones drawn; 45
5. 23 drawn, 10 crossed off; 13
6. 23 drawn, 1 crossed off; 22
7. 31 drawn, 10 crossed off; 21
8. 31 drawn, 1 crossed off; 30
9. 10 more than 20
10. 1 more than 23 is 24
11. 1 less than 30
12. 10 less than 36

Homework Sample

Draw quick tens and ones to show the number. Then, draw 1 more or 10 more.

1.  1 more than 38 is 39.	2.  10 more than 38 is 48.
3. 1 more than 35 is _____.	4. 10 more than 35 is _____.

Draw quick tens and ones to show the number. Cross off (x) to show 1 less or 10 less.

5.  10 less than 23 is 13.	6.  1 less than 23 is 22.

Lesson 6

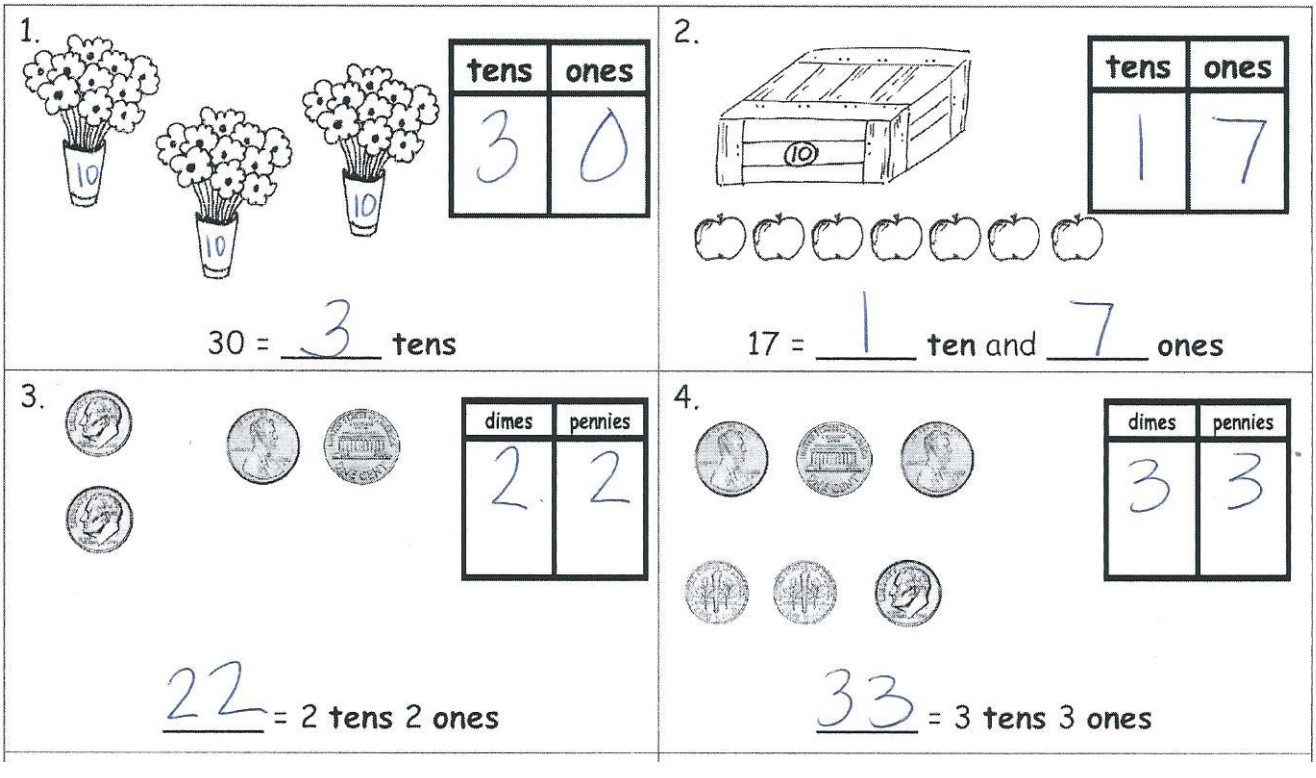
Objective: Use dimes and pennies as representations of tens and ones.

Homework Key

1. 3, 0; 3
2. 1, 7, 1, 7
3. 2, 2; 22
4. 3, 3; 33
5. 0, 8; 8, 0, 8
6. 3, 6; 36, 3, 6
7. 1, 6; 16, 1, 6
8. 2, 4; 2, 4, 24
9. 13; 1 more drawn
10. 13; 10 more drawn
11. 32, 1 more dime drawn
12. 23; 1 more penny drawn
13. 38; 1 penny crossed off
14. 29; 1 dime crossed off
15. 23; 1 dime crossed off
16. 32; 1 penny crossed off

Homework Sample

Fill in the place value chart and the blanks.



Grade 1 Module 4 Topic B

Comparison of Pairs of Two-Digit Numbers

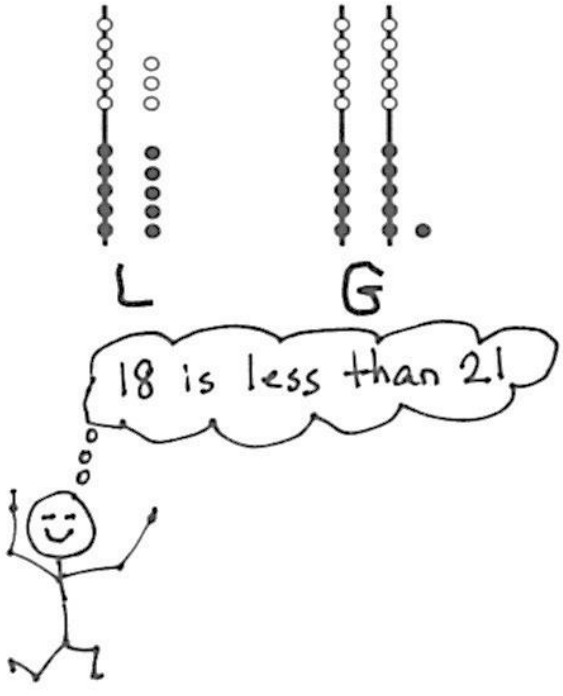
Focus Standards:

1.NBT.3 Compare two two-digit numbers based on meaning of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

Instructional Days Recommended: 4

Topic B begins with Lesson 7, where students identify the greater or lesser of two given numbers. They first work with concrete materials, whereby they build each quantity (**1.NBT.2**) and find the greater or lesser number through direct comparison. They progress to the more abstract comparison of numerals using their understanding of place value to identify the greater or lesser value. Students begin with comparing numbers such as 39 and 12, where the number of both units in the greater number is more than in the smaller number. They then compare numbers such as 18 and 40, where they must realize that the place of the 4 explains the greater value of 40. 4 tens is greater than 1 ten 8 ones.

In Lesson 8, students continue to practice comparing, with the added layer of saying the comparison sentence from left to right. First, they order a group of numerals so that they are reading the set from least to greatest and then greatest to least, always reading from left to right. Then, as students compare two quantities or numerals, they place an *L* below the lesser quantity and a *G* below the greater quantity. When they read, they simply say the first numeral, the comparison word under the numeral, and then the second numeral. This prepares students for using the symbols in later lessons.



The topic closes with Lessons 9 and 10, where students use the comparison symbols >, =, and < to compare pairs of two-digit numbers (**1.NBT.3**). In Lesson 9, students focus on the quantity that is greater as they use the alligator analogy to *eat* and identify the amount that's greater. Within this same lesson, students use the alligator analogy to then identify the amount that is less. Lastly, in Lesson 10, students write the appropriate mathematical symbol to compare two numerals and then apply their knowledge of reading from left to right. For example, 18 < 40 is read as "18 is less than 40."

