COMMON CORE
COLLABORATIVE
CARDS

Didax

Grades 3–5

TEACHER GUIDE

70   75   80
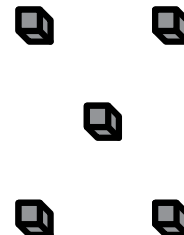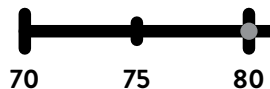
BASE TEN

by Kit Norris

OVERVIEW

Common Core Collaborative Cards support the teaching and learning of mathematics in several ways. They can be used:

- As an activator for the day's lesson
- To review previous content
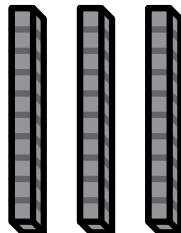- As a learning center activity
- For students' independent practice

Common Core Collaborative Cards provide convenient and motivating ways to place students in collaborative teams for an upcoming unit or problem-solving lesson.
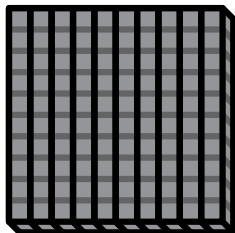
The Common Core Collaborative Cards series consists of three decks of cards per box, each focusing on the same domain in the Common Core State Standards (CCSS). Each deck provides problems representing the standards articulated in the CCSS for a particular grade level.

Teachers using these decks have commented that they have been able to observe what their students under-stand as well as identify their misconceptions. Teachers have also noted that their students begin to rely on each other more instead of seeking out the teacher to answer their questions.

The cards are designed to place students in groups of four. Students are each given a card and asked to solve the problem on it. They then look for three other students who have the same solution. Once they have located their team, the students must be ready to explain why each team member's card belongs in the group. Here is one group of cards from Grade 4: Base Ten:

All four cards in this set have the same answer, 752, so students who receive one of these cards form a group.

GROUP MEMBER ROLES

The cards offer a second feature; the reverse side of each card indicates the role the student holding the card is to perform in the group. After the students are presented with the task for that day's lesson, each member of the group takes on the role designated. These roles are as follows:

- Discussion Director
- Resource Manager
- Recorder
- Team Captain

Teachers can easily identify the roles that students are expected to perform since students place their cards on their desks with the side indicating the role facing up. The roles are explained as follows:

If you are the **Discussion Director**, your job is to . . .

- Make sure that everyone has read the problem and understands what the question is asking. You can ask, "What do we know?" "What do we want to find out?" and "Can we make a prediction?"
- Invite everyone in the group to participate. You can use statements such as, "What is your idea?" and "What are you thinking?"

If you are the **Resource Manager**, your job is to . . .

- Ask the teacher a question if all of the members of the team have the same question.
- Get any supplies needed by the group.
- Keep track of time.

The Resource Manager's role goes beyond taking care of the supplies. The Resource Manager is the only member of the group who may ask the teacher a question. Before asking a question, every member of the group must have the same question, and the teacher can then direct the answer to the whole group. This helps the members of the group become more interdependent, since group members can answer many of their questions among themselves rather than relying on the teacher.

If you are the **Recorder**, your job is to . . .

- Keep track of the thinking of the group. Be ready to answer how the group approached the problem. What strategy did the group use to solve the problem?
- Record the work of the group. Be organized and clear.
- Ask, "Is there anything else we need to include?"

If you are the **Team Captain**, your job is to . . .

- Make sure that everyone in your group can explain to the class the solution and the strategies used to solve the problem.
- Ask each member of your group, "How would you explain what we did to get this answer?" "What questions do you have?"
- Check the group's solution by asking, "Does our answer make sense?"
- Take on any role if one member of your group is absent.

MANAGING THE CARDS IN YOUR CLASSROOM

Like any other classroom materials, you'll need to manage your Common Core Collaborative Cards. It is essential to group the cards by shared answer after each use. Since the cards are designed to place students in groups of four and since class size will vary, this end-of-activity organizational task will make it easier to distribute the cards the next time you use them. Here are some suggestions for organizing the cards after each use:

- As you collect the cards from each student group, place a rubber band around each group of four cards with the same answer before storing.
- After the activity, collect the cards from the class in any order and designate a student to organize the cards into groups of four according to the answer.

