

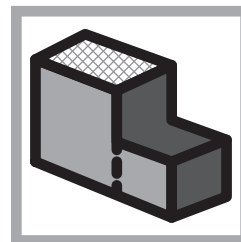
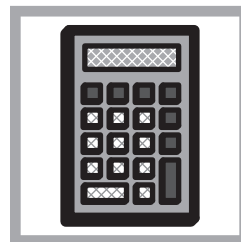
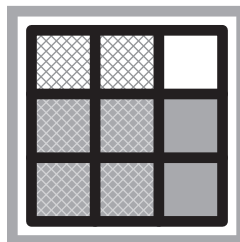
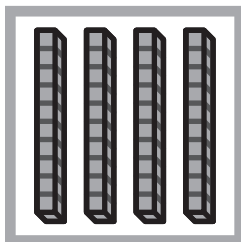
COMMON CORE COLLABORATIVE CARDS



Grade 5

Additional resources available at: didax.com/cccc

IN	OUT
1	4
5	8
9	12
12	15



TEACHER GUIDE

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 five decks of cards per box, with each deck focusing on one domain of the Common Core at that grade level. The five domains are Operations and Algebraic Thinking, Number and Operations in Base Ten, Fractions, Measurement and Data, and Geometry. Each deck provides problems representing the standards articulated in the CCSS for that particular grade level and domain.

Teachers using these decks have commented that they have been able to observe what their students understand as well as identify their misconceptions. Teachers have also noted that their students began 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 the Algebraic Thinking deck:

26

$3 \times (2 + 3 \times 2) - 4$

20

Joe says the answer is 26.
Jamal says the answer is 20. Which answer is correct?
(If neither boy is correct, your team has the answer 1,000.)

I'm thinking of a number. When I double this number and divide by 5, the answer is 8.

Find Roberto's number.

Four times the quantity
two plus three

Write the expression and then find its value.

$10 \times 20 \times 100 \div 1,000$

Find the value.
Share your strategy with your team.
How could you calculate this mentally?

All four cards in this set have the same answer, 20, 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 designated role. 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 desk 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 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 and domain 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 and domain 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.”

OPERATIONS AND ALGEBRAIC THINKING (5.OA)

The Algebraic Thinking deck focuses on the Grade 5 OA standards laid out on page 35 of the Common Core State Standards for Mathematics (2010).

The work with patterns in Grade 4 continues in Grade 5 as students analyze patterns and relationships. 5.OA.3 extends students' thinking to work with two sequences. Grade 5 also includes work on the order of operations and writing expressions.

Here is one group of four cards from the Grade 5 Algebraic Thinking deck that all have the same answer, 5:

$3 + 4 + 5 + 6 + 7 = 25$
 $2 + 3 + 4 + 5 + 6 = 20$
 $5 + 6 + 7 + 8 + 9 = 35$

Lucy says, "Wow! I don't have to add these numbers. For each equation, I can multiply the middle number by the same value to get the sum."
What value is Lucy thinking of?

0	2	4	6	8
0	10	20	30	40

Determine the rule used to make this table. Your partners have the same value.
Be ready to explain your reasoning to your partners.

$\square = 20 - 8 \times 2 + 1$

What number goes in the box?

When I multiply my number by 3 and then subtract 8, the result is 7.

What number is George thinking of?

The first two cards in this set provide students with an opportunity to look at patterns both numerically and in a table. The next card involves the order of operations, while the fourth card promotes algebraic thinking by asking students to work backwards from the answer. As students recognize others who have the same answer on their individual cards, students share their solutions. Students are extending their thinking through these conversations and frequently challenging each other's thinking.

Answers for the Grade 5 Algebraic Thinking deck are provided on pages 12–14 of this guide.

NUMBER AND OPERATIONS IN BASE TEN (5.NBT)

The Base Ten 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:

 <p>How do I solve $315.3 \div 3$?</p> <p>I just break the number into parts: $300 \div 3 + 15 \div 3 + 0.3 \div 3$.</p>	
Find the quotient.	Ms. O'Neill went shopping for holiday gifts. She purchased a sweater for \$84.75 and a book for \$12.35. Ms. O'Neill then spent \$8 on lunch. How much did she spend during this shopping trip?
$105,100 \div 10^3 =$	
Find the answer.	Locate 105.09 on this number line. Round this number to the nearest tenth.

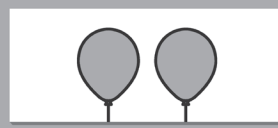
These cards offer students the opportunity to look at using place value in division. They see the same answer, 105.1, in different contexts. Providing opportunities for the students to discuss such problems enables them to enrich their understanding.

Answers for the Grade 5 Base Ten deck are provided on pages 15–17 of this guide.

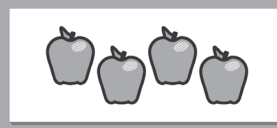
NUMBER AND OPERATIONS – FRACTIONS (5.NF)

The Fractions deck focuses on the Grade 5 NF standards laid out on pages 36–37 of the Common Core State Standards for Mathematics. In Grade 5, students use equivalent fractions to add and subtract, and they apply previous knowledge about multiplication and division to working with fractions. Students make the connection that a fraction is an equivalent representation of a numerator being divided by the denominator. Students also work with division of a whole number by a unit fraction and a unit fraction by a whole number. Students work with these skills in the context of solving problems.