**The sample homework responses contained in this manual are intended to provide insight into the skills expected of students and instructional strategies used in Eureka Math.*

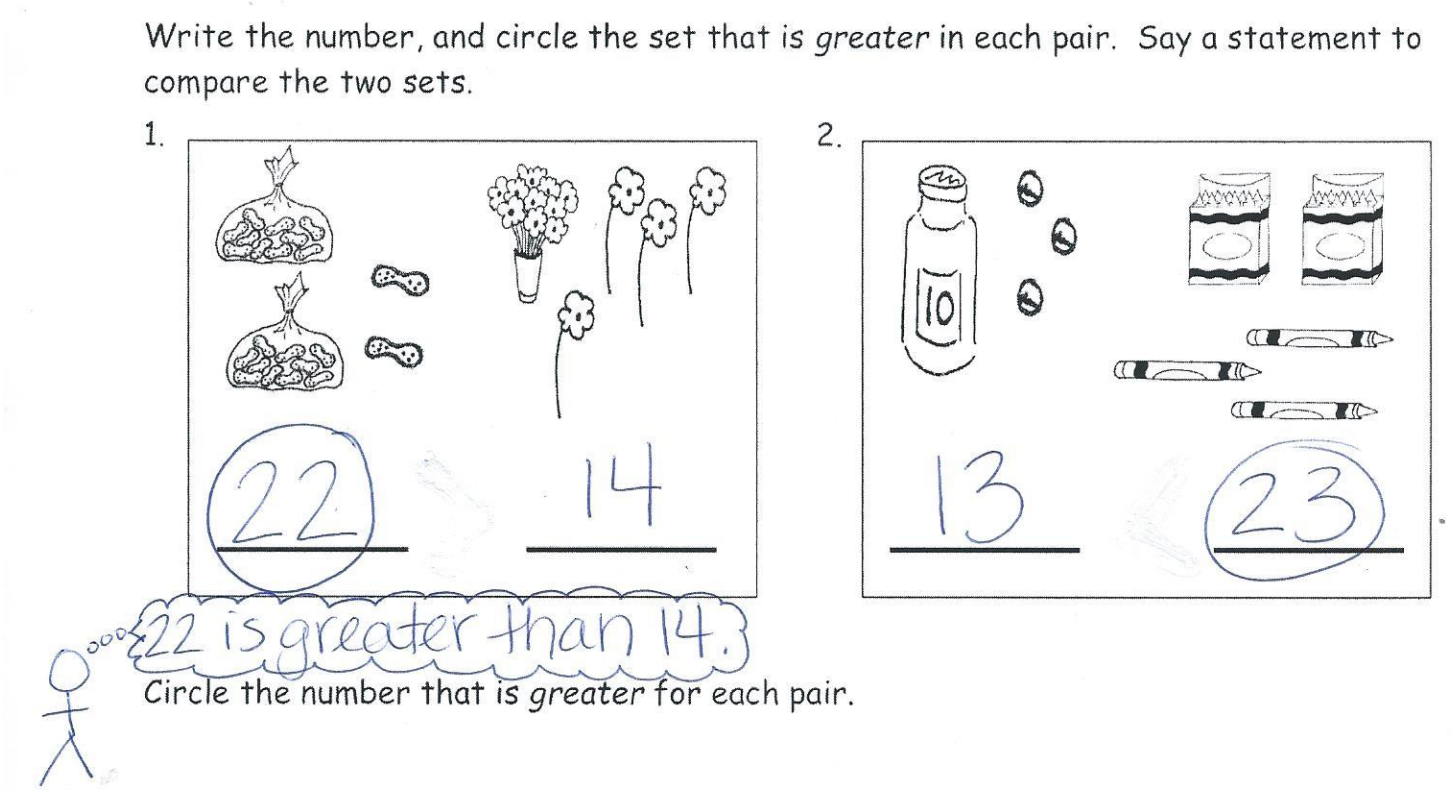
Lesson 7

Objective: Compare two quantities, and identify the greater or lesser of the two given numerals.

Homework Key

1. 22, 14; set of 22 circled
2. 13, 23; set of 23 circled
3. 3 tens 9 ones circled
4. 35 circled
5. 20, 11; set of 2 dimes circled
6. 31, 24; set of 24 circled
7. 28, 38; set of 28 circled
8. 2 tens 7 ones circled
9. 22 circled
10. 22, 13; Set of 1 dime and 3 pennies circled
11. a. 24 circled; 24 is less than 27
    b. 32 circled; 32 is greater than 22
    c. 26 circled; 26 is less than 29
    d. It would be a tie; drawings showing 39

Homework Sample



Lesson 8

Objective: Compare quantities and numerals from left to right.

Homework Key

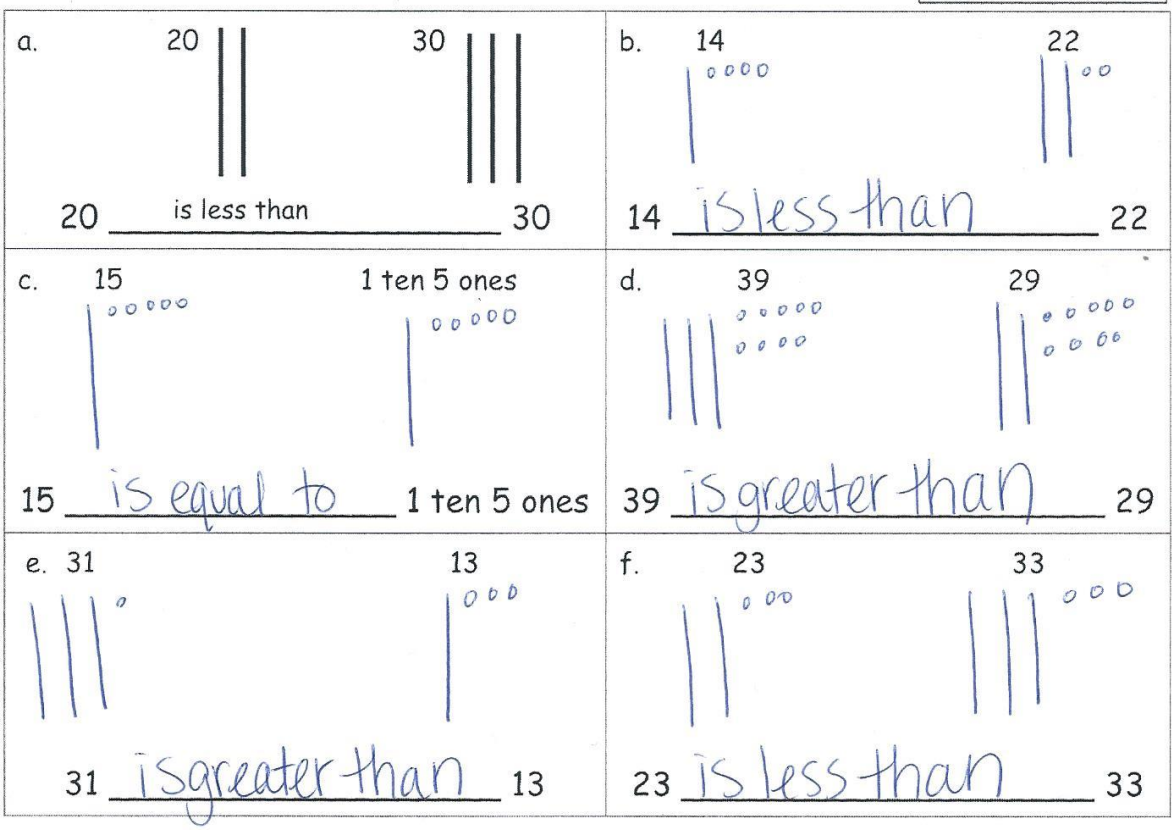
1. The appropriate number of quick tens and ones should be drawn for each.
   a. Answer provided
   b. is less than
   c. is equal to
   d. is greater than
   e. is greater than
   f. is less than
2. 32, 29, 4 tens circled
3. 29, 3 tens, 13 circled
4. 23, 29, 30, 32; 27 goes between 23 and 29
5. 40, 31, 30, 13; 23 goes between 30 and 13
6. Combination of 4 answers will vary (22, 23, 24, 29, 32, 33, 34, 39), but two-digit numbers must be written from least to greatest.

Homework Sample

1. Draw the numbers using quick tens and circles. Use the phrases from the word bank to complete the sentence frames to compare the numbers. The first one has been done for you.

Word Bank

is greater than
is less than
is equal to



Lesson 9 and 10

Objective: Use the symbols >, =, and < to compare quantities and numerals.

Homework Key (Lesson 9)

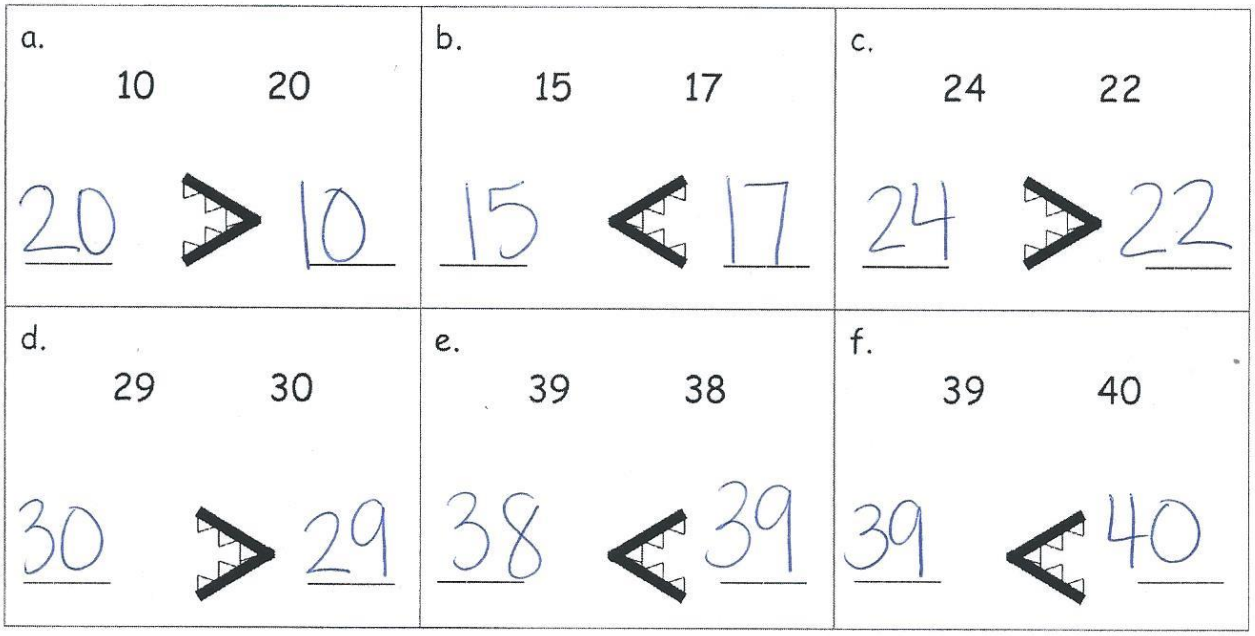
1 a. 20, 10 b. 15, 17 c. 24, 22 d. 30, 29 e. 38, 39 f. 39 ,40