WHAT THE RESEARCH SAYS

Research on the effectiveness of collaborative learning abounds. For more information on the research that informs this product, as well as a complete list of bibliographic references and suggestions for further reading, please visit didax.com/cccc.

COMMON CORE STATE STANDARDS – MATHEMATICAL PRACTICES

The Common Core State Standards define what mathematically proficient students know and are able to demonstrate. Combining the process standards from NCTM's Principles and Standards for School Mathematics with the definition of mathematical proficiency from Kilpatrick, Swafford, and Findell's *Adding It Up: Helping Children Learn Mathematics*, the Common Core Standards present the Mathematical Practices.

These practices focus on the specific actions taken by students who are mathematically proficient.

The eight mathematical practices are:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

(*Common Core State Standards for Mathematics*, 2010, pp. 6–8)

The authors of the Common Core carefully chose to begin the mathematical practices with problem solving. "Problem solving is not only a goal of learning mathematics but also a major means of doing so" (NCTM, 2000, p. 52). Students who are engaged in solving meaningful tasks are in the process of building their understanding. They are making connections, constructing arguments, analyzing approaches, looking for patterns, and reflecting on their thinking. These students are learning mathematics, and they have opportunities to exhibit the eight mathematical practices.

The Collaborative Cards provide students with opportunities to develop proficiency in the eight mathematical practices. Students solve problems, discuss strategies, and reason mathematically (Mathematical Practices 1–3). They work with patterns and apply them in various contexts (Mathematical Practices 7–8). They determine whether to calculate problems mentally or use paper and pencil (Mathematical Practice 5). By attending to the use of appropriate vocabulary and the accuracy of their responses, they are attending to precision (Mathematical Practice 6). They use equations to model problem situations (Mathematical Practice 4).

The Collaborative Cards provide teachers with insights into what individual students truly understand. As they apply their knowledge in new contexts, students use what they know. As one fifth-grade teacher in Grafton, Massachusetts stated, "I gained insights into my students' misconceptions. These cards are an easy way to learn about students' strengths."

NUMBER AND OPERATIONS IN BASE TEN (NBT): GRADE 3

The Grade 3 deck focuses on the NBT standards laid out on page 24 of the Common Core State Standards for Mathematics.

Each group of four cards presents a different representation of the quantity. Students solve the question and then look for their partners, who will have the same solution. When students determine their group, they must collaborate to justify why they are indeed members of the same group. This deck of cards presents opportunities for students to review skills, use place value in varying forms, and challenge their thinking in a supportive environment. Teachers may have students discuss their cards, or they may decide to move directly into the lesson for the day.

In some cases, students may not have studied a particular topic. In the process of finding their group, many students learn from each other. This opportunity initiates thinking upon which students can build in the future.

As mentioned earlier in the guide, students build their understanding through problem solving. As students apply the skills they truly understand to solve meaningful tasks, teachers gain insights into what students have mastered and can plan lessons for individuals and small groups based those insights.

Here is one group of four cards from the Grade 3 Base Ten deck. These four problems address three standards from the Grade 2 domain (2.NBT.1, 3, and 6) and one standard from the Grade 3 domain (3.NBT.2).

This group of cards provides opportunities for students to look at place value and use strategies to mentally calculate the sum (320). After students have identified their team, allow time for each team to discuss how they solved the problem and share their strategies. Students may also discuss what connections they see among the four cards. Ask: What are the patterns demonstrated in this set of four cards?

The Common Core Standards present the necessary skills developmentally. Students are expected to know the standards from a previous grade level; consequently, these cards offer opportunities to review previous expectations and then proceed to problems within the domain at the current grade level. For example, the work in Grade 3 focusing on using place value to add and subtract values enables students to understand the traditional algorithms that are expected in Grade 4.

Answers for the Grade 3 Base Ten deck are provided on pages 10–12 of this guide.

NUMBER AND OPERATIONS IN BASE TEN (NBT): GRADE 4

The Grade 4 deck focuses on the Grade 4 NBT standards laid out on pages 29–30 of the Common Core State Standards for Mathematics.

Being able to mentally multiply and divide by 10, 100, and 1000 enables students to work flexibly with numbers and develop estimation skills. Students use these skills to make sense of the traditional algorithms they are expected to master in Grade 5 (multiplication) and Grade 6 (division.)