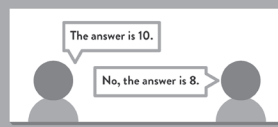
Here is one group of four cards from the Grade 5 Fractions deck that all have the same answer, 16:



Your teacher has some balloons. She wants to put them in 4 groups. Each group has more than 3 balloons. If each group represents $\frac{1}{4}$ of her total number of balloons, what is the smallest number of balloons your teacher might have?



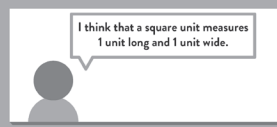
Your teacher has 4 apples. She wants to use $\frac{1}{4}$ of one apple for each dessert. How many desserts can she make?



The answer is 10.

No, the answer is 8.

The problem is $2 \div 3 \times 2$. Help the boys determine the correct answer. When you find the answer, your partners have double this amount.



I think that a square unit measures 1 unit long and 1 unit wide.

How many square units are in a rectangle that measures 4 units by 4 units?

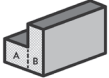
The cards in this group illustrate the concept of division of a whole number by a fraction. Students work to make sense of the situation to arrive at the solution. Once they have formed their group, students can compare the cards and make connections among the various situations.

Answers for the Grade 5 Fractions deck are provided on pages 18–20 of this guide.


MEASUREMENT AND DATA (5.MD)

The Measurement and Data deck focuses on the Grade 5 MD standards, as presented in the Common Core document on page 37. The work in Grade 5 extends the learning in Grade 4 by focusing on unit conversions and volume. Students convert among different standard measurement units that now include decimal values. Students also explore the meaning of volume and determine that the area of the base multiplied by the height represents the volume of a three-dimensional shape. Students also continue their work with line plots to display data and interpret the results.

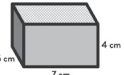
Here are four cards from the Grade 5 deck that all have the same answer, 168:



The dimensions of Box A are $3\text{ cm} \times 3\text{ cm} \times 8\text{ cm}$.
The dimensions of Box B are $2\text{ cm} \times 6\text{ cm} \times 8\text{ cm}$.
What is the total volume of this shape in cubic centimeters?
Be ready to explain your thinking to your team.




Juan has 168,000 centimeters of rope. How many meters is that?



6 cm 4 cm
7 cm

How many unit cubes will fit in this box?



Maria spent $\frac{1}{4}$ of her money buying a gift for her mother.
She put half of the total amount of money in her savings account.
The remaining amount of money is the same as the cost of the gift she purchased: \$42. How many dollars did Maria begin with?

This set of cards focuses on making conversions, finding volumes by combining two shapes, reflecting on the orientation of a box and how that might affect the volume, and solving a problem involving fractional amounts of money.

In the process of finding their partners who have the same answer, students discuss and share their work. This provides opportunities for them to deepen their


understanding and perhaps extend their thinking on the measurement and data concepts being taught.

Answers for the Grade 5 Measurement and Data deck are provided on pages 21–23 of this guide.


GEOMETRY (5.G)

The Geometry deck focuses on the Grade 5 standards in the Geometry and Measurement and Data (geometric measurement) domains as presented in the Common Core State Standards on pages 37–38. In Grade 5 students are asked to extend their thinking from their work with perpendicular and parallel lines in Grade 4. They graph points on the coordinate plane to solve mathematical and real-world problems and classify two-dimensional figures according to a hierarchy of properties. In the geometric measurement domain, students calculate the volume of three-dimensional shapes and relate volume measurement to multiplication and addition.

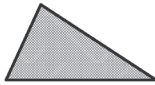
Here is one group of four cards in the Grade 5 deck that all have the same answer, “yes.”




Gracie says that all rectangles have 4 right angles. Then she says that squares must be rectangles because squares have 4 right angles.
(If you agree, the answer is “yes.” If you disagree, the answer is “no.”)



Manny thinks that a right triangle can be either scalene or isosceles but not equilateral.
(If you agree, the answer is “yes.” If you disagree, the answer is “no.”)



Desmond thinks that acute triangles have three angles that measure greater than 0 degrees but less than 90 degrees.
(If you agree, the answer is “yes.” If you disagree, the answer is “no.”)



Sarah says, “All rectangles are also parallelograms.”
(If you agree, the answer is “yes.” If you disagree, the answer is “no.”)

determining whether or not they agree with the statement presented.

Answers for the Grade 5 Geometry deck are provided on pages 24–26 of this guide.

Each of the four cards in this group provides students with the opportunity to evaluate the reasoning stated on the card. Consequently, students engage in Mathematical Practice Standard #3, “Construct viable arguments and critique the reasoning of others.” Close reading is required of students to make sense of the statements presented on the cards. Teachers might consider having students read their cards aloud with a partner before

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 with each domain and 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.)

ALGEBRAIC THINKING GROUPINGS

26

$$3 \times (2 + 3 \times 2) - 4$$

ANSWER
20

Joe says the answer is 26.
Jamal says the answer is 20. Which answer is correct?
(If neither boy is correct, your team has the answer.)

I'm thinking of a number. When I do
number and divide by 5, the answer is 4.



Find Roberto's number.

Four times the quantity
two plus three

Write the expression and then find its value.

$$10 \times 20 \times 100 \div 1,000$$

Find the value.

Share your strategy with your team.
How could you calculate this mentally?

IN	OUT
0	0
1	2
2	4
3	6
4	8
5	?

IN	OUT
0	0
1	4
2	8
3	12
4	16
5	?