2. Answers will vary.

3. 16, 17 is matched to the is less than alligator
31, 23 is matched to the is greater than alligator.
35, 25 is matched to the is greater than alligator.
12, 21 is matched to the is less than alligator .
22, 32 is matched to the is less than alligator .
9, 30 is matched to the is less than alligator .
39, 40 is matched to the is less than alligator.

Homework Sample

1. Write the numbers in the blanks so that the alligator is eating the greater number. Read the number sentence, using *is greater than, is less than,* or *is equal to.* Remember to start with the number on the left.



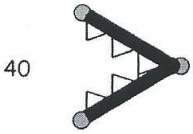
Lesson 10

Homework Key

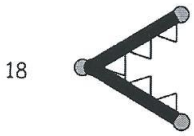
a. >; is greater than
b. <; is less than
c. =; is equal to
d. <; is less than
e. >; is greater than
f. >; is greater than
g. >; is greater than
h. =; is equal to
i. >; is greater than
j. <; is less than
k. >; is greater than
l. =; is equal to
m. <; is less than
n. <; is less than
o. <; is less than
p. >; is greater than

Homework Samples

Use the symbols to compare the numbers. Fill in the blank with <, >, or = to make a true number sentence. Complete the number sentence with a phrase from the word bank.



40 (>) 20
40 is greater than 20.



18 (<) 20
18 is less than 20.

Word Bank
is greater than
is less than
is equal to

a. 17 (>) 13
17 is greater than 13

b. 23 (<) 33
23 is less than 33

c. 36 (=) 36
36 is equal to 36

d. 25 (<) 32
25 is less than 32

e. 38 (>) 28
38 is greater than 28

f. 32 (>) 23
32 is greater than 23

Grade 1 Module 4 Topic C

Addition and Subtraction of Tens

Focus Standards:

1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

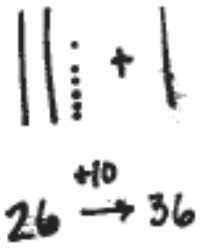
1.NBT.6 Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Instructional Days Recommended: 2

In Topic C, students continue from their previous work with 10 more and 10 less to extend the concept to adding and subtracting multiples of 10.

In Lesson 11, students represent the addition of ten more with concrete objects and number bonds, first using the numeral and then writing as *units* of ten, as shown to the right. After creating such number bonds for several examples, students notice that only the *unit* has changed (e.g., 3 bananas + 1 banana = 4 bananas, just as 3 tens + 1 ten = 4 tens). As students explore, they see that this relationship is present, even when adding more than 1 ten. They come to realize that 2 tens + 2 tens = 4 tens, just as 2 + 2 = 4 (**1.NBT.4**). Students also explore this relationship with subtraction, seeing that 4 tens can be decomposed as 3 tens and 1 ten and that 4 tens – 3 tens = 1 ten, just as 4 – 3 = 1 (**1.NBT.6**). Students see that the arrow is used to show the addition or subtraction of an amount, regardless of whether the number is increasing (adding) or decreasing (subtracting). This provides an important foundation for applying strategies such as the make ten strategy, which is described in Topic D.

In Lesson 12, students add multiples of 10 to two-digit numbers that include both tens and ones. They recognize that, when tens are added to a number, the ones remain the same. Students use the cubes within their kits of 4 ten-sticks, as well as the more abstract manipulatives of dimes and pennies, to explore the concept. They represent their computation in familiar ways such as number bonds, quick ten drawings, arrow notation, and by using the place value chart to organize the quantities as tens and ones.



**The sample homework responses contained in this manual are intended to provide insight into the skills expected of students and instructional strategies used in Eureka Math.*

Lesson 11

Objective: Add and subtract tens from a multiple of 10.

Homework Key

1. Answer Provided

2. 10, 20, 30; 3, 1, 2; 30 = 10 + 20

3. 10, 20, 30; 3, 1, 2; 30 – 10 = 20

4. 20, 20, 40; 4, 2, 2; 40 – 20 = 20

5. 0, 40, 40; 4, 4, 0; 40 – 40 = 0

6. 20, 20, 40; 2, 2, 4; 20 + 20 = 40

7. Quick tens drawn; 10, 20, 30; 30

8. Quick tens drawn; 10, 20, 30; 20

9. Quick tens drawn; 10, 10, 20; 10

10. Quick tens drawn; 10, 30, 40; 40

11. 3 tens

12. 40

13. 30

14. 30

15. 1 ten

16. 10

17. 0

18. 40

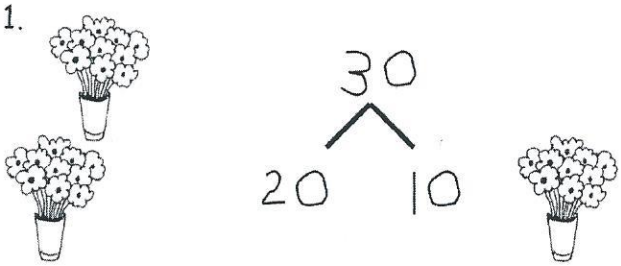
19. 10

Lesson 11 (continued)

Homework Sample

Draw a number bond, and complete the number sentences to match the pictures.

1.



2 tens + 1 ten = 3 tens

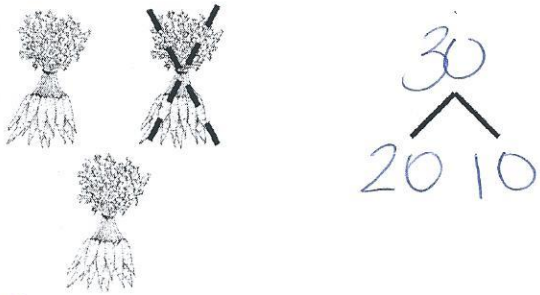
20 + 10 = 30

2.

3 tens = 1 ten + 2 tens

30 = 10 + 20

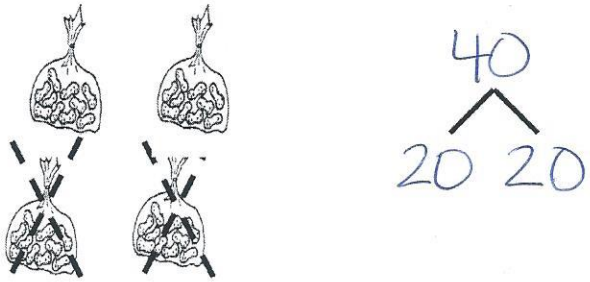
3.



3 tens - 1 ten = 2 tens

30 - 10 = 20

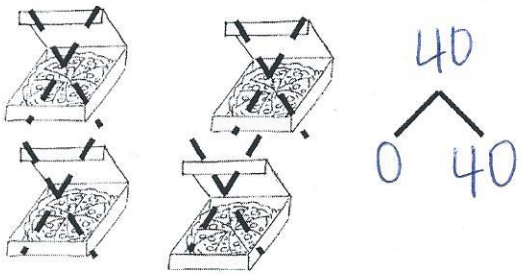
4.



4 tens - 2 tens = 2 tens

40 - 20 = 20

5.



4 tens - 4 tens = 0 tens

40 - 40 = 0

6.

