



**MATH
WHISPERER**
Where math makes sense

Research Edition

Decimals

Math Whisperer is a program created and designed for math to make sense, so all students can learn math. For more information, please go to www.mathwhisperer.com

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DEDICATION

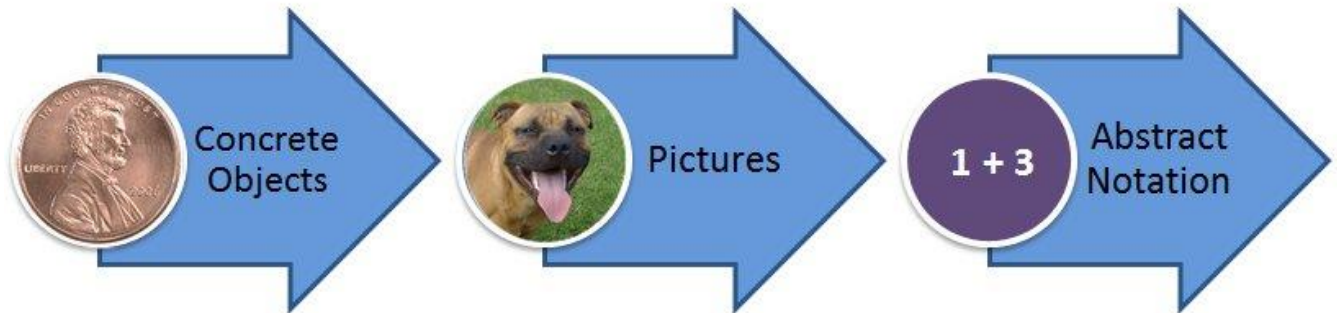
Math Whisperer materials are dedicated to each person who wants to be successful in math, including those who have struggled in the past. Our goal for our students is that they know the math they need to lead the lives they want.

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1. Introduction

Math Whisperer lessons are based on scientific research about how people learn math. Math is actually supposed to make sense. When you start with hands-on objects, math can make sense.



You are probably used to starting with the third step of abstract notation, which means using symbols and maybe a formula. Some people are able to start at this third step, using a formula. Maybe they even understand why the formula works. Maybe they don't, but they get the right answers. These people will benefit from the hands-on objects, also, as they will understand the math at a deeper level. This three step progression works for everybody.

It may feel silly to you to use hands-on objects. My advice to you is: Try it, please. You will see for yourself how well the three step progression works. You are much more likely to remember the formulas this way. And if you forget them, you can reinvent them for yourself. Won't it feel great to never have to learn this again? The math will stick with you with the three step progression.



Hello. I'm Bernice, founder of Math Whisperer. I've worked with lots of students just like you, and they were all able to learn the math they wanted and needed to learn. So can you.

Welcome to Decimals

Welcome to decimals. Decimals are really really really important for two main reasons. The first reason is that money is based on decimals, and understanding money will help you lead an easier life. The second reason is that science uses a decimal system for measurements, the metric system. Even if you are not going to have a career in science, science affects your life – from medicine, to issues confronting our planet, and so much more.

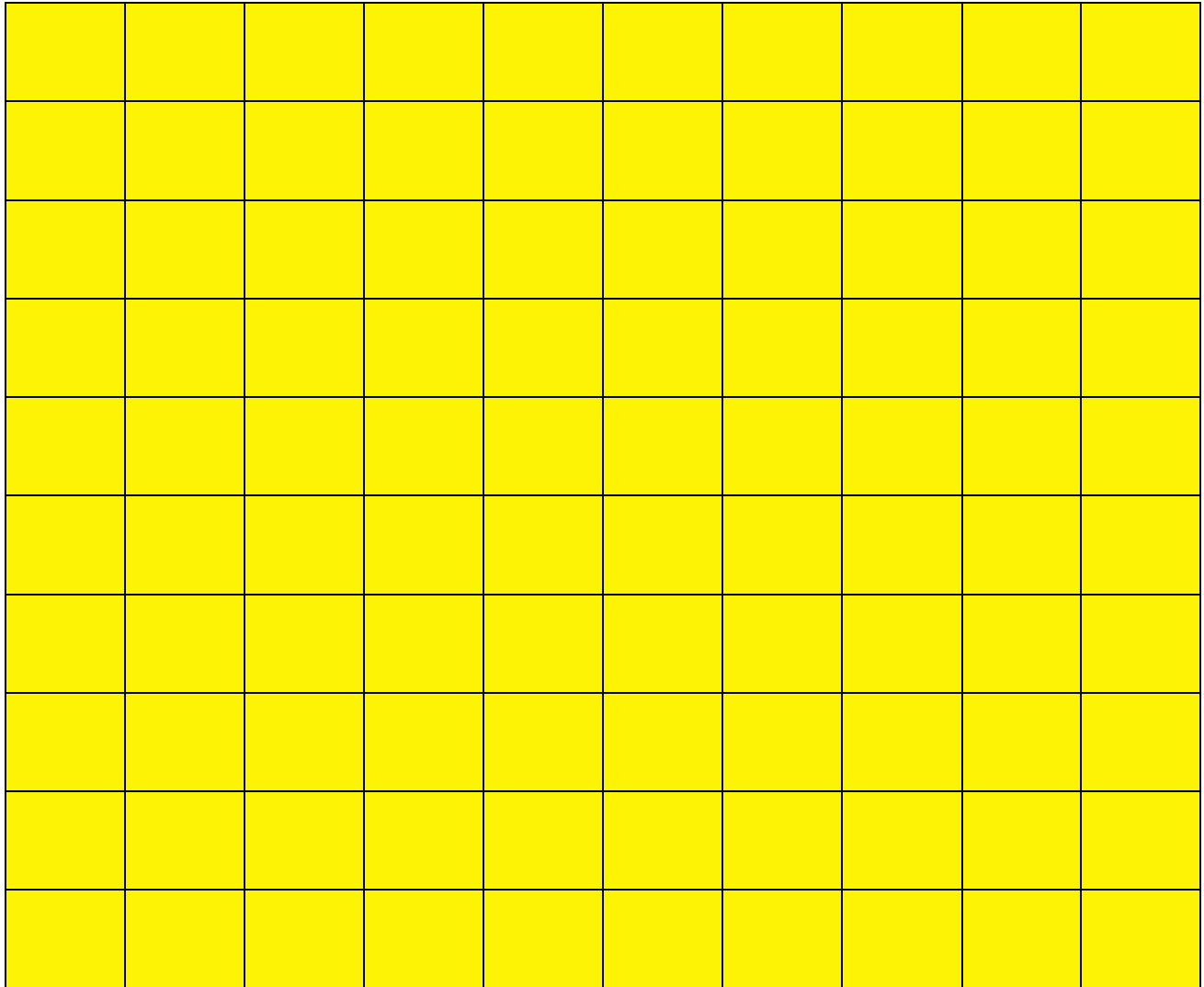
Once you understand how decimals work, everything with them becomes fairly easy. There is an “aha” moment when it all falls into place. You may have to work to get that “aha.” I’ve done my best to get you there as painlessly as possible!

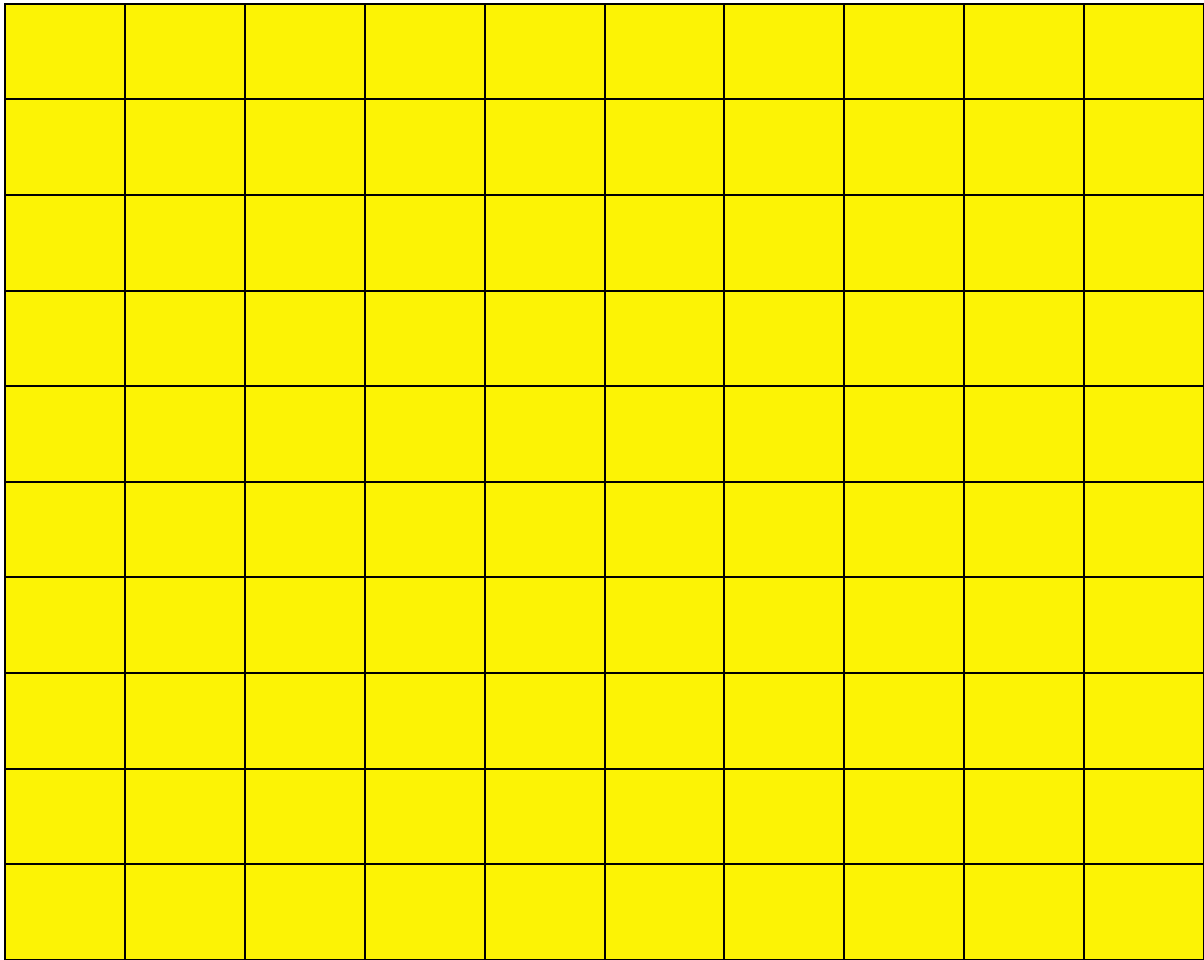
I recommend you are familiar with the concept of fractions, naming fractions and addition and subtraction of fractions before you do this lesson collection. This is Fractions 1 in my series.

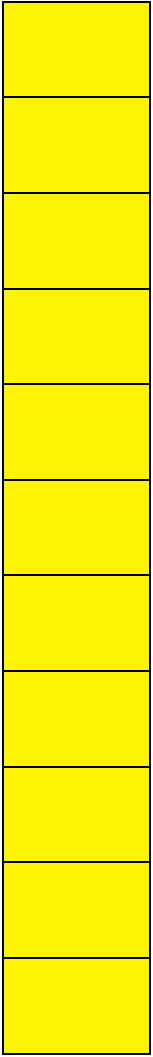
As in most of my lessons, you begin with hands-on-objects. PLEASE be good to yourself and use them. They add maybe ten minutes of work to your entire life, and they help make decimals make sense.