ANSWER
2

How many times greater is the last value in the second table than the last value in the first table?
Share with your partners what caused this result.

$$(12 - 6 \div 3) \div 5$$

Find the value.

Be ready to share your process with your team.

Multiply a number by
Subtract 4 and the result

What is the number?

I don't think even numbers
can be prime numbers.



Mostly you're right,
but there is one
even prime number.



What is this even prime number?



ANSWER
40

If this pattern continues, how many stars will be in the 10th column?
Be ready to share your thinking with your team.

Find the sum of 12 and
and then multiply the result

Write the expression and then find its value.
Be ready to share your expression with your team.

$$100 \times 40 \div 10 \div 10$$

Do this calculation. Try to do it mentally.
Share your strategy with your team.

$$2 \times (4 + 8 \div 2) + 24$$

Half the class thinks 36 is the answer.
The other half disagrees. Find the correct answer.
Explain to your team why 36 is not the correct answer.

ALGEBRAIC THINKING GROUPINGS

Think of any number.
Multiply your number by 1.
Add 9.
Divide by 3.
Subtract your original number.

$$\frac{5 + 3 \times 2 + 7}{6}$$

IN	OUT
1	4
5	8
9	12
12	15



ANSWER
3

What number do you get? Your team has the same value.
(With your team, try other beginning values. Notice what happens. Why does it happen?)

Find the value.
Be ready to explain to your group how you got the value.

Here is the chart that Melissa created. What is the rule?
Your partners have the same value.

One-third of what value is 1?
Prove with your group that your answer is correct.



$$3 \times (7 + 3) - 7$$

11	13	15	17	19
15	17			?

I'm thinking of a number. When I double the number and subtract 1, the result is 45.



ANSWER
23

How many stars will be in the 7th shape?
Be ready to explain your thinking to your group.

Your team has the answer to this expression.
What would happen if the parentheses were not included with your team.

Given the rule "add 4," find the last value in the chart.
Be ready to share with your team how you figured it out.

What is the number?
Be ready to share your thinking with your group.

$$\begin{aligned} 3 + 4 + 5 + 6 + 7 &= \\ 2 + 3 + 4 + 5 + 6 &= \\ 5 + 6 + 7 + 8 + 9 &= \end{aligned}$$

0	2	4	6	8
0	10	20	30	40

$$\square = 20 - 8 \times 2 +$$

When I multiply my number by 3 and then subtract 8, the result is 7.



ANSWER
5

Lucy says, "Wow! I don't have to add these numbers. For each equation, I can multiply the middle number by the same value to get the sum." What value is Lucy thinking of?

Determine the rule used to make this chart.
Your partners have the same value.
Be ready to explain your reasoning to your group.

What number goes in the box?

What number is George thinking of?

ALGEBRAIC THINKING GROUPINGS

ANSWER
14

$$3 + 6 \times [(5 + 4) \div 3]$$

$$2(3 + 4) = 2(3) + 2$$

$$10 + 4 = 7(2)$$

$$2 + 2 + 2 + 2 + 2 + 2$$

$$14, 28, 42, 56, 70$$



Robin says, "This looks hard, but I'll do it one step at a time."
What answer does Robin get?

Show the steps of your solution on another sheet of paper.

Harriet thinks these number sentences and the last one all represent the same value. If she is correct, your team's answer is 14.

(If she is not correct, your team's answer is 14.)

Rashawn followed one rule to create this sequence of numbers.
Your partners have the value used to create the sequence.

There are 252 seats in the auditorium at Mathville Middle School. If there are 18 seats in each row, how many rows are there?

Be ready to explain your answer to your team.

ANSWER
17

$$5 + \frac{3 + 7 \times 9 + 6}{6}$$

$$14 + 6 \div 2 = 10$$

$$2 + 3 \times 5 = 17$$

$$8 + (3 + 3) \div 2 = 10$$



$$10 \times 17 \times 100 \div 2 \times 2 \div 1,000$$

Luigi thinks, "If I work with the numerator first and then the denominator, maybe it will lead to something simpler."
Try Luigi's approach to determine the value of the expression.

Try Luigi's approach to determine the value of the expression.

The equation with the correct solution matches your team's solution.
Find that solution.

Work with your group to explain the errors in the other equations.

Ralph is thinking of a number. His number is prime and less than 30.
29. The sum of the number's digits is 11.

What is Ralph's number?

Sarah thinks, "This problem looks hard, but I know how to divide and multiply by 10, 100, and 1,000. I think I can do this mentally."

What answer does Sarah get?

ANSWER
10

$$\frac{8 \times (3 + 2)}{2 \times 2} = ?$$

$$3 \times 6 - 4 \times 2$$

I'm thinking of a number. If I multiply the number by 3 and add 4, my answer is 22.



IN	OUT
2	12
3	13
12	22
33	43

Find the value.

With your team, discuss how you could write the expression without using the "*" to indicate multiplication.

Find the value.

An incorrect answer to this problem is 28. Discuss with your team what mistake is being made to get that wrong answer.

What is Malcolm's number?

What rule was used to build this table?
Your partners have the value used to create this rule.

BASE TEN GROUPINGS

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



Finish Pedro's sentence.

I can change 780 to 78 by dividing by...



Finish Sarah's sentence.

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



Complete Grace's sentence.

What do I divide 500 by to get 50?



Answer Mario's question.

ANSWER
10



If you have 10 times this amount, how much would you have?