Students in Grade 4 are also expected to use and understand the traditional algorithms for multi-digit addition and subtraction. It is critically important that students have experience using strategies that are based on understanding place value, properties of operations, and the relationship between addition and subtraction.

Here is one group of four cards from the Grade 4 Base Ten deck:

This group of four cards provides an opportunity for students to consider the distributive property. Sara's statement, 26 × 8 is the same as (20 × 8) + (6 × 8), can stimulate a discussion about why this is true. Students might create other examples and consider ways that this property can be helpful when multiplying quantities.

The problems on the different cards vary in complexity. If a group of students has finished discussing, consider asking the group to exchange their cards with another group that has finished. Each student solves the new card, discusses the questions raised within the group, and then shares the group's understandings with the original owners of those cards.

Answers for the Grade 4 Base Ten deck are provided on pages 13–15 of this guide.

NUMBER AND OPERATIONS IN BASE TEN (NBT): GRADE 5

The Grade 5 deck focuses on the Grade 5 NBT standards laid out on page 35 of the Common Core State Standards for Mathematics.

Here is one of the groups of four cards from the Grade 5 Base Ten deck:
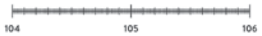
These cards offer students the opportunity to look at using place value in division. They see the same answer, 105.1, in different contexts. Providing opportunities for the students to discuss such problems enables them to enrich their understanding.

Answers for the Grade 5 Base Ten deck are provided on pages 16–18 of this guide.

VISIT DIDAX.COM/CCCC …

For the following important resources:

- A complete bibliography and links to research that informed this product

- A complete correlation to the Common Core State Standards for each grade-level deck

- Meaningful tasks to be used at each grade level (once students have used the Common Core Collaborative Cards to form their groups)

ADDITIONAL MEANINGFUL TASKS

One of the best sources of meaningful tasks related to the Common Core is the book *NCSM: Great Tasks for Mathematics (K–5)* by Connie Schrock, Kit Norris, David K. Pugalee, Richard Seitz, and Fred Hollingshead. (National Council of Supervisors of Mathematics, 2013, ISBN: 978-0-9890765-0-0.)

GRADE 3 GROUPINGS

Correlation to the Common Core State Standards for each group of 4 cards can be found at didax.com/cccc.

162 + 158 =

Find the value.

150 + 20 + 15(
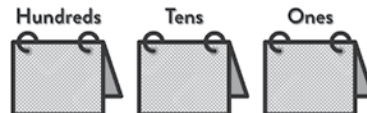
Find the value.

1 hundred + 22 te

What is this number?

| Hundreds | Tens | Ones |

This number has a zero in the ones place.
The hundreds digit is one more than the tens digit.
The sum of all the digits is 5.
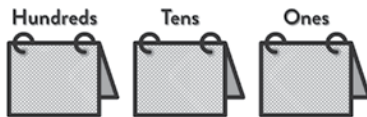What is this number?

---

5 hundreds + 20 tens + 106 o

What is this number?

Lavinia has 900 beads.
She gave her friend Becky 94 bead
How many beads does Lavinia have l

7 hundreds + 106 ones

What is this number?

| Hundreds | Tens | Ones |

This number has a zero in the tens place.
The ones digit is two less than the hundreds digit.
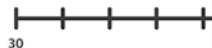The sum of all the digits is 14.
What is this number?

Johnny Appleseed collected 36 appl
Patty Pearson found 24 pears.
How many pieces of fruit did they have to

6 × 10
is the same as
10+ 10 + 10 +10 +1(

What number is this?

30

What value is halfway between 50 and 70 on thi
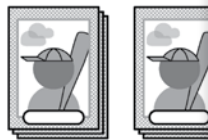
What number is this?

10

GRADE 3 GROUPINGS

Peter collects baseball cards. He currently ha...
He gave his friend Alexia some of his c...
Peter now has 217 baseball cards.
How many cards did he give to Alex...

Henry's mother went to the bank and asked to take...
account. The bank gave her 26 ten-dollar bills and...
How much money did Henry's mother take from...

1 hundred + 16 tens +

Can you think of a different way to write thi...

ANSWER 265

My mother has 176 bite-size candies.
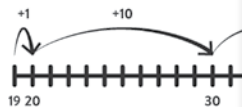My Dad gave her 89 more candies.
How many does she have now?