Activity 1: Introducing decimals with place value blocks

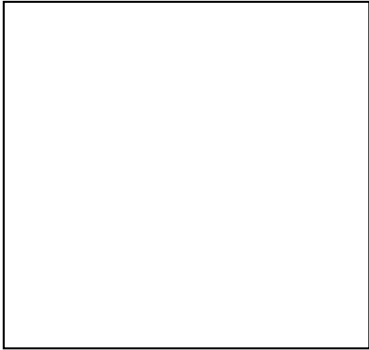
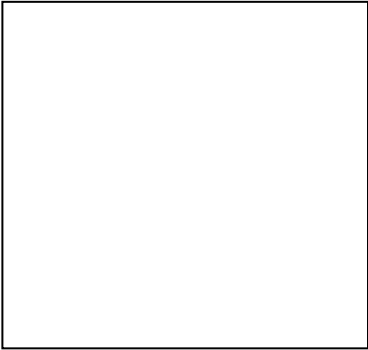
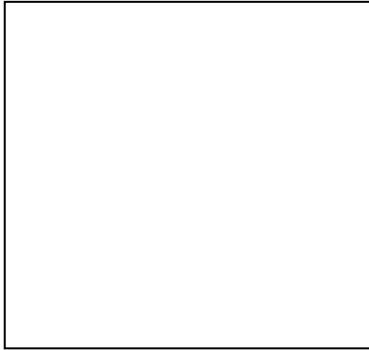
Should there be instructions to cut out??

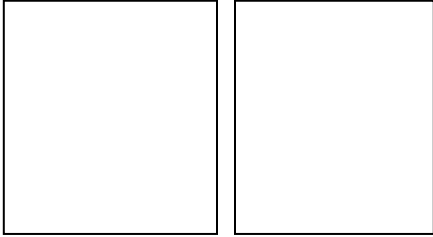
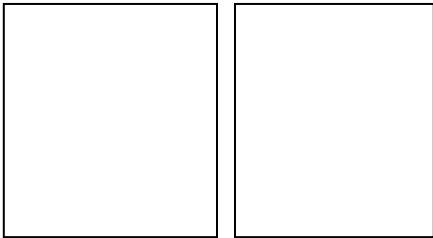
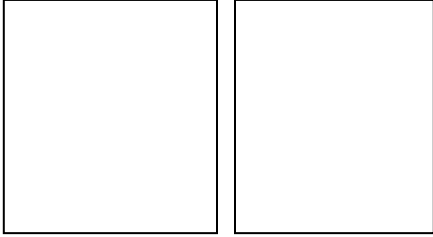




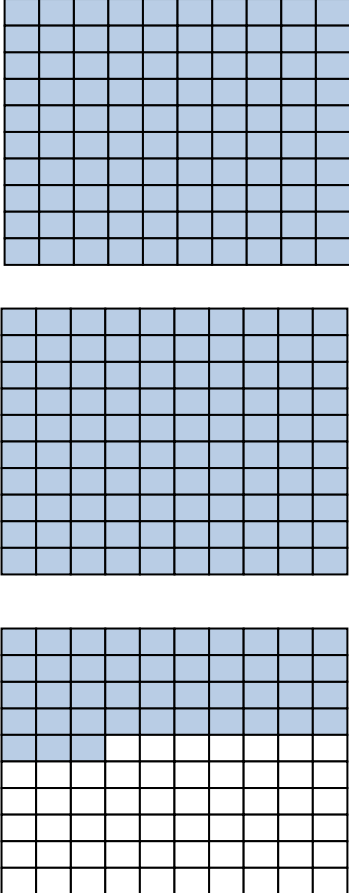


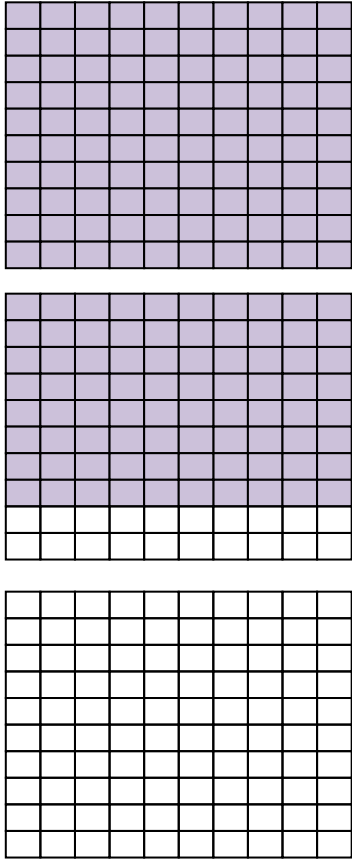
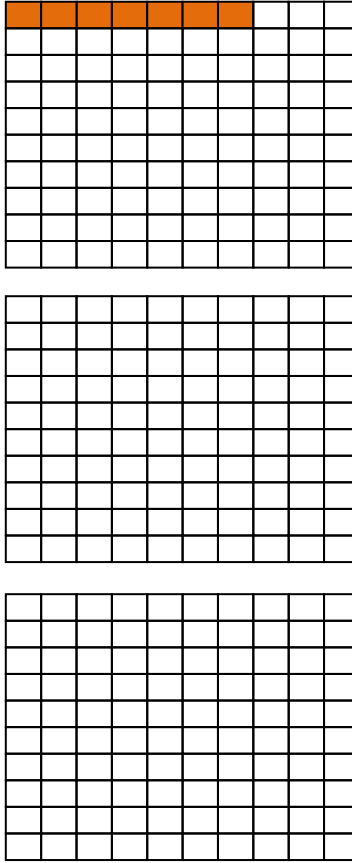
Pretend you are putting tiles on a floor. Your tiles are yellow. The room requires one hundred tiles, with ten tiles each row and ten rows.

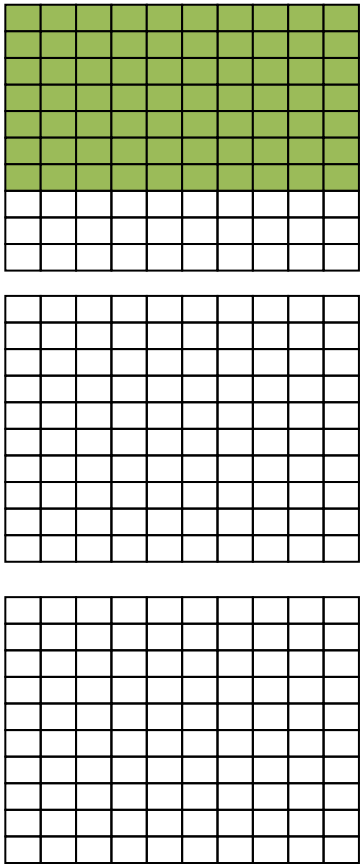
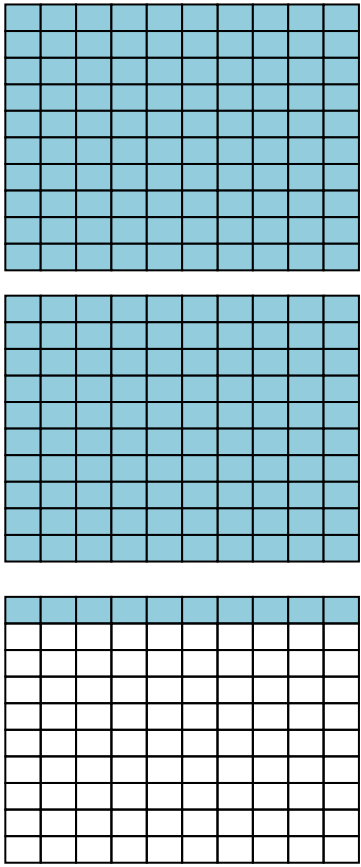
What fraction of each floor is finished? The shaded part is what has been completed.		
One Floor	One Row	One Tile
		
Answer:	Answer:	Answer:

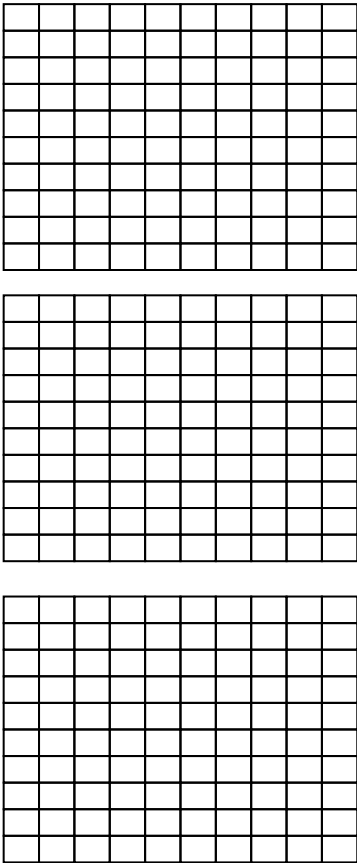
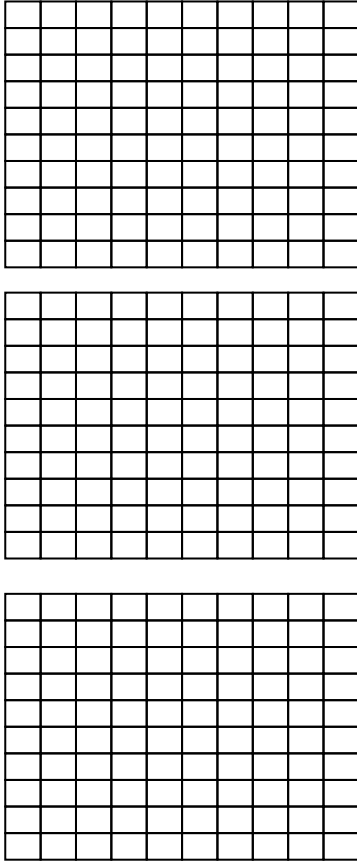
Find all the fraction names that could apply to each shaded amount.		
Finished Floors	All Fraction Names	Description
	Answer: Answer:	Answer: Answer:
	Answer: Answer:	Answer: Answer:
	Answer: Answer:	Answer: Answer:

Activity 2: More floors with place value blocks

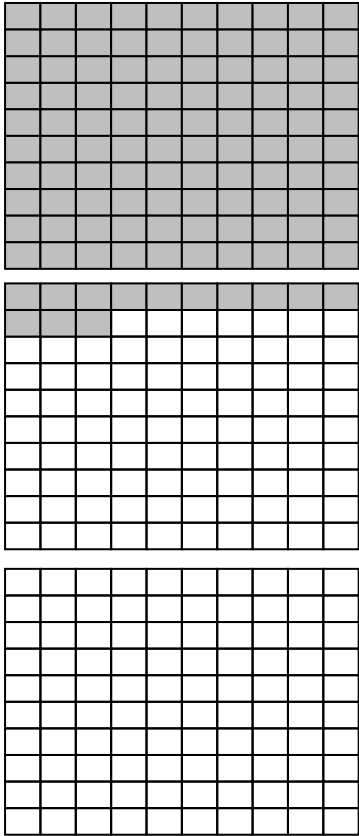
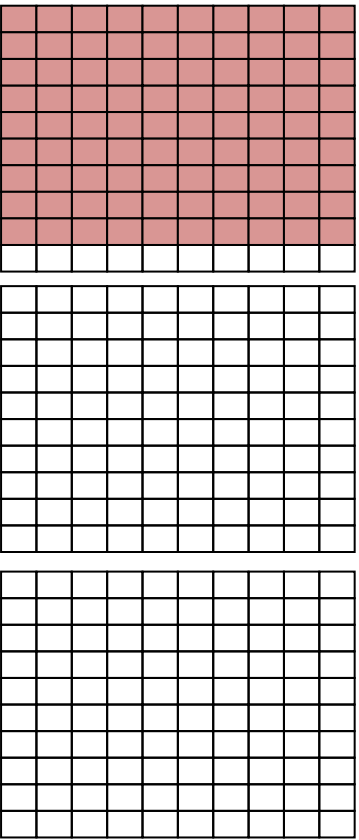
Find all the fraction names that could apply to each shaded amount.		
Finished Floors	All Fraction Names	Description
	$89/100$	89 tiles – can't name this with rows due to the unfinished row
	$2 \frac{43}{100}$ $243/100$	Two finished floors and 43 tiles on another 243 tiles in all

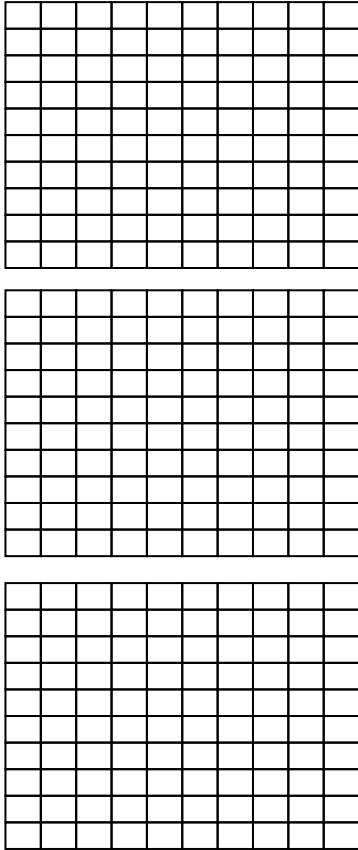
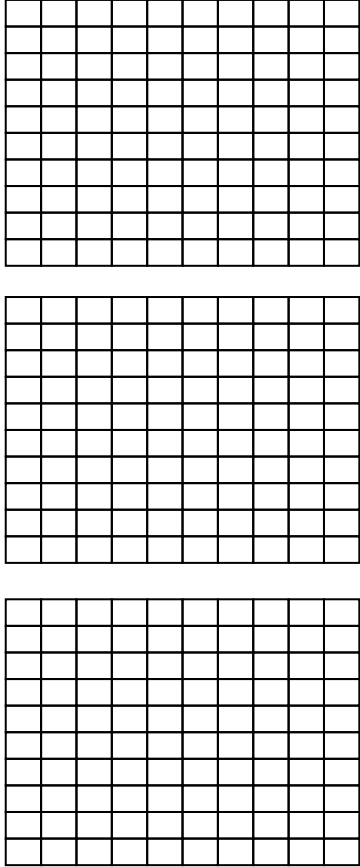
	<p>$1 \frac{8}{10}$</p> <p>$1 \frac{80}{100}$</p> <p>$\frac{18}{10}$</p> <p>$\frac{180}{100}$</p>	<p>1 whole floor + 8 rows</p> <p>1 whole floor + 80 tiles</p> <p>18 rows all together</p> <p>180 tiles all together</p>
	<p>$\frac{7}{100}$</p>	<p>7 tiles</p> <p>The next item is here so students can see the diff. Between 0.07 and 0.7</p> <p>Be sure to discuss the huge difference between $\frac{7}{100}$ and $\frac{7}{10}$ and why it can confuse some kids</p>

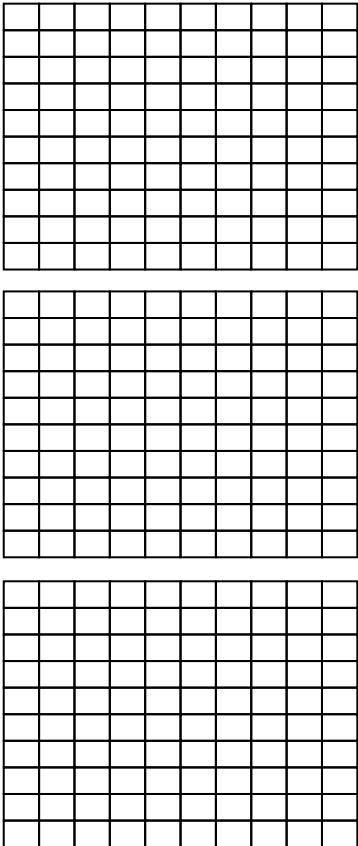
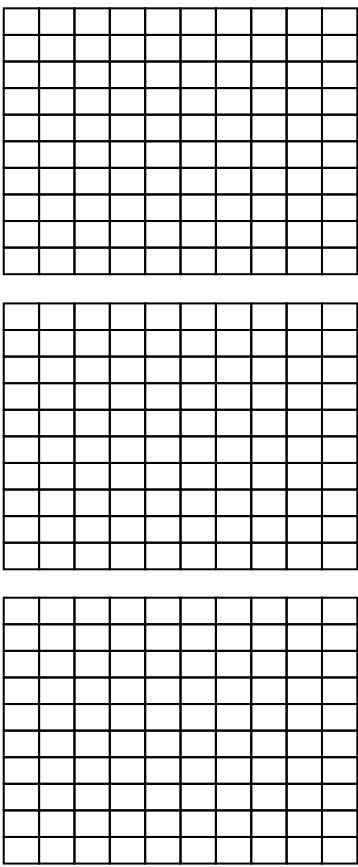
	<p>$7/10$</p> <p>$70/100$</p>	<p>7 rows – talk about tenths indicating entire rows</p> <p>70 tiles – talk about hundredths indicating individual tiles</p>
	<p>$2 \frac{1}{10}$</p> <p>$21/10$</p> <p>$2 \frac{10}{100}$</p> <p>$210/100$</p>	<p>2 whole floors + 1 row</p> <p>2 whole floors + 20 tiles</p> <p>21 rows</p> <p>210 tiles</p>

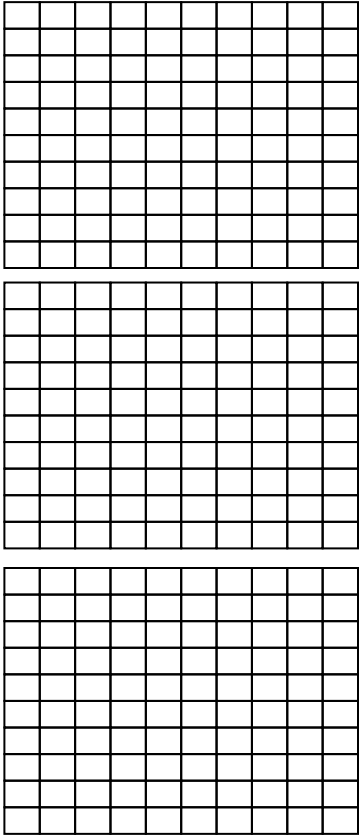
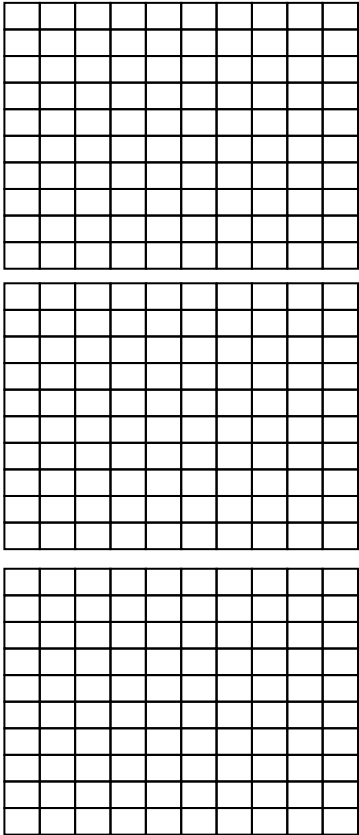
	<p>1 $\frac{23}{100}$</p>	
	<p>Kids have to provide all possible fractions using tenths and hundredths (discourage simplest form)</p>	<p>5 rows</p>

Find all the fraction names that could apply to each shaded amount.

Finished Floors	All Fraction Names	Description
		
		

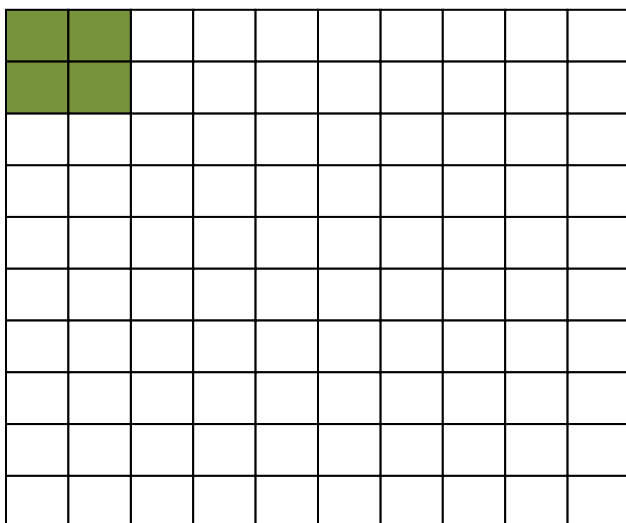
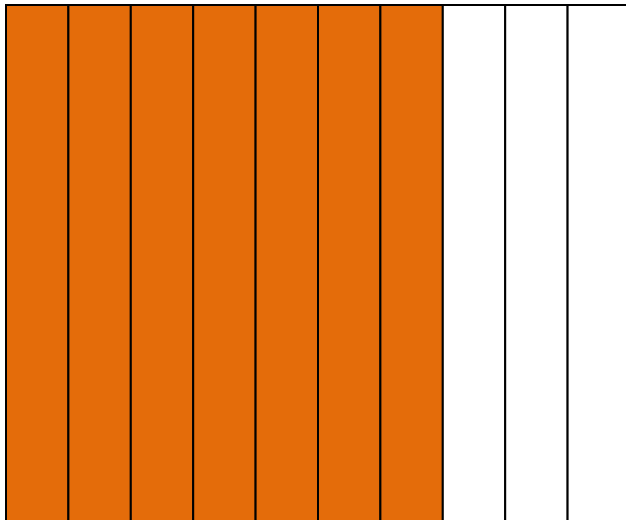
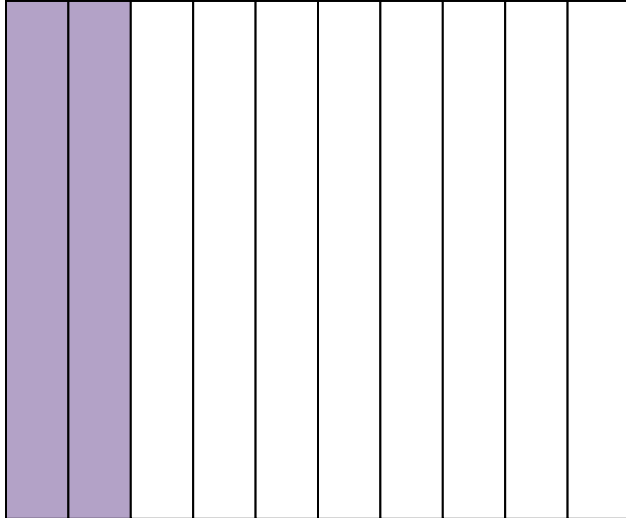
	<p>4/10</p>	
		<p>78 tiles</p>