Mario's Pizza Plaza is planning for a busy lunch. They have baked 30 pizzas and cut each pizza into 10 slices.
How many slices of pizza have been made?



Alfinio has 30 candy bars. He wants to break each candy bar into 10 pieces. Each piece will be $\frac{1}{10}$ of the whole. How many pieces will he have altogether?



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
300

Three hundred forty-two and eight tenths

What is this number?

2 hundreds + 14 tens + 2 ones

What is this number?

$3 \times 10^2 + 4 \times 10 + 2 \times 1 + 8 \times \frac{1}{10}$

What number is this?

Divide 34,280 by 100

What is the quotient?

ANSWER
342.8

BASE TEN GROUPINGS

Four hundred eighty-six and twenty-three

ANSWER
486.23

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

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

Divide 48,623 by 100

What is this number?

What number is this?

What number do you get?

What is the quotient?

Divide 800,000 by 100

ANSWER
8,000

8×10^2 multiplied by 1

$$200 \times 4 \times 10 =$$

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

What number do you get?

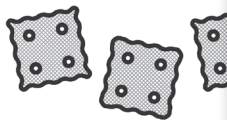
What number is this?

Solve this equation.

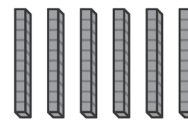
Solve this equation.



ANSWER
224



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



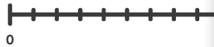
One bookcase in the library has 14 shelves.
Each shelf holds 16 books.
How many books are in this bookcase?

There are 2,240 crackers in the giant-sized
The teacher wants to divide these crackers among
How many crackers will each student have?

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?

BASE TEN GROUPINGS



$$8,000 \div 10^4 =$$

$$8 \div 10 =$$



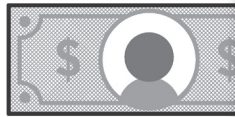
ANSWER
0.8

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

Solve this equation.

Solve this equation.
(Write as a decimal.)

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



Quick, divide 84.3 by 84.3.

That is hard!

ANSWER
1

Use the number line to find 0.63.
Which whole number is 0.63 closest to?

François told his mother that he had \$0.86 in money.
What might François say to his mother if he rounded his money to the nearest whole dollar?

Use the number line to locate 1.23.
Which whole number is 1.23 closest to?

Find the solution to Tim's problem.

How do I solve 315.
I just break the number into groups.
 $300 \div 3 + 15 \div 3 + 0$



$$105,100 \div 10^3 =$$



ANSWER
105.1

Find the quotient.

Ms. O'Neill went shopping for holiday gifts.
She purchased a sweater for \$84.75 and a book for \$15.25.
Ms. O'Neill then spent \$8 on lunch.
How much did she spend during this shopping trip?

Find the answer.

Locate 105.09 on this number line.
Round this number to the nearest tenth.

FRACTIONS GROUPINGS

$$\frac{3}{4} + \frac{3}{4} + \frac{3}{4} +$$

ANSWER
12/4 or 3



$$\frac{3}{4} \times 4 =$$



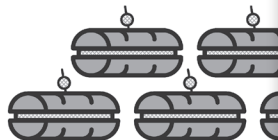
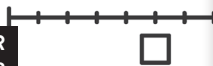
Solve this equation.

Mom brought four pizzas home.
I was so hungry that I ate 1/4 of each pizza.
How many whole pizzas were left for my family?

Solve this equation.

Each rectangle equals one whole.
How many rectangles are shaded altogether?

ANSWER
5/8



$$\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$$

5 divided by 8

What fraction should go in the box?

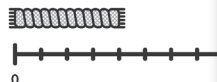
Eight friends shared five large sandwiches.
What fractional part of the 5 sandwiches did each friend get?

Solve this equation.

Express as a fraction.

4 multiplied by

ANSWER
4/9



Express as a fraction.

Nine friends want to share 4 pizzas.
How much pizza will each friend be given?
(Give your answer as a fraction of the 4 pizzas.)

Using this number line, how long is the stack of coins?
(Give your answer as a fraction.)

Two-thirds of the columns are shaded with a cross-hatch pattern.
Two-thirds of the rows are shaded with a diagonal line pattern.
What fraction of the total picture has both types of shading?

FRACTIONS GROUPINGS



$$\frac{20}{24}$$



$$\frac{5}{6} \times \frac{3}{3} =$$

ANSWER
5/6

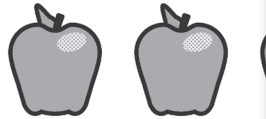
How long would the shaded sections be if you put
(Give your answer as a fraction.)

Find the equivalent fraction that has the smallest

Six friends want to share 5 candy bars.
What fractional part of the 5 candy bars will each

Solve this equation.

$$\frac{2}{3} + \frac{2}{3} + \frac{2}{3}$$



$$\frac{2}{3} \times 3$$



ANSWER
6/3 or 2

Solve this equation.

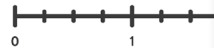
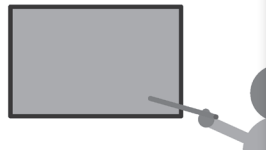
My brother had three apples. I ate 1/3 of each.
How many apples did my brother have

Express as a whole number.

There are 4 windows here.

How many windows can we make using just the shaded parts?

$$3 \text{ times } \frac{1}{4}$$



$$\frac{30}{40}$$

ANSWER
3/4

Express this value in its simplest form.