Raul has 35 baseball cards. He gave 19 to h...
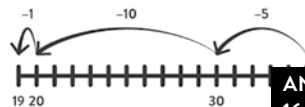How many baseball cards does he have...

What is Juanita's answer?
Explain to your group how Juanita got the...

I can find 35 take away 19 i...
I know 35 − 20 is 15. Now...
to put back the extra that I t...

+1   +10

19 20   30

Peter thinks, "I can subtract 19 from...
It's easy when I use a number line." What answer thi...
(Be ready to share his strategy with your...

−1   −10   −5

19 20   30

ANSWER 16

Forrest thinks, "I can subtract 19 from 35.
It's easy when I use a number line." What answer does Forrest get?
(Be ready to share his strategy with your team.)

5 × 4 × 3 × 4 ×

Find the product.
Which of your team members has the easiest pr...
Explain your thinking.

10 × 8 × 9 =

Find the product.
Which of your team members has the easiest pr...
Explain your thinking.

40 × 2 × 9 =

Find the product.
Which of your team members has the easiest pr...
Explain your thinking.

20 × 4 × 3 × 3 =

ANSWER 720

Find the product.
Which of your team members has the easiest problem to solve?
Explain your thinking.

Correlation to the Common Core State Standards for each group of 4 cards can be found at didax.com/cccc.

ANSWER 240

8 × 15 × 2 =	3 × 10 × 4 × 2	4 × 5 × 3 × 4	3 × 20 × 4 =
Find the product. Which of your team members has the easiest pr... Explain your thinking.	Find the product. Which of your team members has the easiest pr... Explain your thinking.	Find the product. Which of your team members has the easiest pr... Explain your thinking.	Find the product. Which of your team members has the easiest problem to solve? Explain your thinking.

ANSWER 13

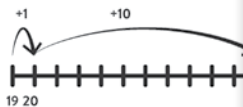I can take 19 away from 32 i... 19 is close to 20, and 32 minus... I need to add back the extra 1 th...

Sherry's mother gave her some stickers. She now... If Sherry had 19 stickers in the beginning, how m... Sherry's mother give her to her?
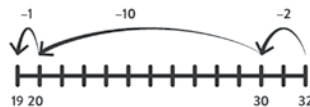
What is Goldie's answer? Explain to your group how Goldie got the...

Cal thinks he can find the answer to 32 – 19 using... What answer does he get? Explain Cal's strategy to your team...

Jen thinks she can find the answer to 32 – 19 using the number line. What answer does she get? Explain Jen's strategy to your team.
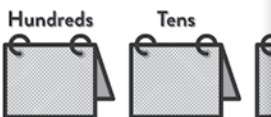
ANSWER 284

4 hundreds + 5 tens +

Hundreds   Tens

Desean has 456 baseball cards of American Le... The rest are of National League player... Desean has 740 cards altogether. How many cards represent National Leagu...

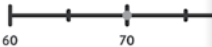What do you need to add to this number to...

This number has three digits. The ones (units) digit... the hundreds digit. The tens digit is 4 more than th... The hundreds digit is 2. What is this num...
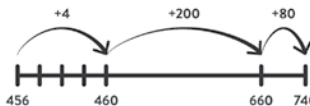
Chris knows that he can use a number line to add numbers together. Chris begins at 456. How much does he add on this number line to make 740?

Correlation to the Common Core State Standards for each group of 4 cards can be found at didax.com/cccc.

GRADE 4 GROUPINGS

6 hundreds + 15 tens +

What is this number?

Be ready to share your thinking with you

---

7 hundreds + 3 tens + 2

What is this number?

Be ready to share your thinking with you

Hundreds   **Tens**

The tens digit is three more than the ones (u
The hundreds digit is two more than the t
The ones (units) digit is 2.
What is the number?

---

4 hundreds + 25 tens + 102 ones

ANSWER 752

What is this number?

Be ready to share your thinking with your group.

?

When rounded to the nearest hundred, this nu

Your partners' cards show the original n

Hundreds   **Tens**

The tens digit is twice as big as the hundr
The ones (units) digit is two less than the t
The ones (units) digit is 6.

---

2 hundreds + 18 tens + 1

What is this number?

---

300   486
    406   468
399
    408   5

ANSWER 486

The largest value on this card is the one you are looking for.