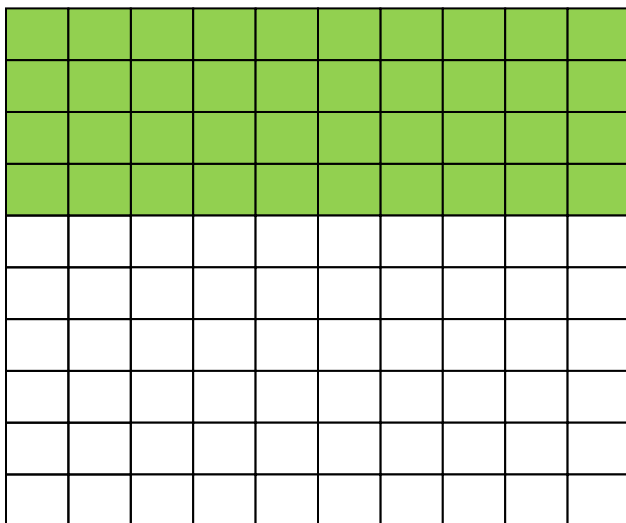
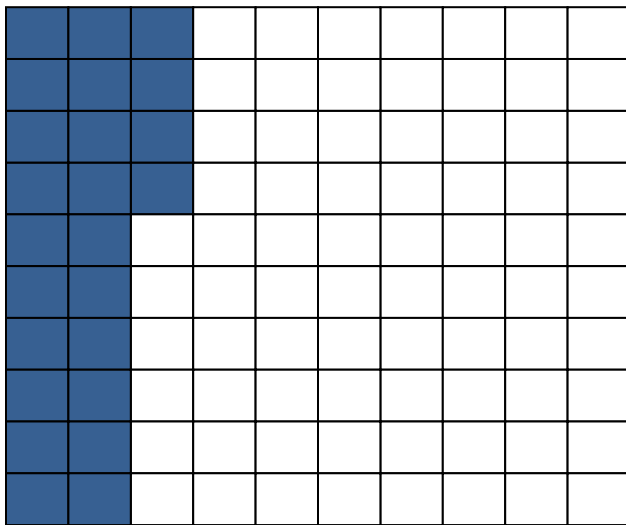
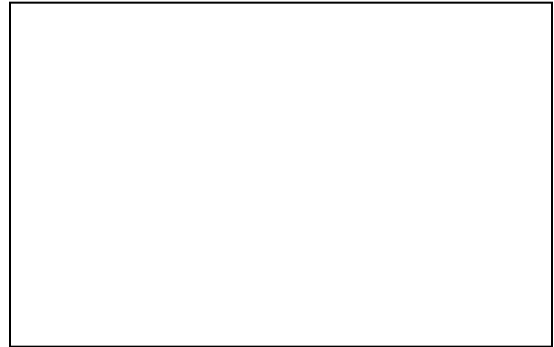
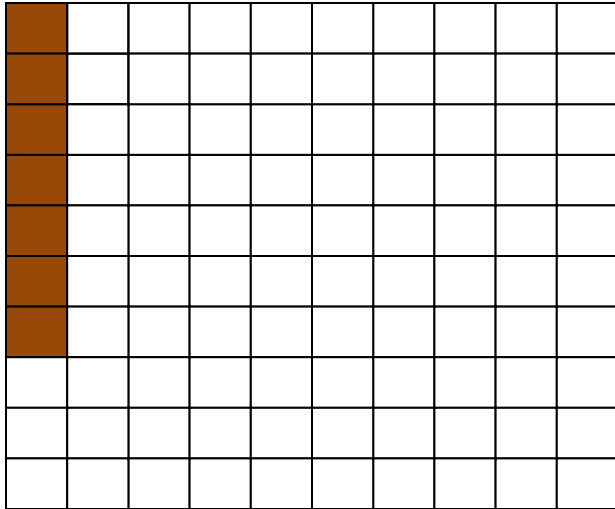
	$2 \frac{6}{10}$	
		2 floors + 60 tiles

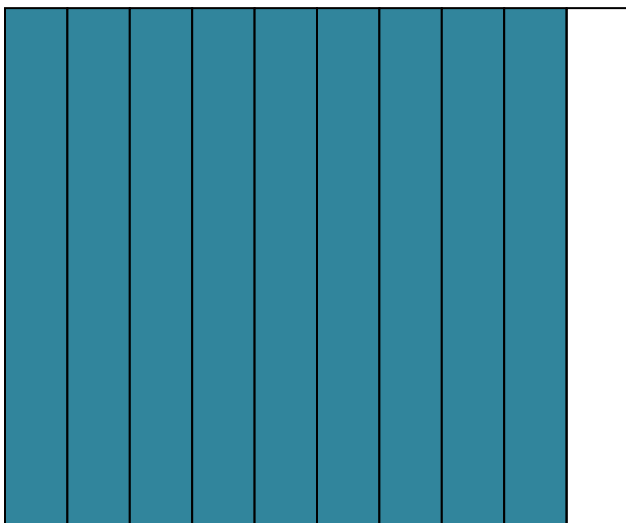
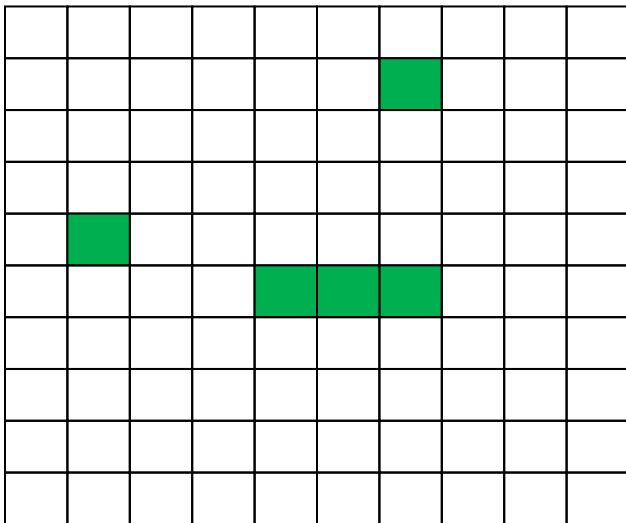
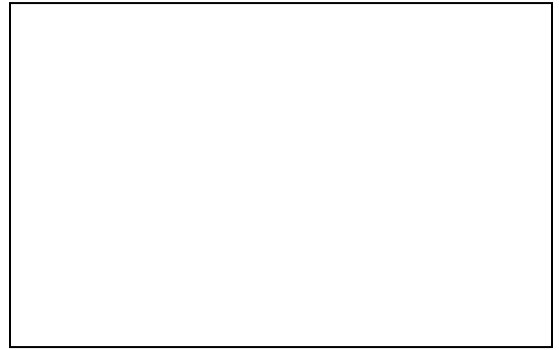
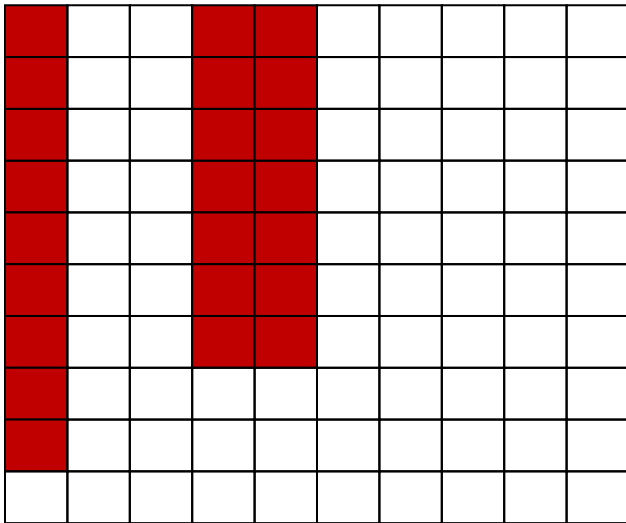
	$29/100$	
	$29/10$	

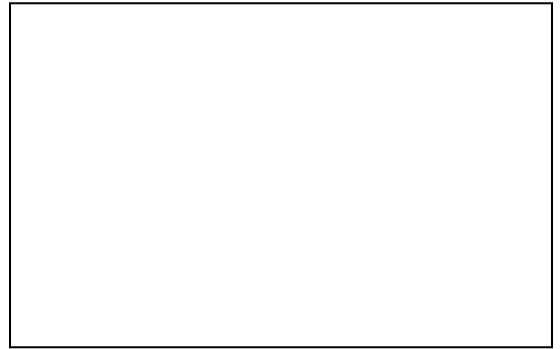
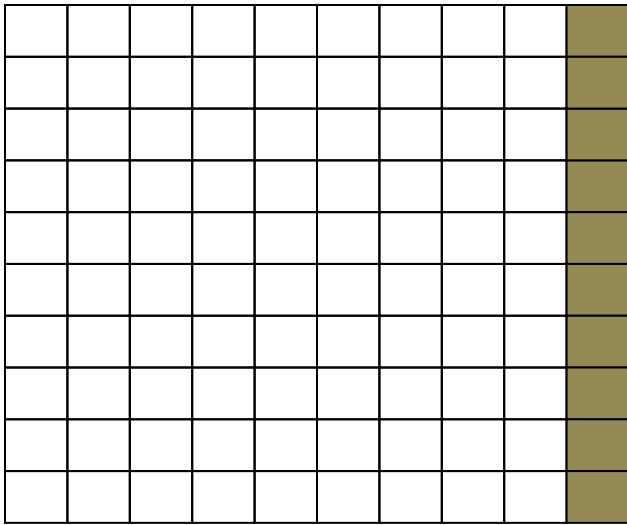
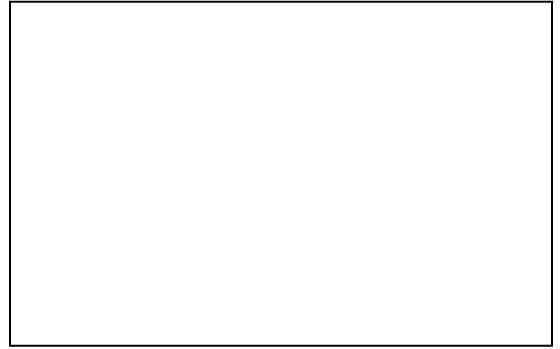
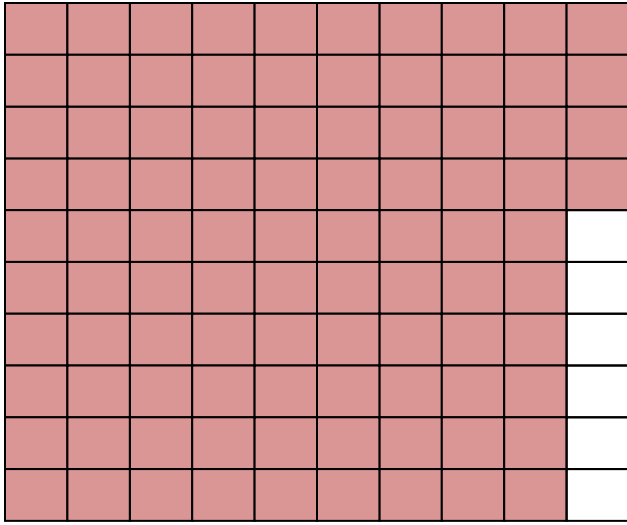
Practice 1: Using grids to model fractions and decimals

Look at the shaded portions and give the fraction and decimal names.