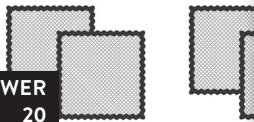
Four teachers are presenting their lesson.
They have 3 hours to do this.
What fractional part of an hour will each teacher
if they share their time equally?

What is 0.75 as a fraction?
Show your group where this fraction is located on

Find the equivalent fraction with the smallest denominator.

FRACTIONS GROUPINGS

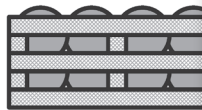
ANSWER
20



Marie has 4 pieces of cloth. She wants to make doll clothes using $\frac{1}{5}$ of a piece for each doll. How many dolls can she clothe with these pieces of cloth? Be ready to share your strategy with your group.



Brian has some baseball cards. He wants to put them into groups. Each pile represents $\frac{1}{5}$ of his cards. What is the smallest number of baseball cards that he can have? Discuss with your group: Are there different answers?

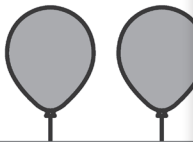


An orange grower is packaging the fruit to send to customers. He has 360 oranges to put in 18 crates. How many oranges will be in each crate?

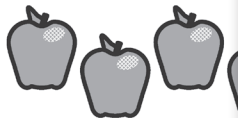
$$2 \text{ times } \left[\frac{1}{2} \times 20 \right]$$

Express this value in its simplest form.

ANSWER
16



Your teacher has some balloons. She wants to put them into groups. Each group has more than 3 balloons. If each group represents $\frac{1}{4}$ of her total number of balloons, what is the smallest number of balloons your teacher has?



Your teacher has 4 apples. She wants to use $\frac{1}{4}$ of an apple for each dessert. How many desserts can she make?

The answer is 10.

No, the answer is 8.

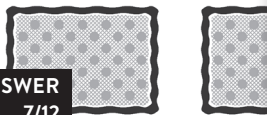


I think that a square unit measures 1 unit long and 1 unit wide.

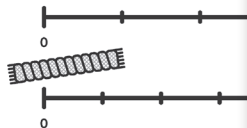
The problem is $2 + 3 \times 2$. Help the boys determine the answer. When you find the answer, your partners have to explain the problem to them.

How many square units are in a rectangle that measures 4 units by 4 units?

ANSWER
7/12



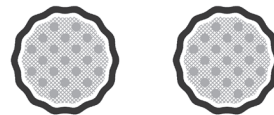
Terry brought home two rectangular pizzas to share with his friends. The two pizzas were the same size. Terry was so hungry that he ate $\frac{1}{4}$ of the first pizza. His brother Barry then ate $\frac{1}{4}$ of the second pizza. What fractional part of the 2 pizzas did Terry and Barry eat?



The rope is the same length as one unit from each end. What fractional part of the rope is highlighted?

$$3 \text{ times } \frac{1}{12} + 4 \text{ times } \frac{1}{12}$$

Express this value in its simplest form.



Deval invited 11 friends to his house to have pizza. He had 7 pizzas for the boys to share. What fractional part of the 7 pizzas will each of the 12 boys get to have?

MEASUREMENT AND DATA GROUPINGS



Abbi spent $\frac{1}{5}$ of her money for lunch. She spent $\frac{1}{4}$ of what she had left on a movie ticket for \$12 and refreshments for \$8. How many dollars did Abbi have in her purse at the beginning?



Bob packed cubes in a box that he was sending to his friend. The area of the base of the box measured 5 inches. The height of the box was 10 inches. How many cubes the size of one cubic inch could fit in the box?



Peter Pascal said that he could change 0.06 to 6 by using the decimal point. If Peter plans to multiply, what value would he multiply 0.06 by to obtain 6?



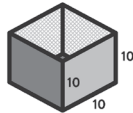
**ANSWER
100**

The number of pennies in a dollar is the same as the number of centimeters in a meter. What is this number?



When we convert meters to millimeters, we use the same value as when we convert liters to milliliters.

What is the value used in these conversions?



How many unit cubes will fit in this box? Be ready to explain your thinking to your group.

$$10^3 = ?$$

Matilda thinks that 10^3 is the same as 30. Do you agree? Your team members have the correct answer to tell you.

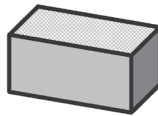


**ANSWER
1,000**

If a beaker will hold 1 liter of liquid, how many milliliters will it hold?

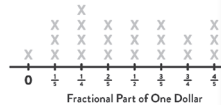


Val knows that a box holds 100 unit cubes. The box measures 5 units by 2 units. How many layers of unit cubes will there be if she fills the box to the top?



$$\text{Volume (V)} = \text{length} \times \text{width} \times \text{height}$$

Rogelio knows that the volume of his box is 50 cubic centimeters. The height of his box is 25 cm and the length of the box is 10 cm. How many centimeters wide is the base of the box?



Students at Mathville School were collecting money for charity. This line plot shows the fractional amount of one dollar each student contributed. What is the total amount of dollars that the students contributed to the charity?

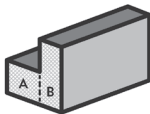


**ANSWER
10**

Clarissa is making a small box to put in her dollhouse. The height of the box is 1 cm, the width is 2 cm, and the length is 5 cm. What is the volume of Clarissa's box in cubic centimeters?