2 tens + 2 tens = 4 tens

20 + 20 = 40

Lesson 12

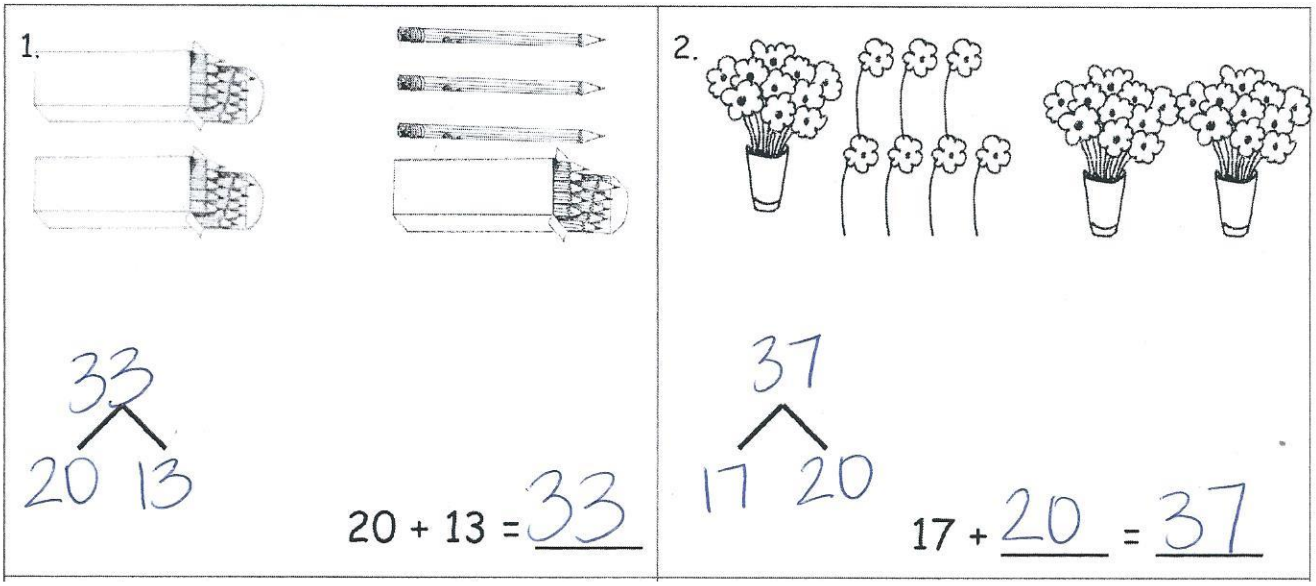
Objective: Add tens to a two-digit number.

Homework Key

1. 33; 13, 20, 33
2. 20, 37; 17, 20, 37
3. 10, 28, 38; 10, 28, 38
4. 30, 19, 49; 19, 30, 49
5. Quick tens/ones drawn; 10, 17, 27; 10, 17, 27
6. Quick tens/ones drawn; 19, 20, 39; 19, 20
7. 29
8. 39
9. 28
10. 11
11. 1, 8; 2, 0; 3,8

Homework Sample

Fill in the missing numbers to match the picture. Complete the number bond to match.



Grade 1 Module 4 Topic D

Addition of Tens or Ones to a Two-Digit Number

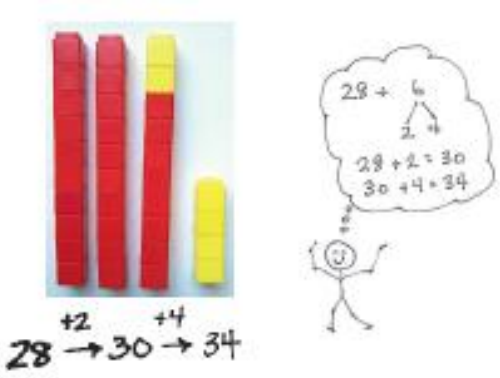
Focus Standards:

1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

Instructional Days Recommended: 6

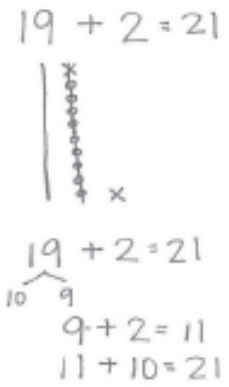
Topic D begins with students applying the Module 2 strategies of counting on and making ten to larger numbers, this time making a ten that is built on a structure of other tens. In Lesson 13, students use linking cubes as a concrete representation of the numbers, write a matching number sentence, and write the total in a place value chart. As they add cubes, students see that sometimes a new ten can be made, for example, 33 + 7 = 40, or 4 tens.

In Lesson 14, students use arrow notation to reach the next ten, and then add the remaining amount when adding across ten. For example, when adding 28 + 6, students recognize that they started with 2 tens 8 ones and, after adding 6, had 3 tens 4 ones. Students also use the number bond notation from Module 2 to represent how they are breaking apart the second addend to make the ten (**1.NBT.4**).



Lesson 15 provides the chance to notice the ways smaller addition problems can help with larger ones. Students add 8 + 4, 18 + 4, and 28 + 4 and notice that 8 + 4 is embedded in all three problems, which connects to their previous work in Topic C.

Lessons 16, 17, and 18 focus on adding ones with ones or adding tens with tens. During Lesson 16, students recognize single-digit addition facts as they solve 15 + 2, 25 + 2, and 35 + 2. When adding 33 + 4, students see that they are adding 4 ones to 3 ones, while the tens remain unchanged, to make 3 tens 7 ones or 37. When adding 12 + 20, students see that they are adding 2 tens to 1 ten to make 3 tens 2 ones or 32. In both cases, one unit remains unchanged. Students work at a more abstract level by using dimes and pennies to model each addend. For instance, students model 14 cents using 1 dime and 4 pennies, and add 2 additional dimes or 2 additional pennies.



Adding Ones with Ones

In Lesson 17, students continue working with addition of like units and making ten as a strategy for addition. They use quick tens and number bonds as methods for representing their work.

During Lesson 18, students share and critique strategies for adding two-digit numbers. They reexamine all of the strategies used thus far in the module, including arrow notation, quick tens, and number bonds. Projecting varying correct work samples, students compare for clarity, discussing questions such as the following: Which drawing best shows the tens? Which drawings make it easier to *not* count all? Which number sentence is easiest to relate to the drawing? What is a compliment you would like to give [the student]? What is a way that [the student] might improve his work? How are [Partner A's] methods different from or the same as yours?

**The sample homework responses contained in this manual are intended to provide insight into the skills expected of students and instructional strategies used in Eureka Math.*

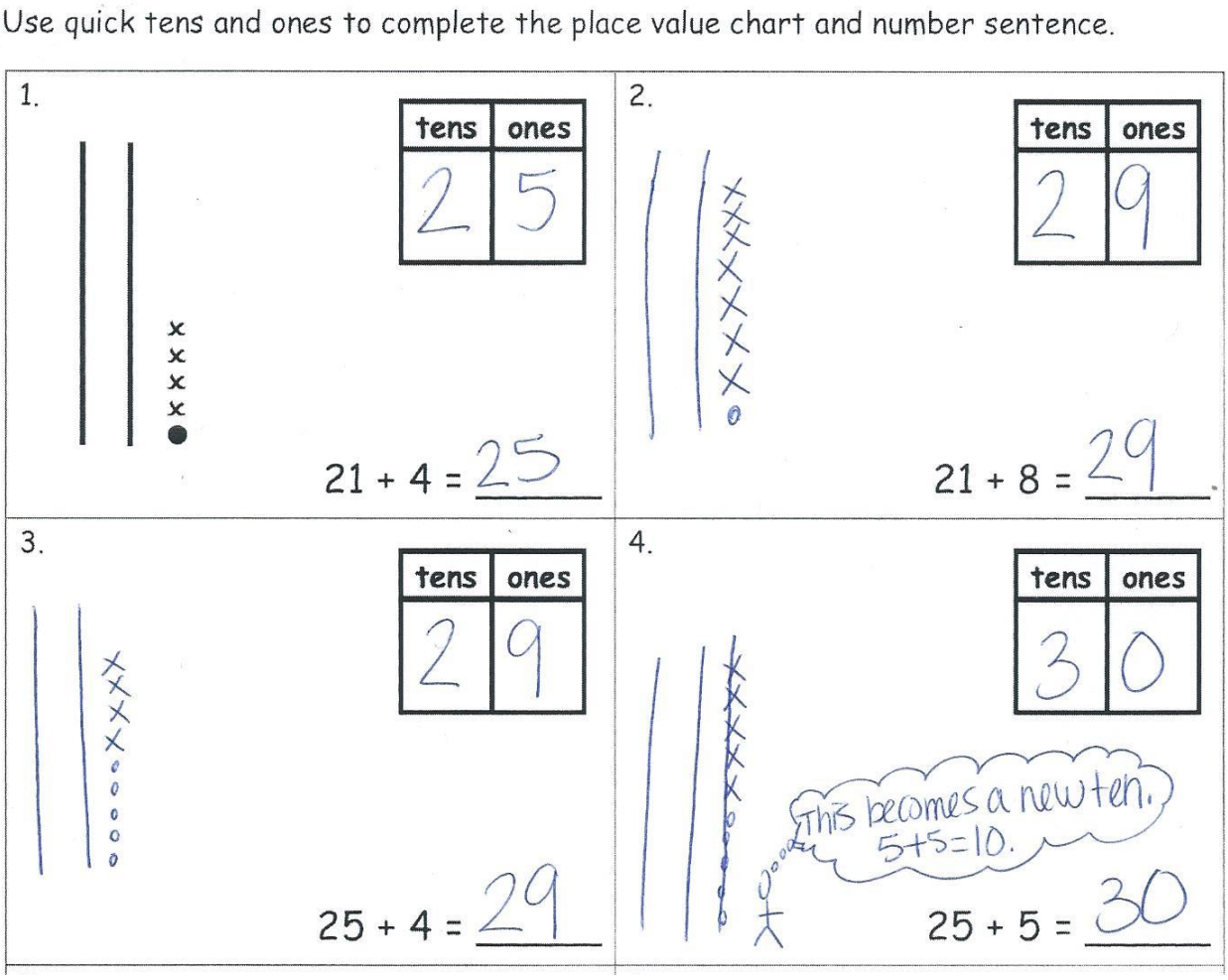
Lesson 13 and 14

Objective: Use counting on and the make ten strategy when adding across a ten.

