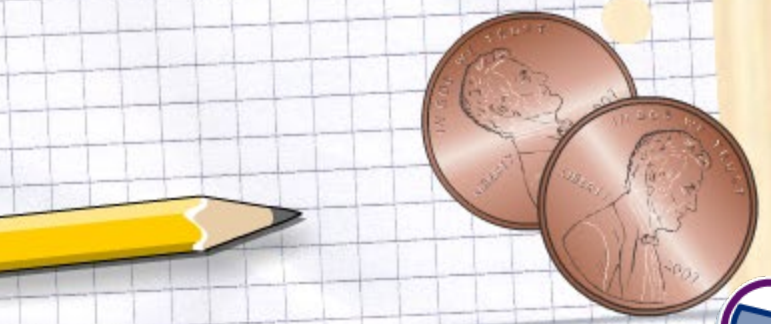
Working with Big Numbers



Information

Common core icons

This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.

Slides containing examples of mathematical modeling are marked with this stamp.

This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These 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.

This icon indicates that the slide contains activities created in Flash. These activities are not editable.

This icon indicates teacher's notes in the Notes field.

Alex's towns

For his school project, Alex has found out how many people live in nearby towns. Here are his results:

Alex needs to find out how many people there are altogether. Can you help him?

The standard algorithm for addition

When working with larger numbers, it can be simplest to write the numbers together in **columns**.

Find the answer to 6,517 + 1,342.

1. Line up the ones, tens, hundreds and thousands.
2. Add the numbers in each column.
3. Write the answer underneath.

	Th	H	T	O
	6	5	1	7
+	1	3	4	2
	7	8	5	9

Carrying and borrowing

We sometimes need to use **carrying** for addition, and **borrowing** for subtraction.

carrying | borrowing

Press the buttons to find out more about carrying and borrowing.

Adding big numbers

0

Can you solve these addition problems using the **standard algorithm** for **addition**?

Press the yellow cards to reveal the numbers in the addition column, then use the pen tool to write the answer underneath. Press the cards after the equal sign to check your answer and complete the number sentence.

Press **start** to begin.

start

Subtracting big numbers

0

Can you solve these subtraction problems using the **standard algorithm** for **subtraction**?

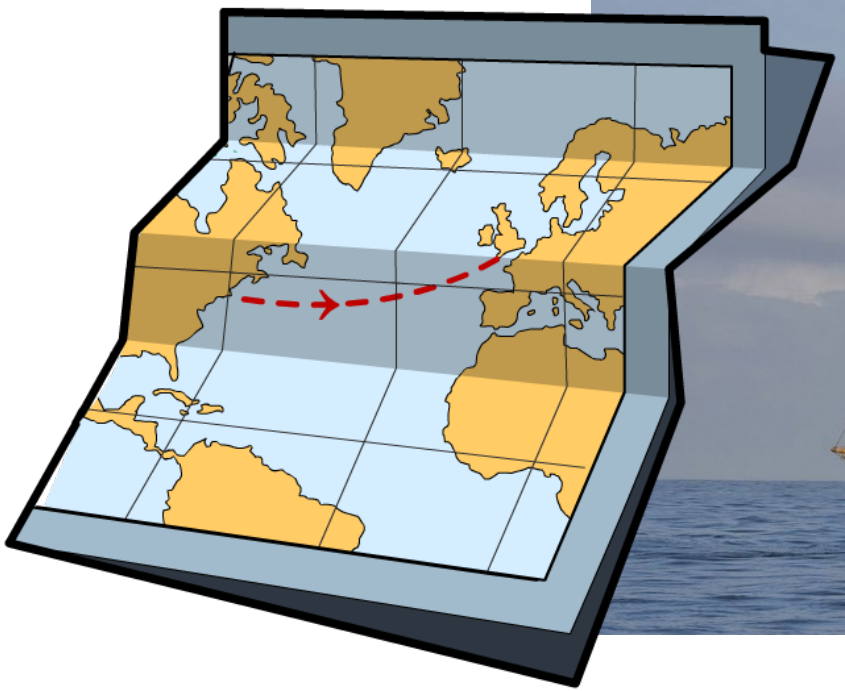
Press the yellow cards to reveal the numbers in the subtraction column, then use the pen tool to write the answer underneath. Press the cards after the equal sign to check your answer and complete the number sentence.