MEASUREMENT AND DATA GROUPINGS

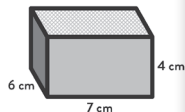
ANSWER
168



The dimensions of Box A are $3\text{ cm} \times 3\text{ cm} \times 4\text{ cm}$.
The dimensions of Box B are $2\text{ cm} \times 6\text{ cm} \times 4\text{ cm}$.
What is the total volume of this shape in cubic centimeters?
Be ready to explain your thinking to your partner.



Juan has 168,000 centimeters of rope. How many meters of rope does he have?



How many unit cubes will fit in this box?



Maria spent $\frac{1}{4}$ of her money buying a gift for her mother. She put half of the total amount of money in her savings account. The remaining amount of money is the same as the cost of the gift she purchased: \$42. How many dollars did Maria begin with?

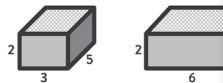
ANSWER
60



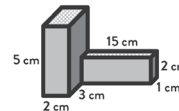
How many unit cubes will fit in this box?
Be ready to discuss your thinking with your partner.

$$0.06\text{ m} = \square\text{ m}$$

What value goes in the box?
Share with your team how you found the answer.



How many cubic units is the volume of each prism?
Your team has the same value as the larger prism.



How many cubic centimeters is the total volume of this shape?
Be ready to share your thinking with your team.

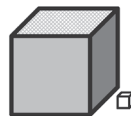
ANSWER
25

METERS	CENTIMETERS
4	400
?	200
$\frac{1}{2}$?
$\frac{1}{4}$?

Mattie made a table for converting between meters and centimeters.
Fill in the missing values on a separate sheet of paper.
(Your partners have the same value as the last entry.)



Clara is confused. "These two prisms look so different. Can their volumes be the same?" If both prisms have the same volume, how many times as long is the second prism?
Your team has the same number as the volume. If your prisms have different volumes, your team has the answer.

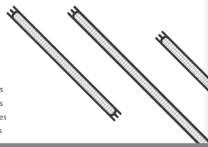


$$25,000\text{ m} = \square\text{ km}$$

What value goes in the box?


Sally filled this box with sugar cubes. She packed 16 cubes in the first layer, 15 in the second, and 14 in the third. Altogether she packed 5 complete layers.
How many sugar cubes must be in each layer?

MEASUREMENT AND DATA GROUPINGS




A: 11 feet 6 inches
 B: 11 feet 3 inches
 C: 10 feet 4 inches
 D: 9 feet 9 inches

Robin's rope measures 2 feet 6 inches. Her brother's longer than Robin's. Robin's sister's rope is $\frac{1}{2}$ as long placed their ropes end to end, how long would the rope be?
 (Your partners have the same letter answer as you do.)



A: Twice as big as the volume of cube A.
 B: 8 times as big as the volume of cube A.
 C: 4 times as big as the volume of cube A.
 D: One-half the volume of cube B.

The volume of cube B is ...
 (Your partners have the same letter answer as you do.)



A: 11 m 35 cm
 B: 10 m 35 cm
 C: 9 m 35 cm
 D: 9 m 95 cm

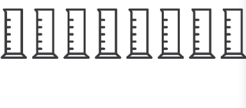
The girls are practicing the long jump. Maggie jumped $2\frac{1}{2}$ m, Beatrice jumped $2\frac{1}{2}$ m, and Lolly jumped 4 m. What is the total distance the girls jumped in the practice?
 (Your partners have the same letter answer as you do.)



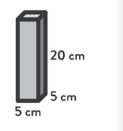
A: Pedro: 84.62 seconds
 B: Miguel: 81.64 seconds
 C: Mitch: 83.9 seconds
 D: Alfred: 83.46 seconds

Four boys ran a 500 m relay race. Their times are shown here. Who won the race?
 (Your partners have the same letter answer as you do.)

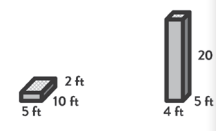
ANSWER B




Harley has 5 liters of a chemical solution that he has to use in an experiment. Harley wants to divide the solution among ten beakers. How much must each beaker hold? Express your answer in milliliters.



How many cubic centimeters will fit in this prism?

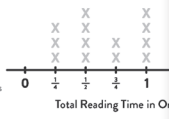


Find the total volume of the two rectangular prisms.



Peter's family was moving. The volume of one of the packing crates was 40,000,000 cubic cm. Peter determined that the width of the crate was 200 cm and the length was 400 cm. How many centimeters high was this crate?

ANSWER 500



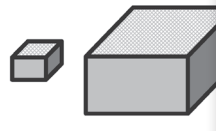
A: 1 day
 B: 22 hours and 30 minutes
 C: 23 hours and 15 minutes
 D: 22 hours and 15 minutes

What was the total amount of time the class spent reading?
 (Your partners have the same letter answer as you do.)

100 cm	1 m
10,000 sq cm	1 sq m
?	1 cubic m

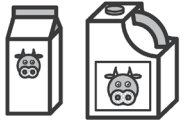
A: 100,000
 B: $100 \times 10 \times 100$
 C: 1,000,000
 D: $10 \times 10 \times 10$

Look at the pattern in the table and then select the correct answer for the missing value.
 (Your partners have the same letter answer as you do.)



A: 24
 B: 20
 C: 27
 D: 30

How many boxes measuring $3 \text{ cm} \times 4 \text{ cm} \times 4 \text{ cm}$ can fit inside a box that measures $9 \text{ cm} \times 12 \text{ cm} \times 12 \text{ cm}$?
 (Your partners have the same letter answer as you do.)