---

60   70

Name the number that is 10 times big
than the number shown on this numbe

603
80.6   90.9

Which number is the biggest?
Round the biggest number to the nearest
Your partners have this rounded num

I can divide 7,000 by 10 in r
7,000 ÷ 10 =

Find the answer and then discuss with p
how you might solve this problem in you

---

453   460

ANSWER 700

Bernadette used a number line to solve 453 + 247 =.
Her first jump went 7 units. Her second jump went 40 units.
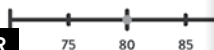She reached the solution on the third jump. What is the solution?

13

Correlation to the Common Core State Standards for each group of 4 cards can be found at didax.com/cccc.

ANSWER 800

75 80 85

Name the number that is 10 times bigger than the number shown on this number line.

$(300 + 80 + 6) + (400 + $

Find the value.
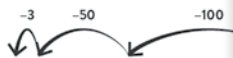
I can divide 8,000 by 10 in my head
$8,000 \div 10 = $

Find the answer and then discuss with partners how you might calculate this problem in your head.

901   936
5,012
823.1
900

Find the smallest value on this card.
Round the smallest value to the nearest hundred.
Your partners have this rounded number.

ANSWER 847

−3   −50   −100

Clarence says that he can subtract numbers using a number line.
Clarence began at 1,000 and made jumps.
How much did he take away from 1,000, and what...
Your group has Clarence's answer to his subtraction.

I'm thinking of a number: 6 hundreds + 14 tens...

I'm thinking of a number:
4 hundreds + 24 tens + 207 ones

Are these boys thinking of the same number?
If so, what is this number?

$ ● $

Maurice had $1,000 in the bank. He took out $153...
How much did he have left in the bank?

I think this involves the order of operations.
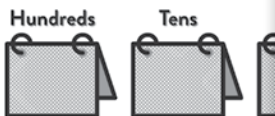
$8 \times 100 + 4 \times 10 + 7 = ?$

Help the girls solve this problem.

ANSWER 208

26×8 is the same as $(20 \times 8) + (6 \times ...)$

If Sara is correct, your partners have the answer...

If this is not true, your partners have 1,000 as...

Hundreds   Tens

The units digit is 4 times greater than the hundreds...
The units digit is 8. A zero is in the tens...

What is the number?

$ ● $

William has $208.48 in his bank account...
If he rounds his money to the nearest whole...
about how much money does he have...

I can divide 2,080 by 10 in my head
$2,080 \div 10 = $

Find the answer and then discuss with partners how you might calculate this problem in your head.

GRADE 4 GROUPINGS

$3 \times 2 = 6$

$3 \times 20 = 60$

So...

$3 \times 200 = ?$

Be ready to explain your thinking to your

$6 \times 1 = 6$

$6 \times 10 = 60$

So...

$6 \times 100 = ?$

Be ready to explain your thinking to your

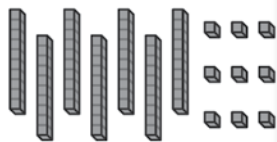$1 \times 6 = 6$

$10 \times 6 = 60$

So...

$10 \times 60 = ?$

Be ready to explain your thinking to your

$3 \times 5 \times 2 \times 2 \times 5 \times 2 =$

ANSWER 600

Explain how your problem relates to the problems your partners have.

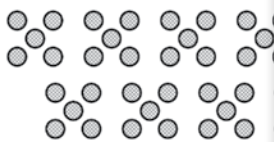Yes, you all have the same answer. Why?

Suppose you didn't have any hundre
and you built 453 using only tens and

How many tens must you use to make this

If 4,500 divided by 1 is

4,500 divided by 10 is

What is 4,500 divided

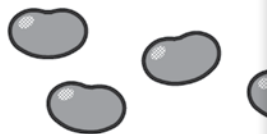Be ready to explain your thinking

---

How many balls are represented her

Be ready to explain how you found your answer.

ANSWER 45

What is three times 3 groups of 5?

Eliza wants to share her jelly beans equally with 3
She put her 86 jelly beans in 4 pile
How many jelly beans are left over

$80 \div 40 =$

$800 \div 400 =$

$8,000 \div 4,000 =$

Be ready to explain how you got your a
What pattern do you see?