Press **start** to begin.

start

Ashley's sailing trip

Nicole's older cousin, Ashley, is a sailor. On her next trip, Ashley is planning to sail 216 miles a day for 23 days.

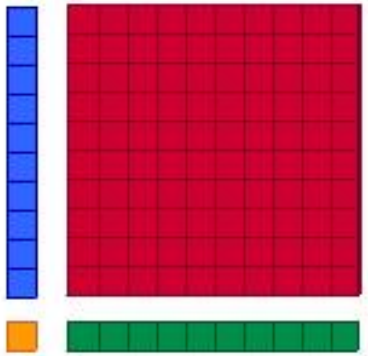


How far will Ashley sail altogether?

Using area models

Use the colored rectangles to solve these calculations.

1) 12 × 12 2) 23 × 12 3) 32 × 21 4) 34 × 11



The standard algorithm

The standard algorithm for multiplication

We can use the standard method for **multiplication**.

multiplying with 1 digit numbers

multiplying with 2 digit numbers

Press the buttons to find out more.

Multiplication wheel

Can you answer these multiplication problems?
Press **spin** to generate a new problem. Press the yellow rectangle to see the answer.

Press **start** to begin.

start

Dividing bigger numbers

How would you answer this problem? It looks difficult!

$$2{,}408 \div 4 = ?$$

Let's use the strategies we already know.