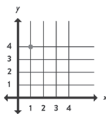
A: 8
 B: 12
 C: 32
 D: 40

If there are 4 quarts in each gallon and there are 2 pints in each quart, how many pints are in 4 gallons?
 (Your partners have the same letter answer as you do.)

ANSWER C

GEOMETRY GROUPINGS

ANSWER
B

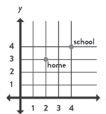


- A: A square is a special rectangle.
- B: A rhombus is a special rectangle.
- C: A square and a rectangle both have four 90 degree angles.
- D: A rhombus and a square have four equal sides.

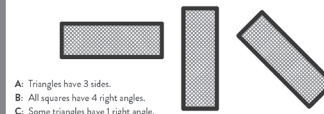
What is the coordinate of the indicated point?
(Your partners have the same letter answer as you do.)

Which statement is **not** true about the above shapes?
(Your partners have the same letter answer as you do.)

- A: 12
- B: 6
- C: 3
- D: 8



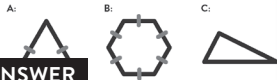
How many blocks must Jimmie walk to get to school and back home again? (He cannot cut across a block.)
(Your partners have the same letter answer as you do.)



- A: Triangles have 3 sides.
- B: All squares have 4 right angles.
- C: Some triangles have 1 right angle.
- D: Diagonals of a rectangle are the same length.

Sonia said, "I know that all rectangles have 4 right angles." Based on this fact, what else can Sonia conclude?
(Your partners have the same letter answer as you do.)

ANSWER
C



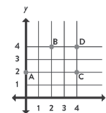
- A: A triangle can have two right angles.
- B: A scalene triangle has two angles that are congruent.
- C: A right triangle can be scalene or isosceles.
- D: An equilateral triangle has three congruent angles, but the sides may not be congruent.

Which shape is **not** like the others?
Discuss with your partners why this is the case.
(Your partners have the same letter answer as you do.)

Which statement is true?
(Your partners have the same letter answer as you do.)

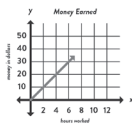


Which shape is **not** like the others?
Discuss with your partners why this is the case.
(Your partners have the same letter answer as you do.)

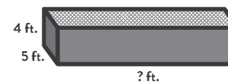


Which point is located 4 units to the right of the origin and 2 units above the origin?
(Your partners have the same letter answer as you do.)

ANSWER
45



$$4,500 \text{ cm} = \square$$





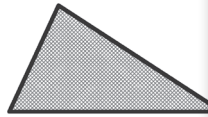

Pedro earns an hourly rate walking dogs. Use the graph to determine how many dollars he will earn for 9 hours of work.


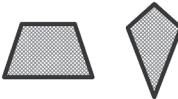
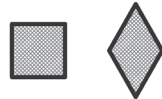

Sally is packing a box with cubic-centimeter blocks. How many can she fit in a box that measures 3 cm long, 3 cm wide, and 5 cm tall?

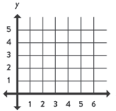


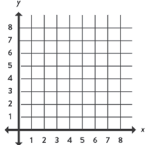
What value goes in the box?

The volume of a rectangular prism is 900 cubic feet. How many feet long is the missing side?

GEOMETRY GROUPINGS

			 <p>ANSWER yes</p>
<p>Gracie says that all rectangles have 4 right angles. The squares must be rectangles because squares have 4 right angles.</p> <p>(If you agree, the answer is "yes." If you disagree, the answer is "no.")</p>	<p>Manny thinks that a right triangle can be scalene or isosceles but not equilateral.</p> <p>(If you agree, the answer is "yes." If you disagree, the answer is "no.")</p>	<p>Desmond thinks that acute triangles have three angles that measure greater than 0 degrees but less than 90 degrees.</p> <p>(If you agree, the answer is "yes." If you disagree, the answer is "no.")</p>	<p>Sarah says, "All rectangles are also parallelograms."</p> <p>(If you agree, the answer is "yes." If you disagree, the answer is "no.")</p>

			 <p>ANSWER no</p>
<p>Matt states that rectangles have all the same properties as squares.</p> <p>(If you agree, the answer is "yes." If you disagree, the answer is "no.")</p>	<p>Luke thinks that trapezoids and kites have all the same properties because they are both quadrilaterals.</p> <p>(If you agree, the answer is "yes." If you disagree, the answer is "no.")</p>	<p>Mary Ann says that rhombuses are really squares because they both have 4 equal sides.</p> <p>(If you agree, the answer is "yes." If you disagree, the answer is "no.")</p>	<p>Angus stated that an obtuse triangle has three angles that all measure greater than 90 degrees.</p> <p>(If you agree, the answer is "yes." If you disagree, the answer is "no.")</p>

 <p>A: (2, 4) B: (3, 2) C: (4, 4) D: (1, 4)</p>	 <p>A: All isosceles triangles are also scalene triangles. B: All squares are also rectangles. C: Trapezoids and kites are quadrilaterals. D: A rhombus is a special parallelogram.</p>	 <p>A: 51 cm = 51 mm B: 2 square feet = 24 square inches C: 1 cubic foot = 144 cubic inches D: 150 cm = 15 m</p>	 <p>ANSWER A</p>
<p>Michael started at the origin and counted a total of 4 units before placing a point. Which ordered pair might represent the point on the coordinate plane? (Your partners have the same letter answer as you do.)</p>	<p>Which statement is not true? (Your partners have the same letter answer as you do.)</p>	<p>Which statement is true? (Your partners have the same letter answer as you do.)</p>	<p>Betsy started at the origin and counted a total of 8 units before placing a point. Which ordered pair might represent the point on the coordinate plane? (Your partners have the same letter answer as you do.)</p>

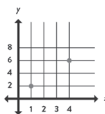
Correlation to the Common Core State Standards for each group of 4 cards can be found at didax.com/ccc.