How many times greater is 72 than 3

Do you mean $36 \times \_ = 72$
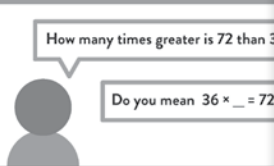
Help the girls by finding the answer to their

ANSWER 2

Morgan has 126 stars that she wants to arrange on a
rectangular-shaped cloth. She wants to make exactly 4 rows.
How many stars will be left over?

GRADE 5 GROUPINGS

Correlation to the Common Core State Standards for each group of 4 cards can be found at didax.com/cccc.

ANSWER 10

To change 78 to 780 on my calcu...
I would multiply by...

Finish Pedro's sentence.

I can change 780 to 78 by dividin...

Finish Sarah's sentence.

I can change 0.3 to just 3 by multiply...

Complete Grace's sentence.

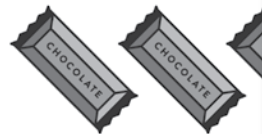
What do I divide 500 by to get 50?

Answer Mario's question.

ANSWER 300

If you have 10 times this amount, how much w...

Mario's Pizza Plaza is planning for a busy lu...
They have baked 30 pizzas and cut each pizza ...

How many slices of pizza have been made ...

Alfinio has 30 candy bars.
He wants to break each candy bar into 10 bite...
Each piece will be 1/10 of the whol...
How many pieces will he have altogeth...

There are 10 children in Henry's family, including Henry.
He and his brothers and sisters have saved $3,000 over the last 5 years.
If they share their money equally, how much is each person's share?

ANSWER 342.8

Three hundred forty-two and ei...

What is this number?

---

2 hundreds + 14 tens + 2 ones

What is this number?

$3 \times 10^2 + 4 \times 10 + 2 \times 1 + 8 ...$

What number is this?

Divide 34,280 by 100

What is the quotient?

Correlation to the Common Core State Standards for each group of 4 cards can be found at didax.com/cccc.

GRADE 5 GROUPINGS

Four hundred eighty-six and twenty-three

What is this number?

---

3 hundreds + 18 tens + 6 ones + 2 tenths +

What number is this?

$4 \times 10^2 + 8 \times 10 + 6 + 2 \times \dfrac{1}{10}$

What number do you get?

Divide 48,623 by 100

What is the quotient?

ANSWER 486.23

Divide 800,000 by 10

What number do you get?

8×10^2 multiplied by 1

What number is this?

$200 \times 4 \times 10 =$

Solve this equation.

$10 \times 8,000 \div 10 =$

Solve this equation.

ANSWER 8,000
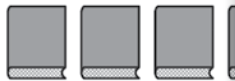
One bookcase in the library has 14 shelves.
Each shelf holds 16 books.
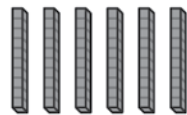How many books are in this bookcase?
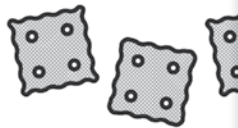
There are 2,240 crackers in the giant-sized
The teacher wants to divide these crackers among
How many crackers will each student have

$(2 \times 10^3 + 2 \times 10^2 + 4 \times 10)$

Solve this equation.

Joey built the number 2,240 using base-ten blocks.
He did not use any thousand-blocks or hundred-flats.
How many ten-rods did he use?

ANSWER 224

Correlation to the Common Core State Standards for each group of 4 cards can be found at didax.com/cccc.

ANSWER 0.8

Which value is the largest?
0.2   0.8   0.70   0.39
Use the number line to help you.

$8,000 \div 10^4 =$

Solve this equation.

$8 \div 10 =$

Solve this equation.
(Write as a decimal.)

Your mother has $8, and she said that you can have 1/10 of this money.
How much money is your mother going to give you?

ANSWER 1

1

Use the number line to find 0.63.

Which whole number is 0.63 closest

François told his mother that he had $0.86 in

What might François say to his moth
if he rounded his money to the nearest who

0   1

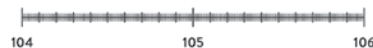Use the number line to locate 1.23

Which whole number is 1.23 closest

Quick, divide 84.3 by 84.3.

That is hard!

Find the solution to Tim's problem.

ANSWER 105.1

How do I solve 315.