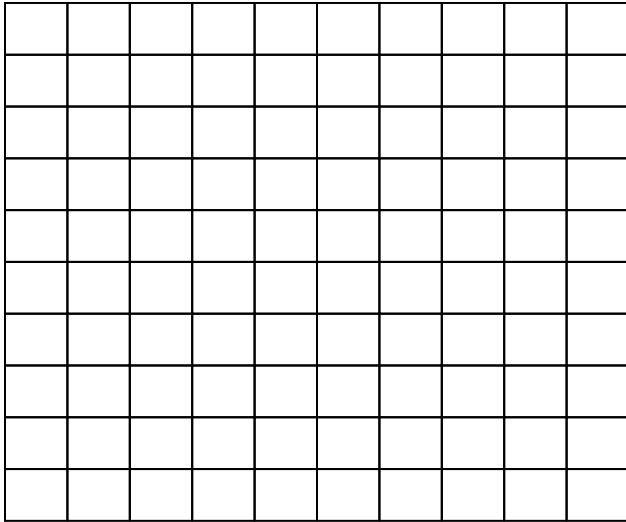




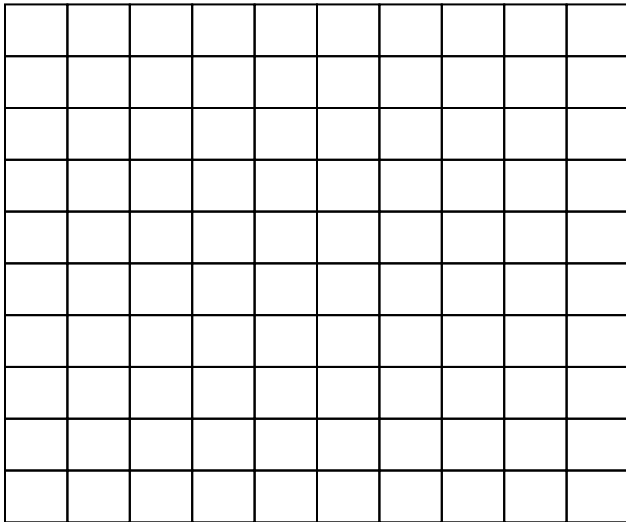




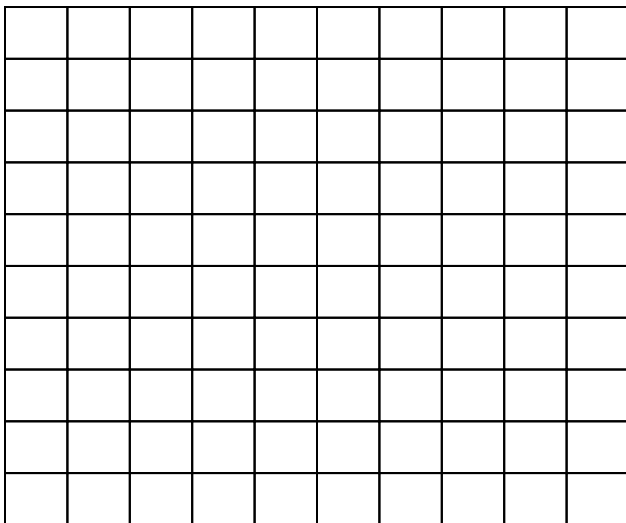
Show 2 hundredths



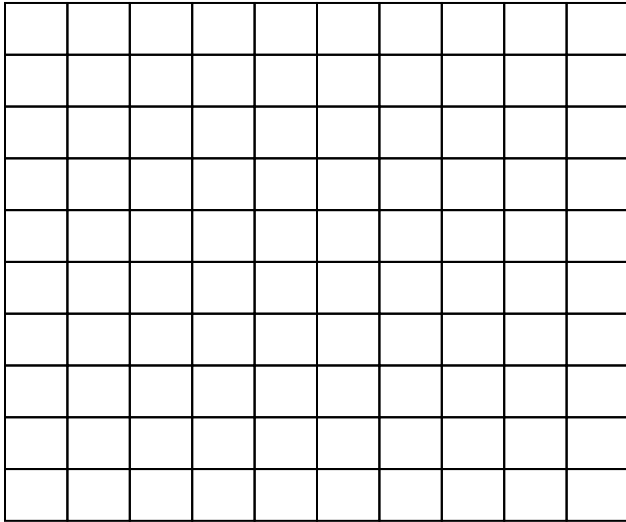
Show 2 tenths



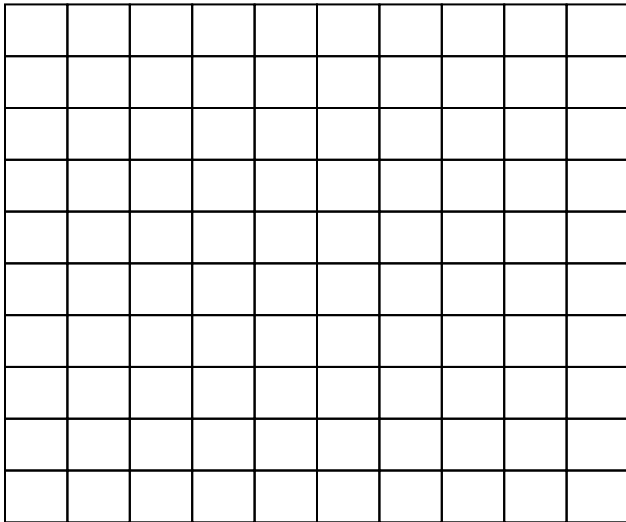
Show 4 hundredths



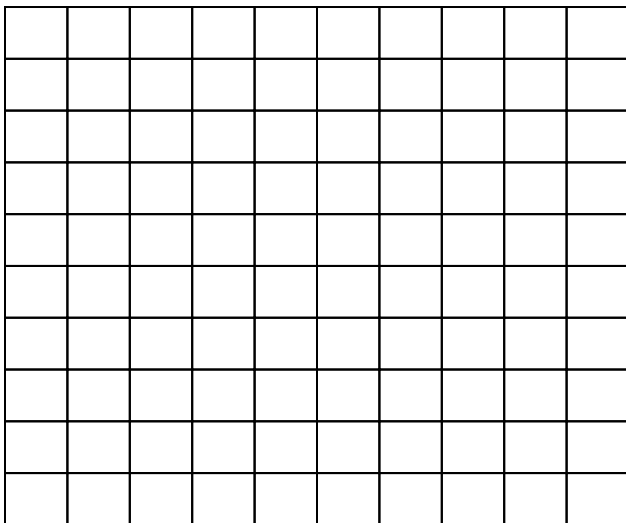
Show 4 tenths



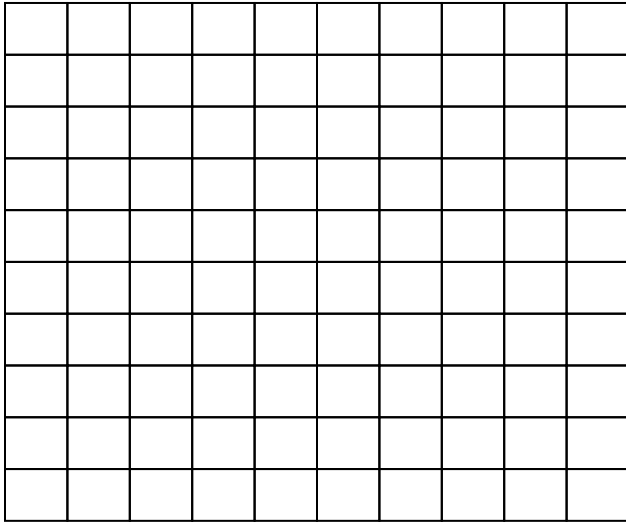
Show 42 hundredths



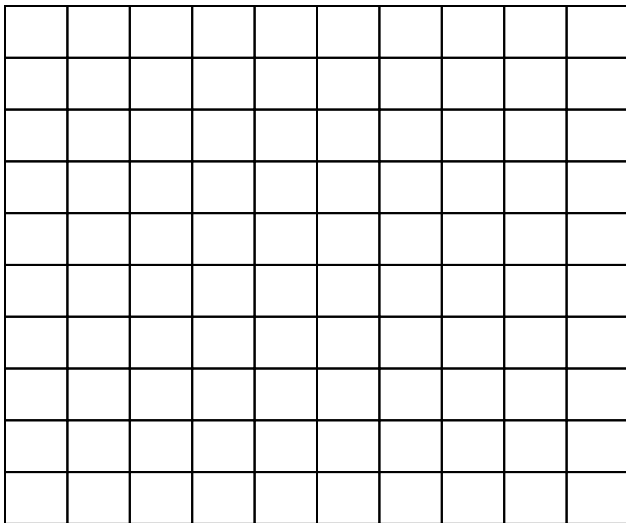
Show 21 hundredths



Show 7 hundredths



Show 99 hundredths



Practice 2: The Place Value Chart

Our number system has patterns. Place value is a pattern. The purpose of the place value pattern is to make numbers easy to understand. We will start with one and numbers greater than one.

You are already familiar with many of the place values. Here is a quick reminder.

Thousands Hundreds tens ones

Place value with numbers one and greater

Write the name of the number


thousands	hundreds	tens	ones	Name of number
		1	2	twelve
	3	1	2	
5	3	1	2	
			7	
	1	0	7	
8	1	0	7	
8	0	0	7	
8	0	0	0	


Look at the names of the numbers.

Where did you start with the number name?

(Answer: You start on the left, with the largest value.)

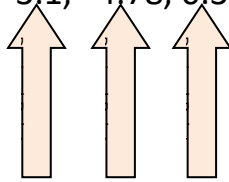
How do you go from one place value to the next?

(Answer: Going right to  left you multiply by 10. So for example, ten = 10 * one, one hundred = 10 * ten, etc.

Going left to  right, you divide by 10.)

Now we move to the right side of the ones. We have to use a decimal point to do that.

Here are some examples: 3.1, 4.78, 0.3456.



Place value is very symmetric.

thousands, hundreds, tens, ones ● tenths, hundredths, thousandths

The “ones” and decimal point are not repeated, but there is symmetry otherwise. It’s as if there were a mirror at the ones and the decimal point.

thousands, hundreds, tens, ones ● tenths, hundredths, thousandths



Here is another version of part of a place value chart.

quadrillionths

hundred trillionths

ten trillionths

trillionths

hundred billionths

ten billionths

billionths

hundred millionths

ten millionths

millionths

hundred thousandths

ten thousandths

thousandths

hundredths

tenths

decimal point

ones

tens

hundreds

thousands

ten thousands

hundred thousands

millions

ten millions

hundred millions

billions

ten billions

hundred billions

trillions

ten trillions

hundred trillions

quadrillions



Activity 2: Place Value Chart

You will need:

- Colored pencils
- A Kleenex

Optional, but recommended! The song “One Is the Loneliest Number” by Three Dog Night to emphasize that the ones place has no symmetric partner. I substitute “place value” for “number” so the words become: *One is the loneliest place value...* Dancing to this song really helps!!