GEOMETRY GROUPINGS

ANSWER
D

has many sides.
has some congruent sides.
has some congruent angles.
has congruent angles and congruent sides.

- A: (2, 4)
- B: (4, 0)
- C: (1, 4)
- D: (4, 2)



- A: The volume of the small rectangular prism is 6.0 cubic feet.
- B: The area of the base of the large rectangular prism is 6 square feet.
- C: The total volume is the sum of the volumes of the two prisms.
- D: The total volume is 36 cubic feet.



- A: The volume becomes twice as much.
- B: The volume increases by 2 cubic units.
- C: The volume is 4 times greater.
- D: The volume is 8 times greater.



Roberto asked, "What is a regular polygon?"
Choose the correct definition.
(Your partners have the same letter answer as you do.)

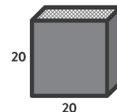
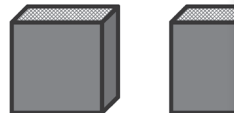
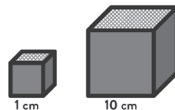
Mary plotted (4, 6) and (1, 2) on the graph. If she was plotting a right triangle, where could she place the third vertex?
(Your partners have the same letter answer as you do.)

Which statement about the above figure is not true?
(Your partners have the same letter answer as you do.)

A cube has sides that measure 1 inch. What will happen to the volume of the cube if the side measure is doubled?
(Your partners have the same letter answer as you do.)

ANSWER
1,000

- 14 m = 14,000 mm
- 1,500 g = 1.5 kg
- 2,000 m = 2 km



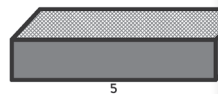
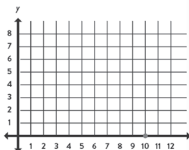
What value did Joe multiply or divide by to make each of these conversions?

The volume of the larger cube is how many times greater than the volume of the smaller cube?

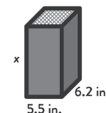
Two cardboard boxes each measure 10 in. \times 10 in. \times 10 in. Together, how many cubic inches do the two boxes hold?

What is the volume of this rectangular prism?
Your team's answer is the volume of this prism cut in half.

ANSWER
10



mm = 1 cm

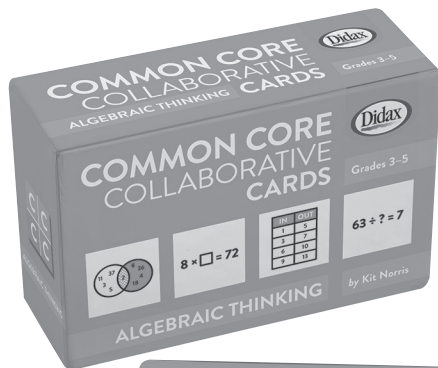


How far is this point from the origin?

A rectangular prism measures 5 cm by 2 cm by 2 cm.
How many cubic centimeters is its volume?

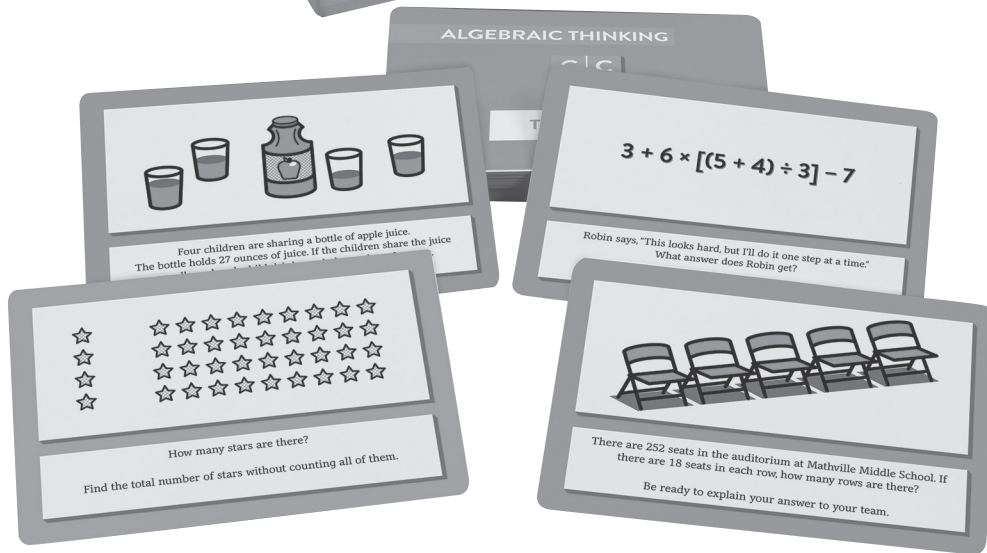
What value goes in the box?

The volume of this rectangular prism is 341 cubic inches.
Find the height of the prism (x) in inches.



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GRADE 5

TEACHER GUIDE

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

Created using the five domains from the Common Core State Standards, 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 four 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 grade-level set includes 36 durable, two-color cards per domain for a total of 180 cards. Teacher Guide includes suggestions for classroom use, answers, and access to website with additional tasks and resources.



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