Homework Key (Lesson 13)

1. 2, 5; 25
2. Quick ten drawing; 2, 9; 29
3. Quick ten drawing; 2, 9; 29
4. Quick ten drawing; 3, 0; 30
5. Quick ten drawing; 3, 6; 36
6. Quick ten drawing; 4, 0; 40
7. 20, 6; 28; 2, 8; quick ten drawing
8. 30, 6; 39; 3, 9; quick ten drawing
9. 20, 6; 30; 3, 0; quick ten drawing
10. 20, 4; 30; 3, 0; quick ten drawing
11. a. 29
    b. 30
    c. 40

Homework Sample



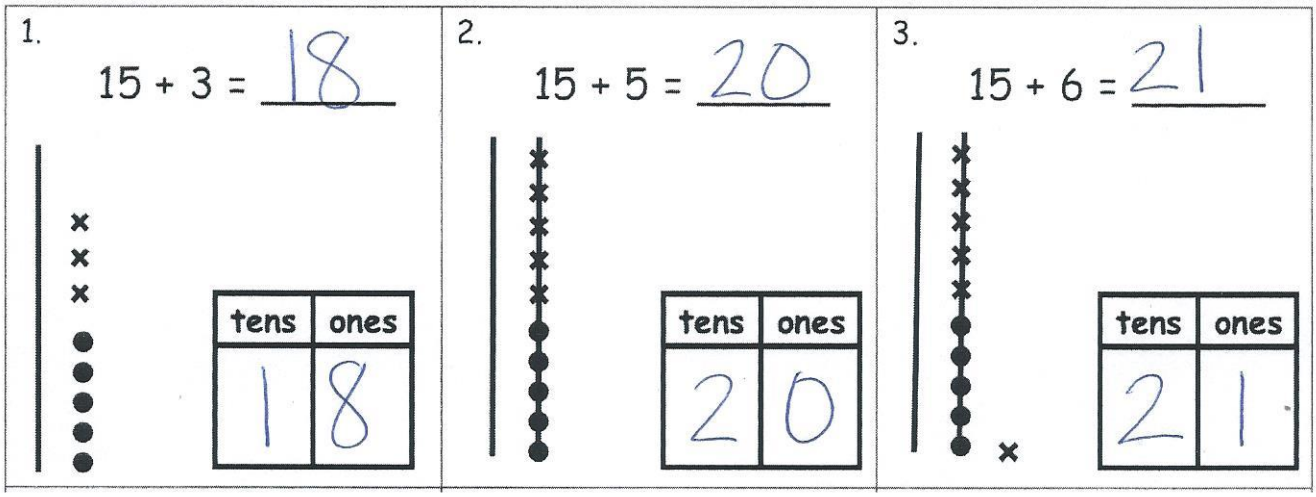
Lesson 14

Homework Key

1. 18; 1, 8
2. 20; 2, 0
3. 21; 2, 1
4. 30; 3, 0; quick ten drawing
5. 32; 3, 2; quick ten drawing
6. 35; 3, 5; quick ten drawing
7. 20; 2, 0; quick ten drawing
8. 24; 2, 4; quick ten drawing
9. 34; 3, 4; quick ten drawing
10. 10, 3; 19; 1, 9; work shown may vary.
11. 10, 3; 20; 2, 0; work shown may vary.
12. 20, 5; 30; 3, 0; work shown may vary.
13. 5, 3; 33; 3, 3; work shown may vary.
14. 6, 2; 32; 3, 2; work shown may vary.
15. 7, 2; 32; 3, 2; work shown may vary.

Homework Sample

Use the pictures or draw quick tens and ones. Complete the number sentence and place value chart.



Lesson 15

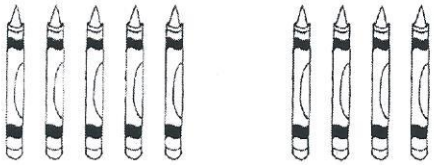
Objective: Use single-digit sums to support solutions for analogous sums to 40.

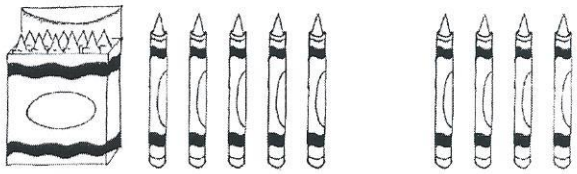
Homework Key

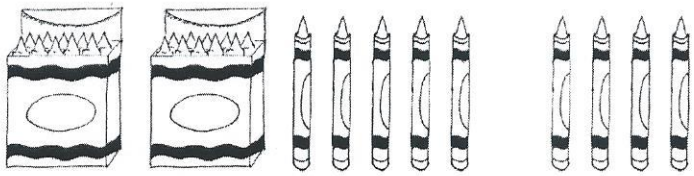
1. 9
2. 19
3. 29
4. 39
5. 12
6. 22
7. 32
8. a. 7
   b. 17
   c. 27
   d. 37
9. a. 10
   b. 20
   c. 30
   d. 40
10. a. 9
    b. 19
    c. 29
11. a. 11
    b. 21
    c. 31
12. a. 15
    b. 25
    c. 35
13. a. 12
    b. 22
    c. 32
14. 29; 4+5 = 9
15. 31; 4 + 7 = 11

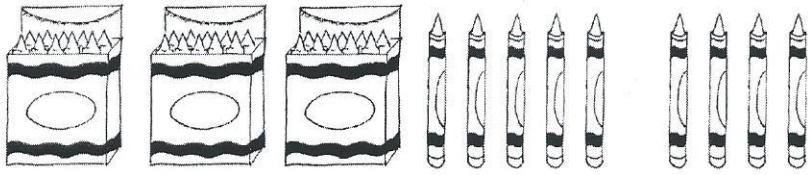
Homework Sample

Solve the problems.

1.  5 + 4 = 9

2.  15 + 4 = 19

3.  25 + 4 = 29

4.  35 + 4 = 39

Lesson 16 and 17

Objective: Add ones and ones or tens and tens.

Homework Key (Lesson 16)

1. Quick ten drawing; 19
2. Quick ten drawing; 20
3. Quick ten drawing; 17
4. Quick ten drawing; 34
5. Written notation; 30
6. Written notation; 34
7. a. 23; 2 dimes and 3 pennies
   b. 19; 13 + 6
   c. 29; $26 \overset{+3}{\rightarrow} 29$
   d. 40; quick ten drawing
   e. 32; 3 dimes and 2 pennies

Homework Sample

Draw quick tens and ones to help you solve the addition problems.

1. 17 + 2 = 19 	2. 17 + 3 = 20 
3. 14 + 3 = _____	4. 24 + 10 = _____

Make a number bond or use the arrow way to solve the addition problems.

5. 6 + 24 = 30 20 4 6+4=10 10+20=30 	6. 14 + 20 = _____

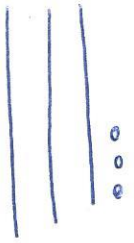
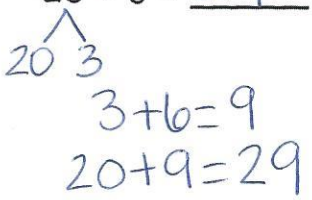
Lesson 17

Homework Key

1. 33; quick ten or number bond drawing
2. 29; quick ten or number bond drawing
3. 33; quick ten or number bond drawing
4. 34; quick ten or number bond drawing
5. 33; quick ten or number bond drawing
6. 37; quick ten or number bond drawing
7. Answers will vary.
8. 32; quick ten or number bond drawings
9. 34; quick ten or number bond drawing
10. 34; quick ten or number bond drawing
11. 38; quick ten or number bond drawing
12. 37; quick ten or number bond drawing
13. 38; quick ten or number bond drawing
14. Answers will vary.

Homework Samples

Use quick ten drawings or number bonds to make true number sentences.

1. 13 + 20 = 33 	2. 23 + 6 = 29 

Lesson 18

Objective: Share and critique peer strategies for adding two-digit numbers.