I just break the number
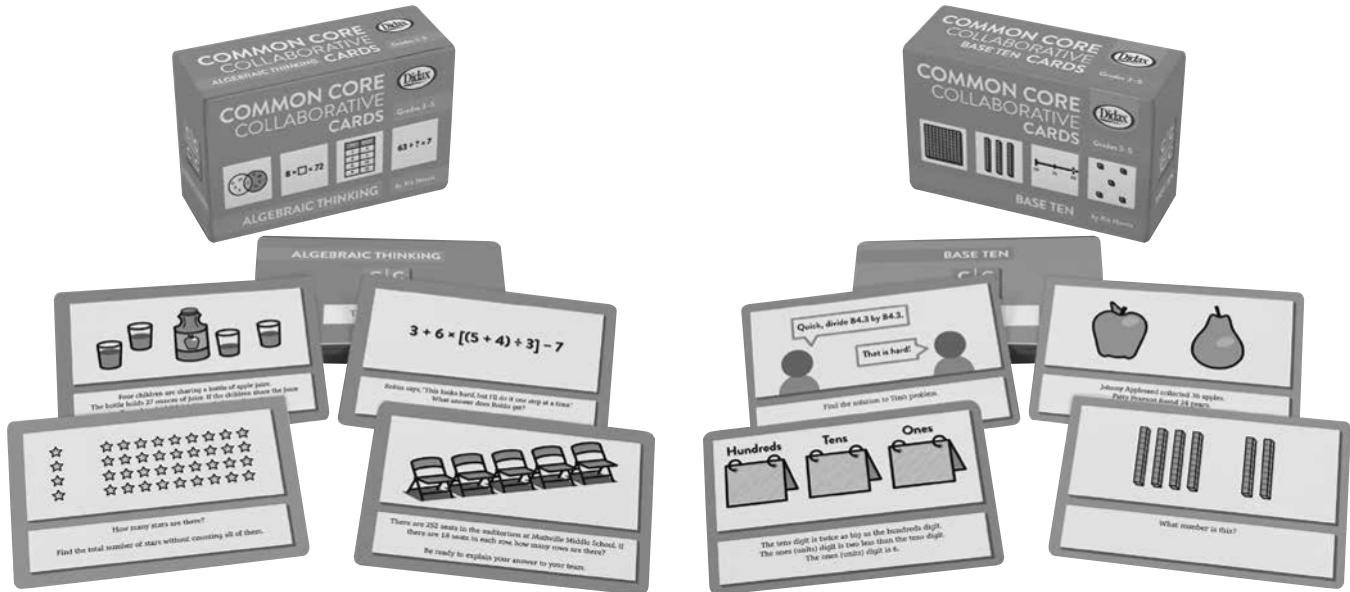
$300 \div 3 + 15 \div 3 + 0$

Find the quotient.

Ms. O'Neill went shopping for holiday
She purchased a sweater for $84.75 and a boo
Ms. O'Neill then spent $8 on lunch
How much did she spend during this shop

$105,100 \div 10^3 =$

Find the answer.

104   105   106

Locate 105.09 on this number line.

Round this number to the nearest tenth.

Common Core Collaborative Cards **BASE TEN**	Common Core Collaborative Cards **FRACTIONS**	Common Core Collaborative Cards **ALGEBRAIC THINKING**	Common Core Collaborative Cards **NUMBER SYSTEM**
didax.com/211394	**didax.com/211395**	**didax.com/211420**	**didax.com/211397**

BASE TEN

TEACHER GUIDE
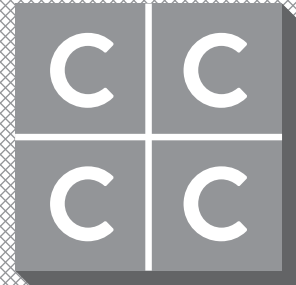
Practice and reinforce the content from the Common Core
State Standards with these innovative activity cards.

Created using the standards in the Number and Operations – Base Ten domain, these cards actively engage students in problem solving and promote mathematical discussion. Students solve the question on their individual card and then look for others who have the same solution. The students holding cards with the same answer form a group; the back of their cards show the role that each student will play as the group works on the next task. Based on the most recent research about the effectiveness of collaborative learning, and in accordance with the Common Core Mathematical Practices, these card sets can be used repeatedly to group students for an upcoming unit or problem-solving lesson. Cards can also be used for small-group instruction or as an independent activity. Each set includes 40 durable, two-color cards per grade level for a total of 120 cards. Teacher's Guide includes suggestions for classroom use, activities, and access to website with additional tasks and resources.

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