Show the symmetry in the names of each place value by coloring symmetric names the same color, as in the chart on page 15.

Say the names of each place value. When you say the “ths” be sure to hold the Kleenex over your mouth. It helps to spit a bit (kind of kidding, be careful of passing germs) with the “ths.”

quadrillionths
hundred trillionths
ten trillionths
trillionths
hundred billionths
ten billionths
billionths
hundred millionths
ten millionths
millionths
hundred thousandths
ten thousandths
thousandths
hundredths
tenths
decimal point

ones
tens
hundreds
thousands
ten thousands
hundred thousands
millions
ten millions
billions
ten billions
hundred billions
trillions
ten trillions
hundred trillions
quadrillions
hundred millions

Reproduce the place value chart from memory.

0	
9	
8	
7	
6	
5	
4	
3	
2	
1	
0	
9	
8	
7	
6	thousandths
5	hundredths
4	tenths
.	Big mirror
2	Ones – not symmetric
1	tens
0	hundreds
9	
8	
7	
6	
5	
4	
3	

Practice 3: Decimal names

You will need page 17, the place value chart.

4.58	four and fifty eight hundredths
1.003	one and three thousandths
1.23	one and twenty three hundredths
1.234	one and two hundred thirty four thousandths
3.235	
4.56	
4.567	
4.007	
4.056	
8.002	
8.03	
8.4	
	eleven and three tenths
	eleven and 4 tenths
	eleven and 43 hundredths
	one hundred and thirty five ten thousandths
	one hundred and thirty five hundredths
	one hundred and thirty five thousandths
	one and thirty five thousandths
123.456	
1234.56	
1234.056	
0.004	
12.004	
12.0004	
0.123	
0.0123	
0.00123	
	two thousandths
	three hundred twelve and fifty six hundredths
	five hundredths
	five ten thousandths
60.1	
61.01	
610.001	
	eighteen thousand and three tenths
	eight and three tenths
	eight and four tenths
18.35	

Practice 4: Place Value Chart

Here are four numbers. Which is the largest and why?

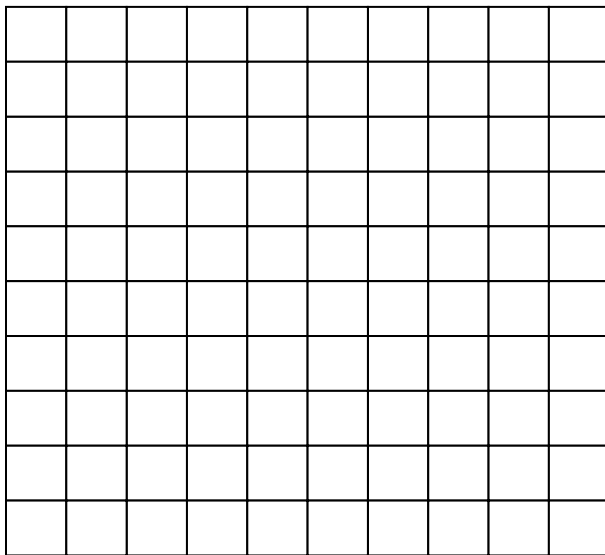
0.36, 0.058, 0.375, 0.4

Which do you think is the largest? _____

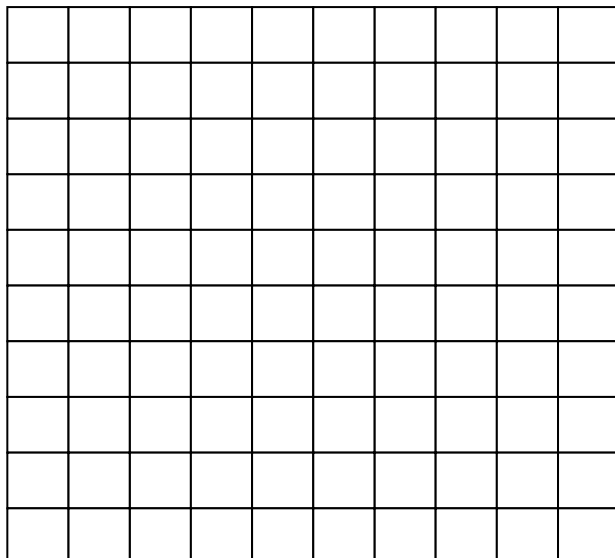
Why? _____

Now you will show each of these numbers on the hundred grid. I'll give hints.

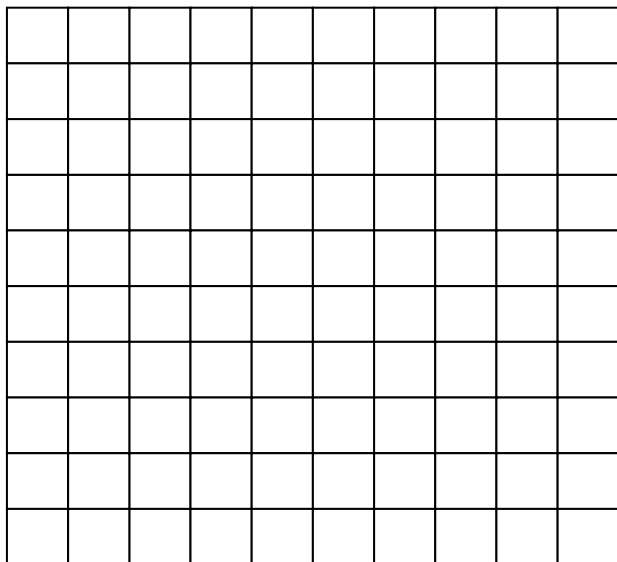
Use the grid paper to show 0.36



Now show 0.4. (Hint: 0.4 means 4 tenths. This is the same as 0.40 – zero hundredths.)

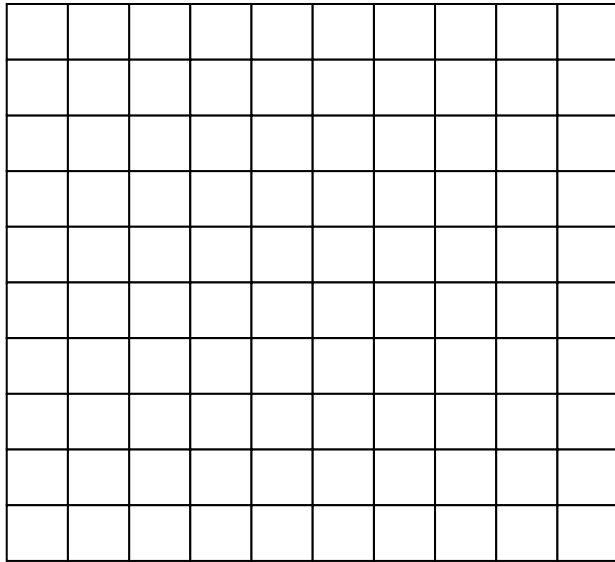


Use the grid to show 0.375. (Hint: 0.375 rounds to 0.38.)

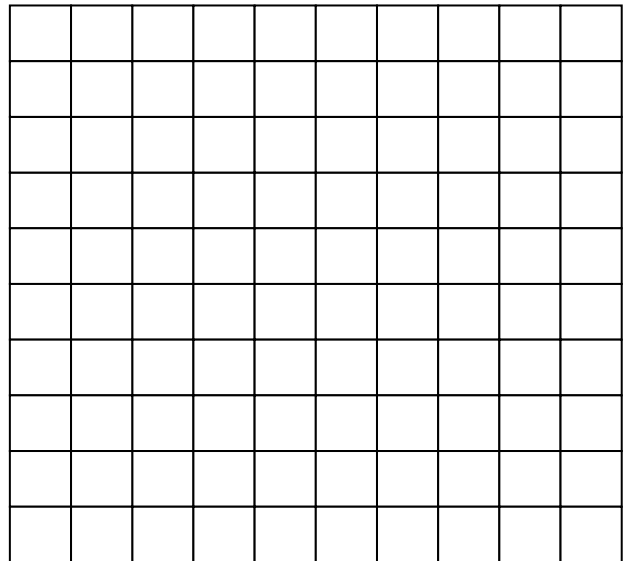
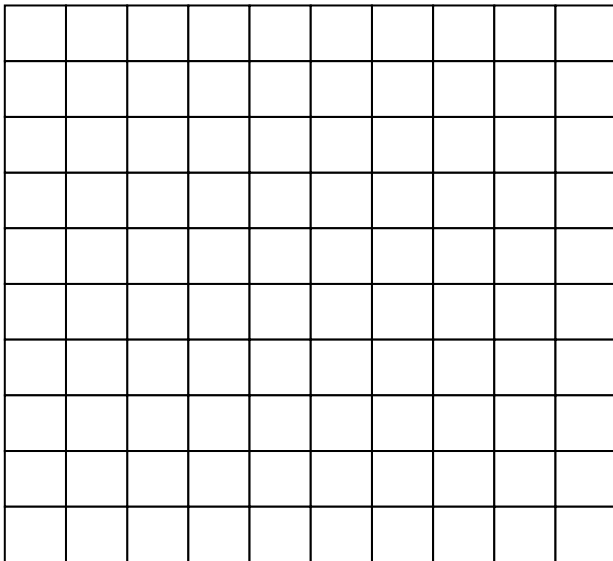


Practice 5: Using grids to show decimal values

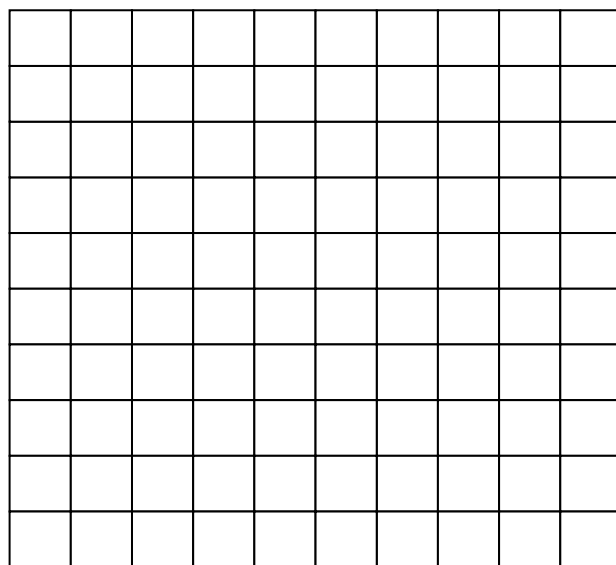
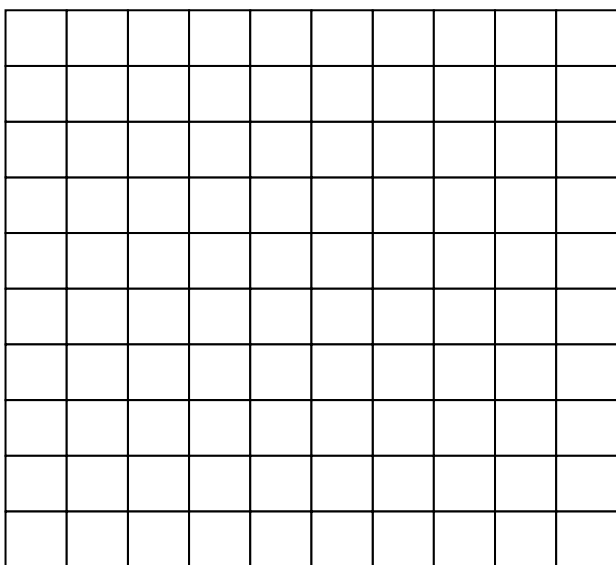
a. Use the grid to show 0.058. (Hint: 0.058 rounds to 0.06)