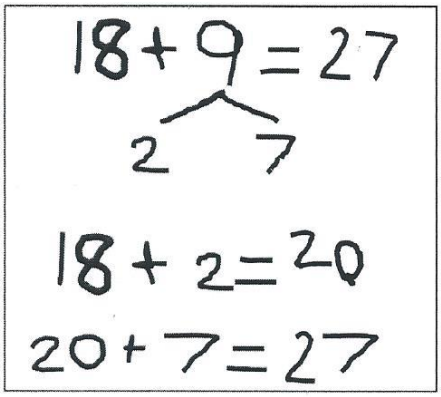
Homework Key

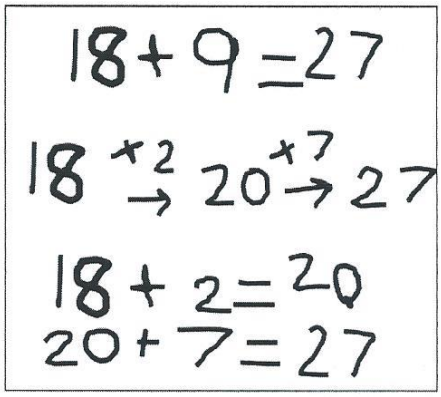
1. Yes, both are correct. Explanations will vary.
2. No, the first solution added 11 dots instead of 9.
3. Students B and Student C worked the problem correctly. Quick ten drawing is made for 19 + 6

Homework Samples

1. Two students both solved the addition problem below using different methods.

18 + 9





Are they both correct? Why or why not?

Yes, They both broke apart the 9 into 2 and 7, but they still added all the parts together toget the answer 27.

Grade 1 Module 4 Topic E

Varied Problem Types Within 20

Focus Standards:

1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Instructional Days Recommended: 4

As students begin working with larger numbers in word problems, representing each item and drawing it individually can become cumbersome. In previous work with problem types, the two parts have been almost exclusively single-digit numbers. For example, students were adding 9 and 6 or subtracting 8 from 14 to solve.

During Topic E, students begin to represent quantities in larger groupings while still visualizing the relationship between the numbers. For example, students may be adding a two-digit number and a one-digit number, such as 12 and 4, or subtracting a two-digit number from a two-digit number, such as 16 – 12, represented in the tape diagram below.

Tape Diagram

In Lesson 19, students are presented with *put together/take apart with total unknown* and *add to with result unknown* word problems within 20 (**1.OA.1**). As they solve, they draw and box the two parts and then include the numeral label within the box, producing tape diagrams. This enables them to quickly identify where the quantity can be found within the drawing. Students begin adding a bracket as shown to identify the total.

Lessons 20 and 21 allow students to explore number relationships as they solve *put together/take apart with addend unknown* and *add to with change unknown* word problems

within 20. As they do so, they explore number relationships as they notice and discuss how the size of the boxes relate to the size of each part. For example, when adding 12 + 4, students notice that the part in their tape diagram that contains 12 is much longer than the part that contains 4. They also notice that, when adding 10 + 10, the two parts are the same size.

During these lessons, students share their strategies for drawing when a part is unknown. For example, to solve the problem, "Maria has 15 playing cards in her hand. She has 8 black cards. If the rest are red, how many red cards does she have?" Some students may draw all 15 cards first, and then place a box around the 8 black cards Maria already has. Other students may draw the 8 black cards, and then count on as they draw to 15. Still other students may label 15 for the total, draw one part labeled 8, and then work toward identifying the missing part. Students continue to work on recognizing what kind of unknown they are looking for—a part or a total.

During Lesson 22, students use their experiences and understanding to write their own word problems of varied types based on given tape diagrams.

**The sample homework responses contained in this manual are intended to provide insight into the skills expected of students and instructional strategies used in Eureka Math.*

Lesson 19

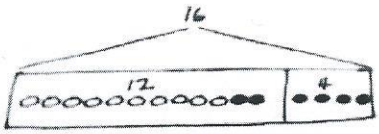
Objective: Use tape diagram as representations to solve *put together/take apart with total unknown* and *add to with result unknown* word problems.

Homework Key

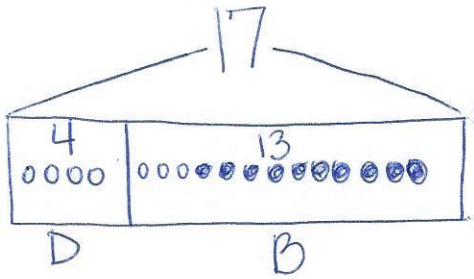
1. 17; 4 + 13 = 17; labeled tape diagram
2. 20; 14 + 6 = 20; labeled tape diagram
3. 13; 7 + 6 =13; labeled tape diagram
4. 18; 13 + 5 = 18; labeled tape diagram

Homework Sample

Read the word problem.
Draw a tape diagram and label.
Write a number sentence and a statement that matches the story.

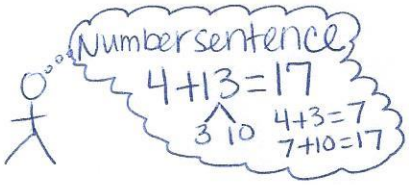


1. Darnel is playing with his 4 red robots. Ben joins him with 13 blue robots. How many robots do they have altogether?



4+13=17

They have 17 robots.



Lesson 20 and 21

Objective: Recognize and make use of part-whole relationships within tape diagrams when solving a variety of problem types.

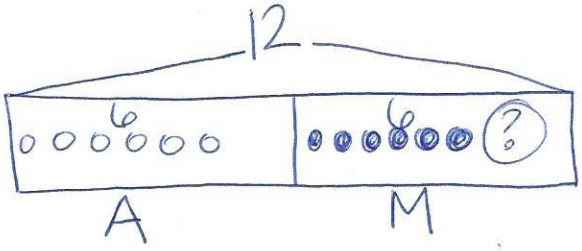
Homework Key (Lesson 20)

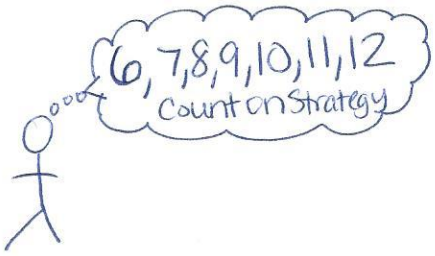
1. 6; 6 + 6 = 12 or 12 – 6 = 6; labeled tape diagram
2. 9; 7 + 9 = 16 or 16 – 7 = 9; labeled tape diagram
3. 20; 9 + 11 = 20; labeled tape diagram
4. 3; 13 + 3 = 16 or 16 – 13 = 3; labeled tape diagram

Homework Sample

Read the word problem.
Draw a tape diagram and label.
Write a number sentence and a statement that matches the story.

1. Rose has 12 soccer practices this month. 6 practices are in the afternoon, but the rest are in the morning. How many practices will be in the morning?





$12 = 6 + \boxed{?}$

$12 = 6 + 6$

or

$12 - 6 = 6$

Rose has 6 practices in the morning.

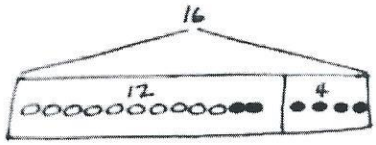
Lesson 21

Homework Key

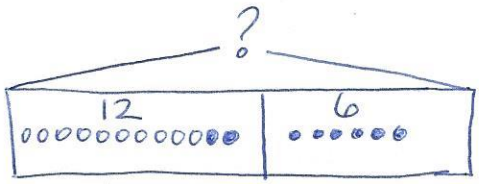
1. 18; 12 + 6 = 18; labeled tape diagram
2. 7; 7 + 7 = 14 or 14 – 7 = 7; labeled tape diagram
3. 5; 13 + 5 = 18 or 18 – 13 = 5; labeled tape diagram
4. 17; 8 + 9 = 17; labeled tape diagram

Homework Sample

Read the word problem.
Draw a tape diagram and label.
Write a number sentence and a statement that matches the story.



1. Fatima has 12 colored pencils in her bag. She has 6 regular pencils, too. How many pencils does Fatima have?



12 + 6 = 18
10 2
2 + 6 = 8
10 + 8 = 18

Fatima has 18 pencils.

Lesson 22

Objective: Write word problems of varied types.

Homework Key

1. Answers will vary.
2. Answers will vary.

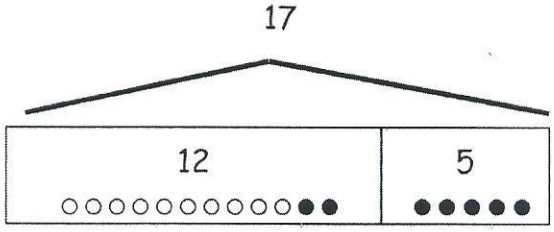
Homework Sample

Use the tape diagrams to write a variety of word problems. Use the word bank if needed. Remember to label your model after you write the story.

Topics (Nouns)		
flowers	goldfish	lizards
stickers	rockets	cars
frogs	crackers	marbles

Actions (Verbs)		
hide	eat	go away
give	draw	get
collect	build	play

1.