$2{,}000 \div 4 = 500$

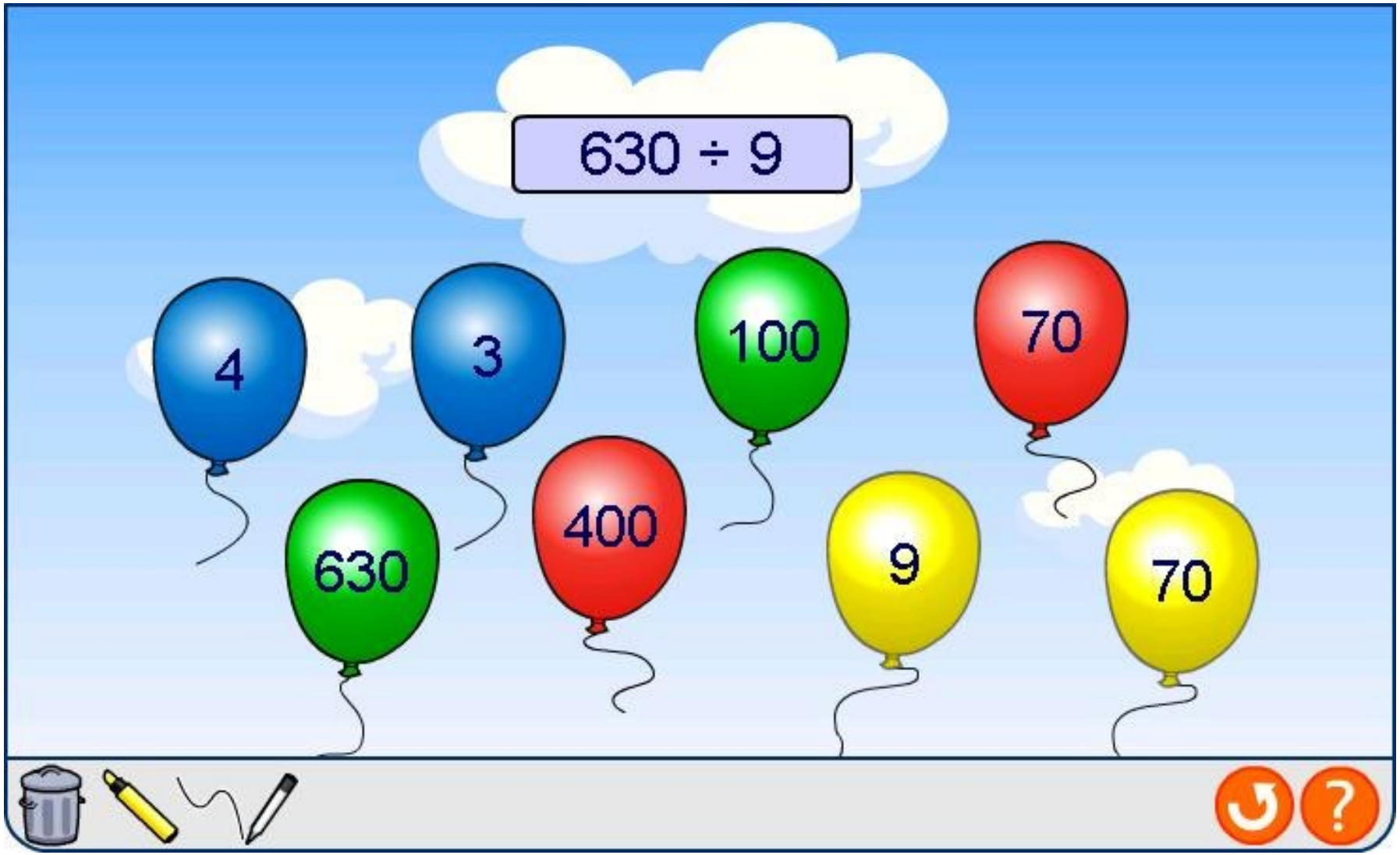
$400 \div 4 = 100$

$8 \div 4 = 2$

If we add these together, we can find an answer.

$500 + 100 + 2 = \mathbf{602}$

Balloons activity

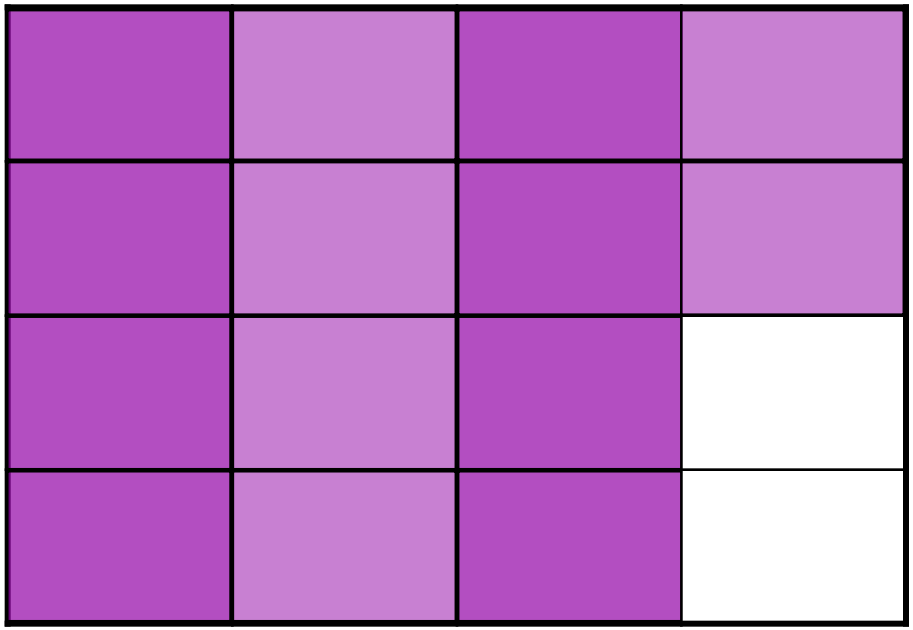


Remainders

Numbers do not always fit into each other exactly.

If there are numbers left over at the end of a division problem, we call these **remainders**.

Find the answer to 14 ÷ 4.



We can split **14** into **4** three times, with two left over.

We have a **remainder** of 2, and we write it like this:

14 ÷ 4 = **3 r 2**

Modeling division with remainders

We can use pictures to show what happens when we divide.

In this activity, the division problem at the bottom of the screen is modeled by the blue counters in the grid. Press the yellow arrows to change the numbers in the division problem.

Press **start** to begin.

start

nber

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al

Field day challenge

In Alex's school, there are 1,528 students taking part in Field Day. They will be split into teams of 14. How many teams will be created?

Press the buttons to see two ways of finding the answer.

answering in stages

using an area model

Can you think of any other methods?