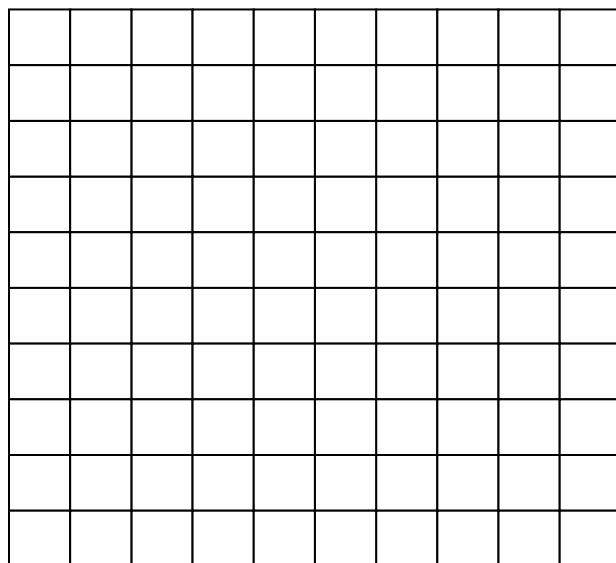
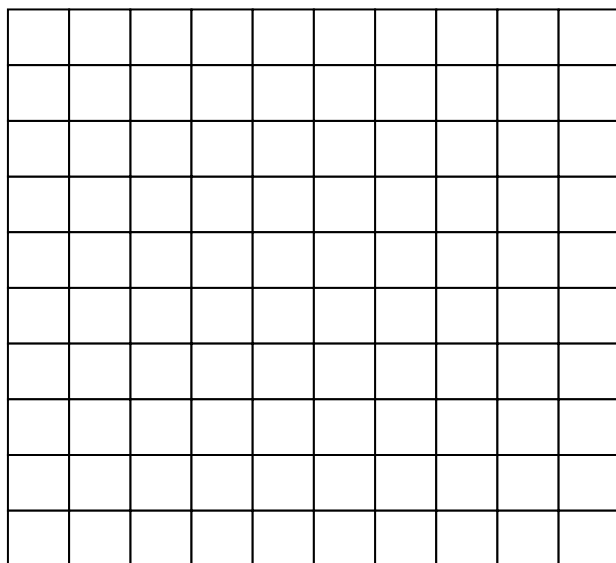
b. Show these numbers: 0.3 and 0.03



c. Show 1.35 on the grids



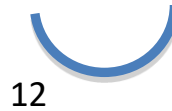
d. Show 1.04 on the grids



Addition of decimals

All additions work the same way. Similar quantities are added.

Here is an example: $12 + 4 = ?$ This is the same as 1 ten + 2 ones + 4 ones



We add the ones together ($2 + 4 = 6$).

$$12 + 4 = 6.$$

We could have written this with decimal points: 12.0
+ 4.0

Notice the decimal points line up.

Addition with decimals work the same way. Here is an example: $0.37 + 0.12$.

$0.37 = 3$ tenths + 7 hundredths

$0.12 = 1$ tenth + 2 hundredths

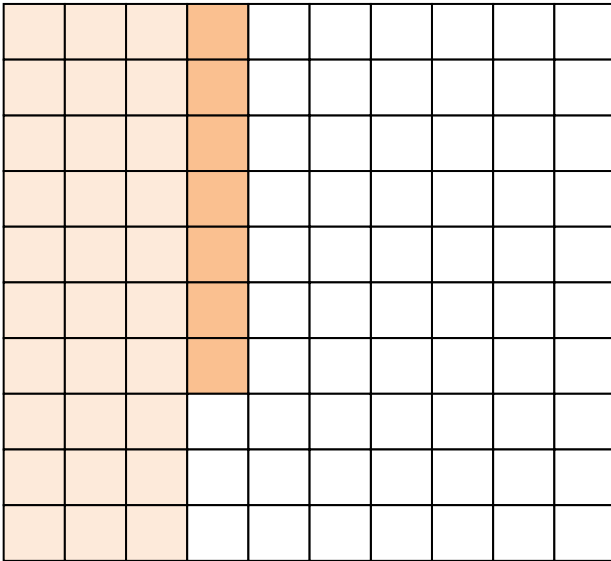
We add the tenths (3 tenths + 1 tenth = 4 tenths) and then

add all the hundredths (7 hundredths + 2 hundredths = 9 hundredths) and then combine:

$$(4 \text{ tenths} + 9 \text{ hundredths} = 0.49)$$

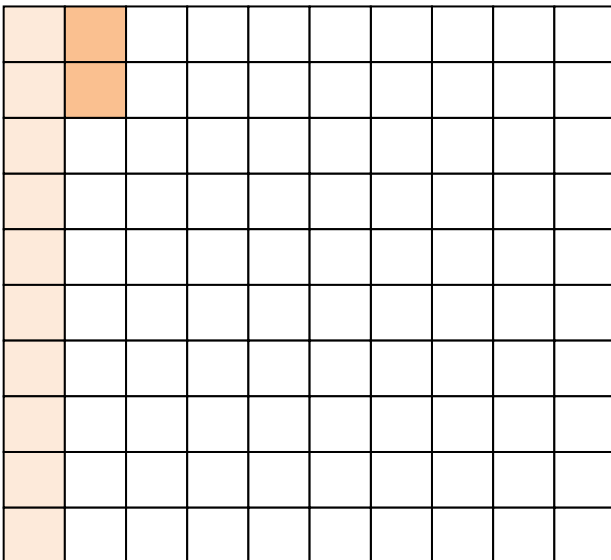
The hundredths grid gives the same result (of course).

So $0.37 + 0.12 = 0.49$



0.37

+



0.12

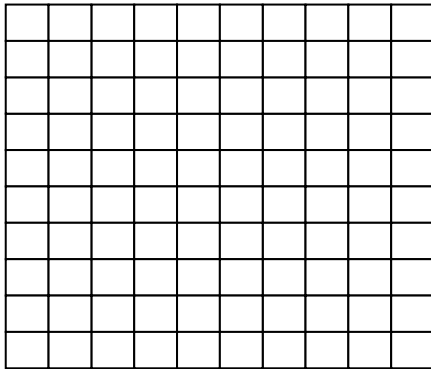
0.49

Practice 6: Addition of decimals

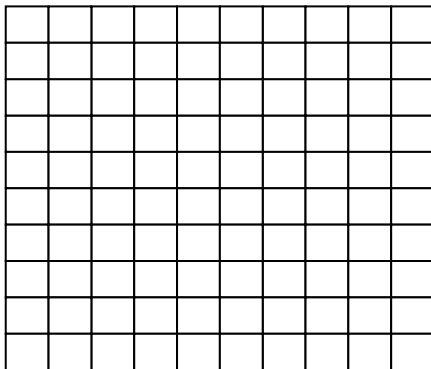
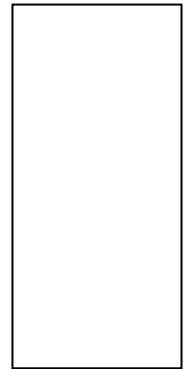
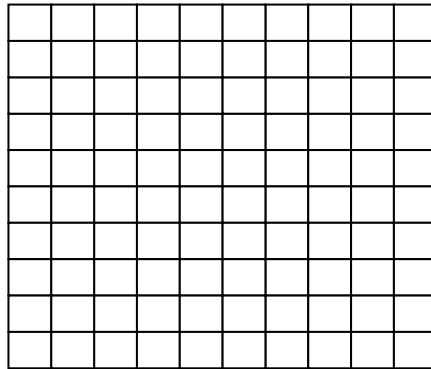
You will need:

- 2 colored pencils

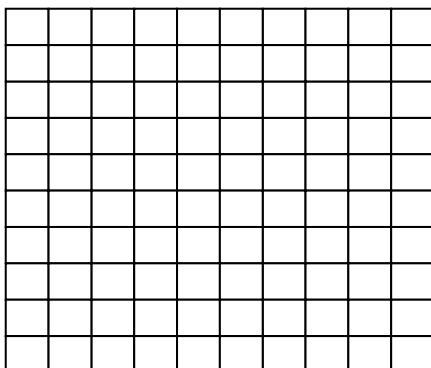
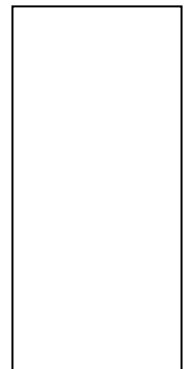
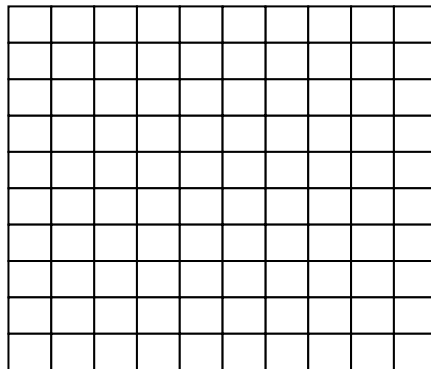
Show the tenths in one color and the hundredths in another color. Show the addition on the right side of the grids.