Answers vary

Jordan had 17 goldfish crackers. He ate 12 of them. How many are left?

Grade 1 Module 4 Topic F

Addition of Tens and Ones to a Two-Digit Number

Focus Standards:

1.NBT.4
Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

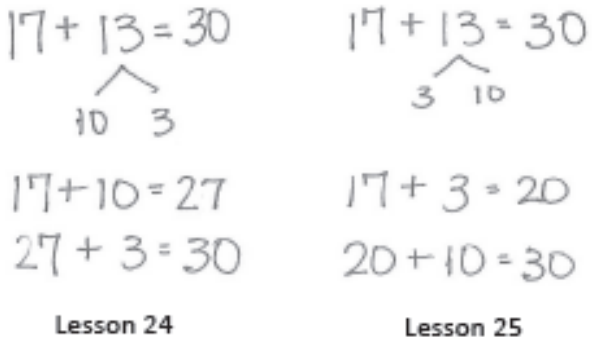
1.NBT.2
Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
a. 10 can be thought of as a bundle of ten ones—called a "ten."
c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

Instructional Days Recommended: 7

In Topic F, students begin adding like units within pairs of two-digit numbers. Lesson 23 focuses on taking interpretations of two-digit numbers a step further, having students interpret numbers such as 25 as 1 ten and 15 ones, as well as 2 tens and 5 ones and as 25 ones. Working with this concept supports student understanding in the next lessons when students add pairs such as 14 + 16 and initially make 2 tens and 10 ones.

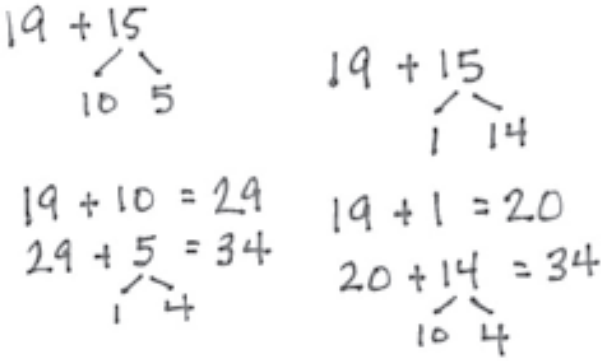
During Lessons 24 and 25, students interchangeably add sets of two-digit numbers, where the ones digits produce a sum less than or equal to 10. For example, when adding 17 + 13,

students decompose the second addend into 10 and 3. They then add 10 to 17, making 27, and then add the remaining ones. In Lesson 25, students also practice adding ones to the first addend and then adding the remaining ten.



Lesson 24 Lesson 25

In Lessons 26 and 27, students add tens and ones when the ones digits have a sum greater than 10, such as 19 + 15. Students continue to decompose the second addend, alternating between adding on the ten first and making the next ten, as shown to the right. In Lesson 27, students solve the same problem using the varying strategies taught throughout the topic. Students continue to strengthen their use of Level 3 strategies for adding numbers to 40.



Adding on Ten First Adding to Make the Next Ten First

The module closes with Lessons 28 and 29, wherein students solve Problem Sets of varied types to support flexibility in thinking as they add any pair of two digits whose sum is within 40. In Lesson 29, students again share methods and representations for finding the sums.

**The sample homework responses contained in this manual are intended to provide insight into the skills expected of students and instructional strategies used in Eureka Math.*

Lesson 23

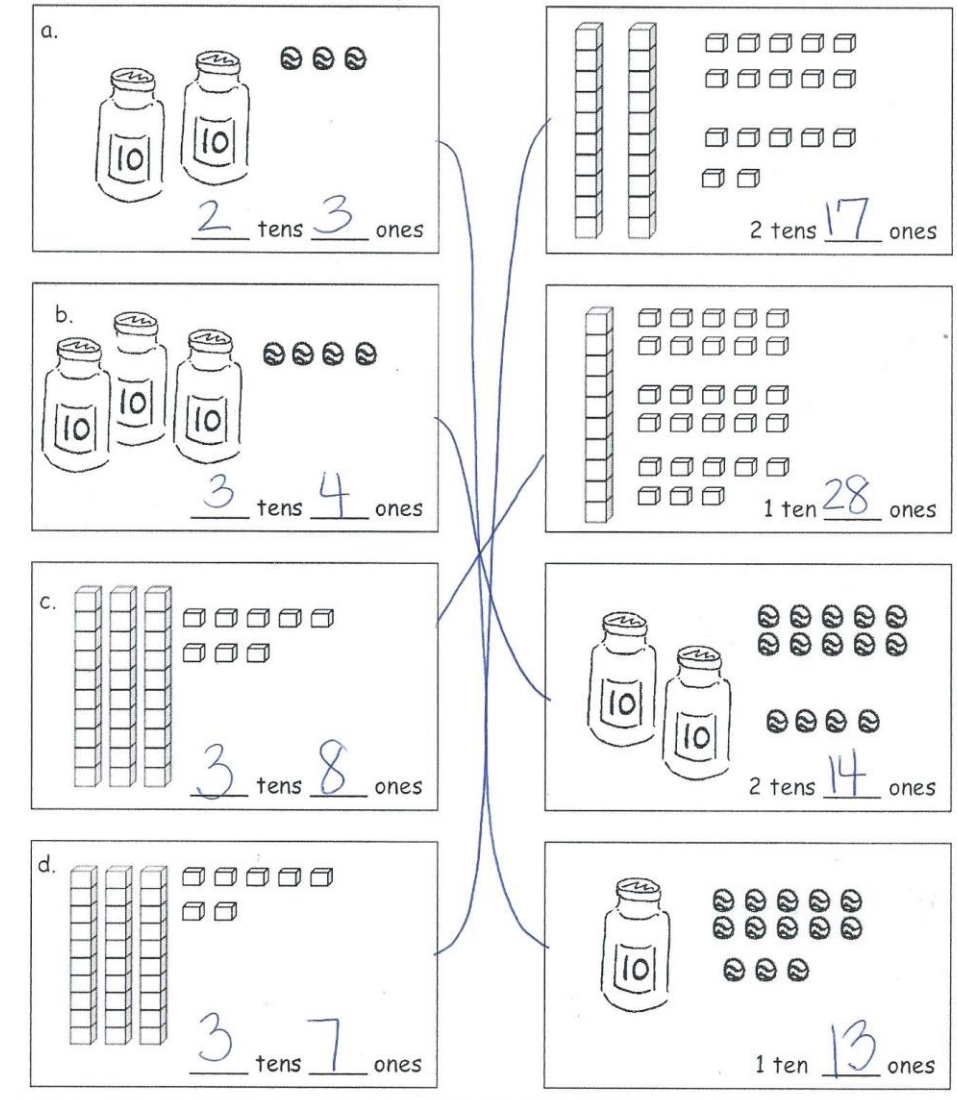
Objective: Interpret two-digit numbers as tens and ones, including cases with more than 9 ones.

Homework Key

1. a. 2, 3; matched to fourth pair; 13
   b. 3, 4; matched to third pair; 14
   c. 3, 8; matched to second pair; 28
   d. 3, 7; matched to first pair; 17
2. a. 3 tens, 8 ones
   b. 2 tens, 6 ones
   c. 2 tens, 1 one
3. a, b, and c should be checked.
4. Quick tens drawing showing Emi is correct

Homework Sample

1. Fill in the blanks, and match the pairs that show the same amount.



Lesson 24 and 25

Objective: Add a pair of two-digit numbers when the ones digits have a sum less than or equal to 10.

Homework Key (Lesson 24)

1. a. 29
   b. 39; 33; 33, 39
   c. 30; 26; 26, 30
   d. 40; 36; 36, 4, 40
   e. 30; 17, 10, 27; 27, 3, 30
   f. 10, 3; 40; 27, 10, 37; 37, 3, 40

2. a. 27; 14, 10, 24; 24, 3, 27
   b. 38; 24, 10, 34; 34, 4, 38
   c. 29 number bonds shown
   d. 39 number bonds shown
   e. 39 number bonds shown
   f. 39 number bonds shown
   g. 30 number bonds shown
   h. 40 number bonds shown

Homework Sample

1. Solve using number bonds. Write the two number sentences that show that you added the ten first. Draw quick tens and ones if that helps you.

a. 13 + 16 = 29 (10, 3)
16 + 10 = 26
26 + 3 = 29

b. 16 + 23 = 39 (10, 6)
23 + 10 = 33
33 + 6 = 39

c. 16 + 14 = 30 (10, 4)
16 + 10 = 26
26 + 4 = 30

d. 14 + 26 = 40 (10, 4)
26 + 10 = 36
36 + 4 = 40

e. 17 + 13 = 30 (10, 3)
17 + 10 = 27
27 + 3 = 30

f. 27 + 13 = 40 (10, 3)
27 + 10 = 37
37 + 3 = 40

Lesson 25

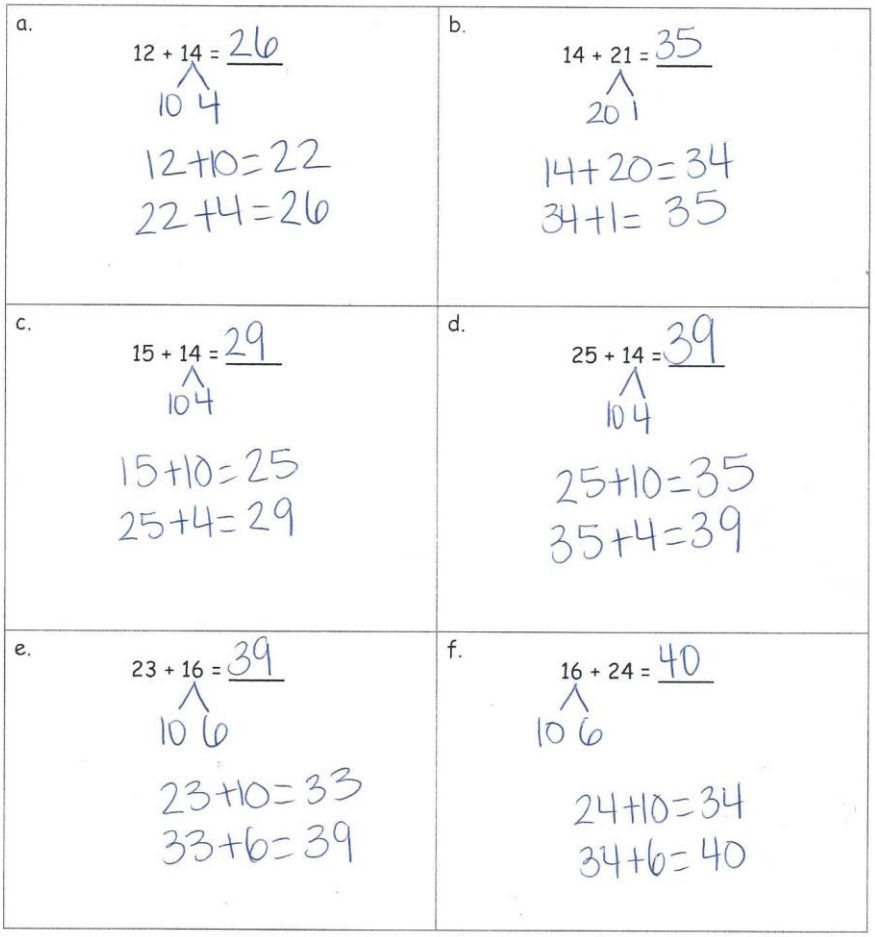
Homework Key

1. a. 26; 10, 2, 14 + 10 = 24; 24 + 2 = 26; number bonds and sentences may vary
   b. 35; 10, 4, 21 + 10 = 31; 31 + 4 = 35; number bonds and sentences may vary
   c. 29; 10, 4, 15 + 10 = 25; 25 + 4 = 29; number bonds and sentences may vary
   d. 39; 10, 4, 25 + 10 = 35; 35 + 4 = 39; number bonds and sentences may vary
   e. 39; 10, 6, 23 + 10 = 33; 33 + 6 = 39; number bonds and sentences may vary
   f. 40; 10, 6, 24 + 10 = 34; 34 + 6 = 40; number bonds and sentences may vary

2. a. 37; 27 + 10 = 37
   b. 40; 3, 10; 27 + 3 = 30; 30 + 10 = 40; number bonds and sentences may vary
   c. 39; 3, 10; 26 + 3 = 29; 29 + 10 = 39; number bonds and sentences may vary
   d. 40; 4, 10; 26 + 4 = 30; 30 + 10 = 40; number bonds and sentences may vary
   e. 30; 2, 10; 18 + 2 = 20; 20 + 10 = 30; number bonds and sentences may vary
   f. 39; 10, 8; 21 + 8 = 29; 29 + 10 = 39; number bonds and sentences may vary
   g. 30; 1, 10; 19 + 1 = 20; 20 + 10 = 30; number bonds and sentences may vary
   h. 40; 9, 10; 21 + 9 = 30; 30 + 10 = 40; number bonds and sentences may vary

Homework Sample

1. Solve using number bonds. This time, add the tens first. Write the 2 number sentences to show what you did.



Lesson 26

Objective: Add a pair of two-digit numbers when the ones digits have a sum greater than 10.

Homework Key (Lesson 26)

1. a. 31
   b. 32
   c. 32; 27; 27, 32
   d. 33; 27; 27, 33
   e. 31; 27; 27, 4, 31
   f. 36; 29; 29, 7, 36

2. a. 32
   b. 33
   c. 33; 20; 33
   d. 35; 20; 20, 35
   e. 37; 19, 20; 20, 37
   f. 38; 19, 1, 20; 20, 18, 38

Homework Sample

1. Solve using a number bond to add ten first. Write the 2 addition sentences that helped you.

a. 18 + 13 = 31 (10, 3)
18 + 10 = 28
28 + 3 = 31

b. 13 + 19 = 32 (10, 3)
19 + 10 = 29
29 + 3 = 32

c. 17 + 15 = 32 (10, 5)
17 + 10 = 27
27 + 5 = 32

d. 17 + 16 = 33 (10, 6)
17 + 10 = 27
27 + 6 = 33

e. 17 + 14 = 31 (10, 4)
17 + 10 = 27
27 + 4 = 31

f. 19 + 17 = 36 (10, 7)
19 + 10 = 29
29 + 7 = 36

Lesson 27

Homework Key

1. Connected number bonds and pairs of number sentences for each
   a. 31
   b. 31
   c. 32
   d. 31
   e. 33
   f. 34
   g. 34
   h. 35

2. a. 33
   b. 36
   c. 35
   d. 32
   e. 31
   f. 31
   g. 38
   h. 36

Homework Sample

1. Solve using number bonds with pairs of number sentences. You may draw quick tens and some ones to help you.

a. 17 + 14 = 31 10 4 17+10=27 27+4=31	b. 16 + 15 = 31 10 5 16+10=26 26+5=31
c. 17 + 15 = 32 10 5 17+10=27 27+5=32	d. 18 + 13 = 31 10 3 18+10=28 28+3=31
e. 18 + 15 = 33 10 5 18+10=28 28+5=33	f. 18 + 16 = 34 10 6 18+10=28 28+6=34
g. 19 + 15 = 34 10 5 19+10=29 29+5=34	h. 19 + 16 = 35 10 6 19+10=29 29+6=35

Lesson 28 and 29

Objective: Add a pair of two-digit numbers with varied sums in the ones.

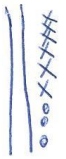
Homework Key (Lesson 28)

a. 29; work shown
b. 31; work shown
c. 32; work shown
d. 38; work shown
e. 39; work shown
f. 32; work shown
g. 33; work shown
h. 35; work shown
i. 37; work shown
j. 39; work shown
k. 35; work shown
l. 36; work shown
m. 39; work shown
n. 40; work shown
o. 35; work shown
p. 37; work shown

Homework Sample

Solve using quick tens and ones, number bonds, or the arrow way.

a. 13 + 16 = 29



b. 15 + 16 = 31

10 5

16+10=26
26+5=31

c. 16 + 16 = 32

10 6

16 +10→ 26 +6→ 32

16+10=26
26+6=32

d. 26 + 12 = 38

e. 22 + 17 = 39

10 7

22+10=32
32+7=39

f. 17 + 15 = 32

10 5

17 +10→ 27 +5→ 32

g. 17 + 16 = 33

10 6

17+10=27
27+6=33

h. 18 + 17 = 35

10 7

18 +10→ 28 +7→ 35

Lesson 29

Homework Key

1. a. 28; work shown
   b. 38; work shown
   c. 39; work shown
   d. 33; work shown
   e. 31; work shown
   f. 39; work shown
   g. 33; work shown
   h. 34; work shown

2. a. 29; work shown
   b. 38; work shown
   c. 32; work shown
   d. 40; work shown
   e. 37; work shown
   f. 35; work shown
   g. 29; work shown
   h. 36; work shown

Homework Sample

1. Solve using quick ten drawings, number bonds, or the arrow way.

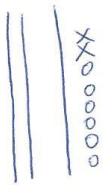
a. 13 + 15 = 28

10 3

15+10=25

25+3=28

b. 26 + 12 = 38



c. 23 + 16 = 39

10 6

23 +10→ 33 +6→ 39

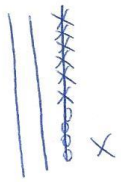
d. 17 + 16 = 33

10 6

17+10=27

27+6=33

e. 14 + 17 = 31



f. 27 + 12 = 39

10 2

27 +10→ 37 +2→ 39

g. 15 + 18 = 33

10 5

18+10=28

28+5=33

h. 18 + 16 = 34

10 6

18+10=28

28+6=34