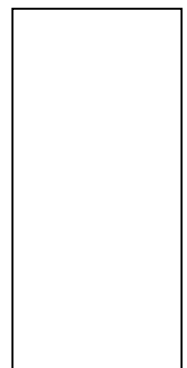
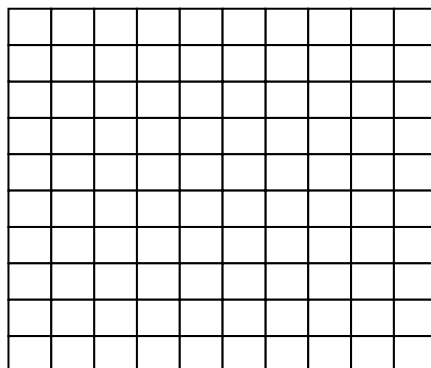
$$0.78 + 0.03 =$$

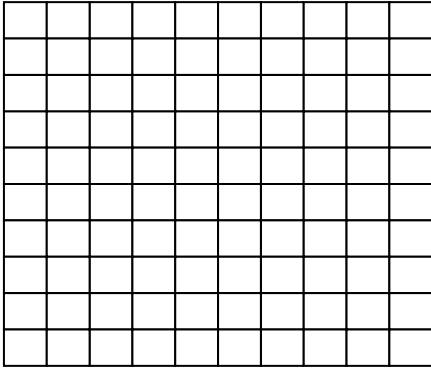


$$0.61 + 0.14 =$$

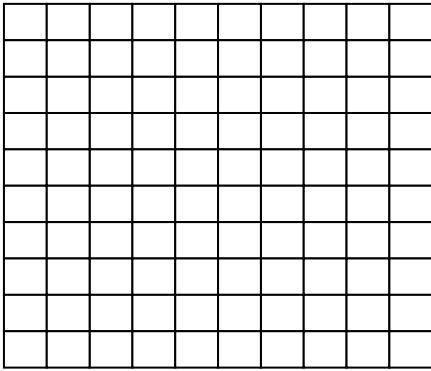
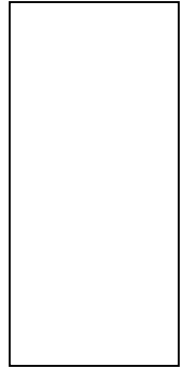
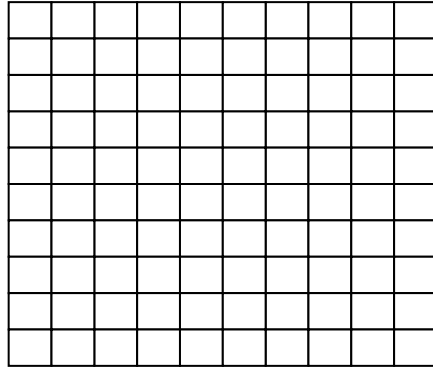


$$0.32 + 0.26 =$$

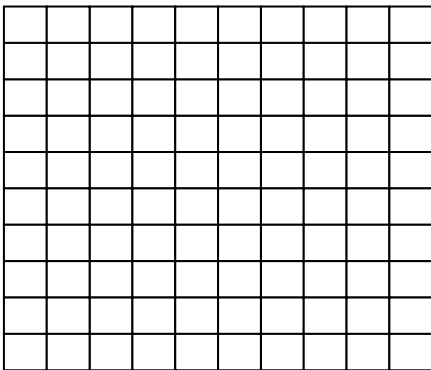
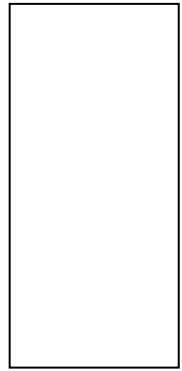
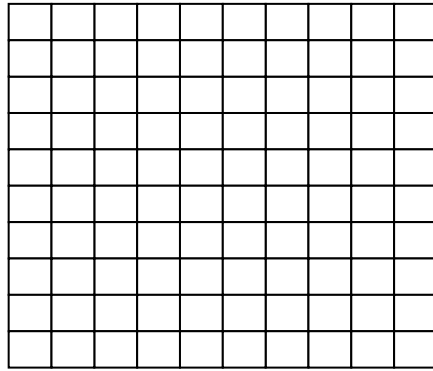




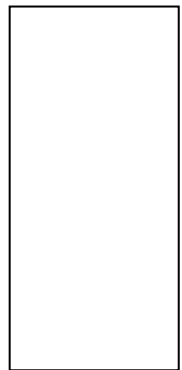
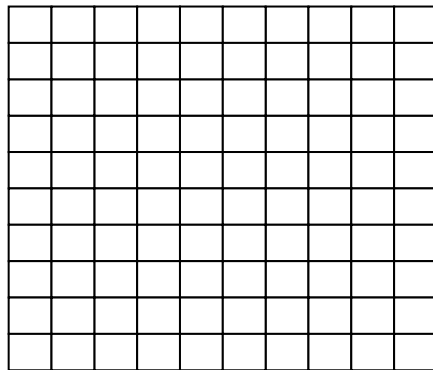
$$0.38 + 0.03 =$$



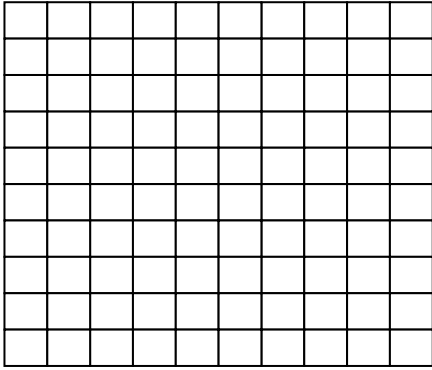
$$0.65 + 0.18 =$$



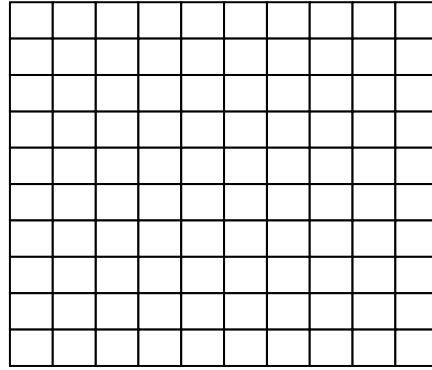
$$0.37 + 0.26 =$$



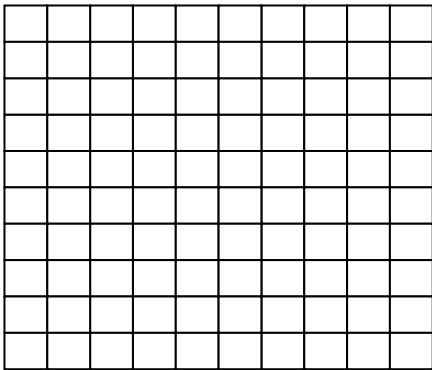
For this next exercise you are encouraged to visualize the 100 grid, but to perform the addition calculations without drawing.



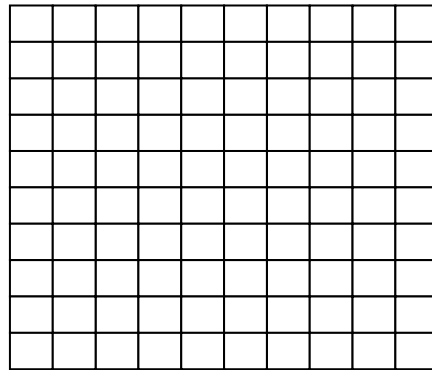
$$0.78 + ? = 1$$



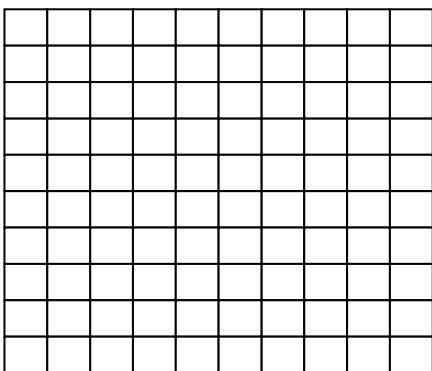
$$0.25 + ? = 1$$



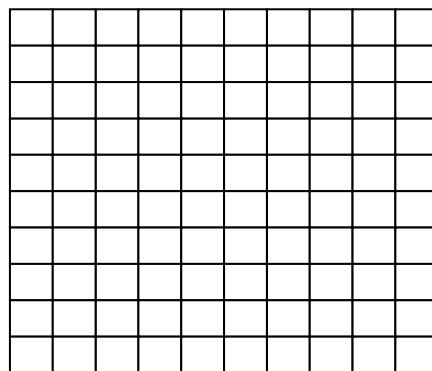
$$0.64 + ? = 1$$



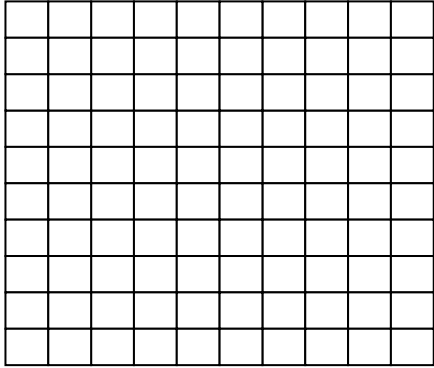
$$0.17 + ? = 1$$



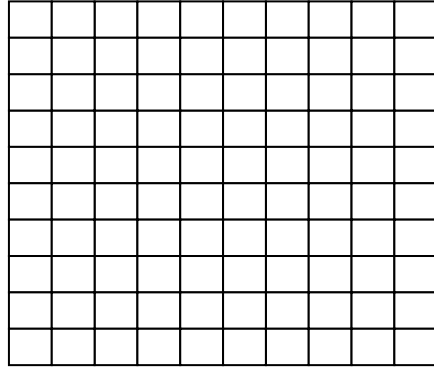
$$0.98 + ? = 1$$



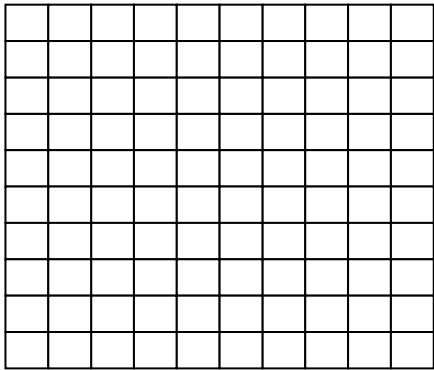
$$0.23 + ? = 1$$



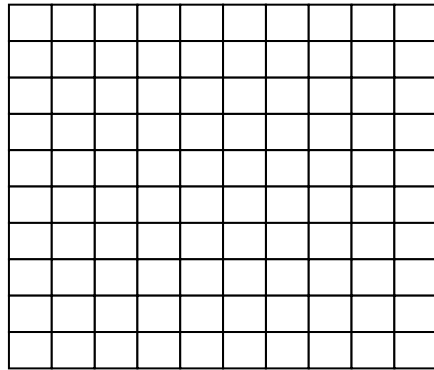
$1 - 0.71 = ?$



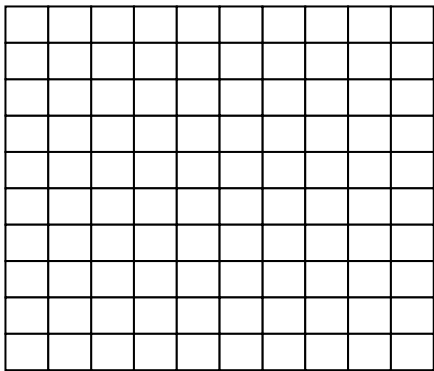
$1 - 0.51 = ?$



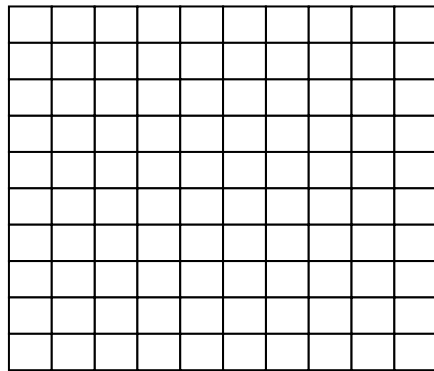
$0.48 + ? = 1$



$1 - 0.61 = ?$

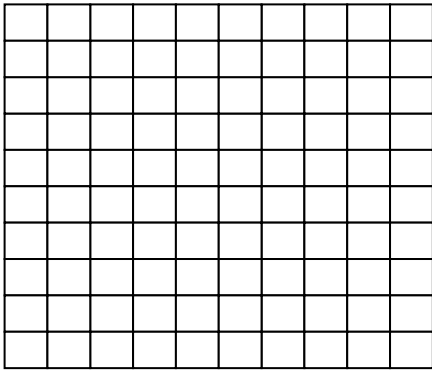


$1 - 0.94 = ?$

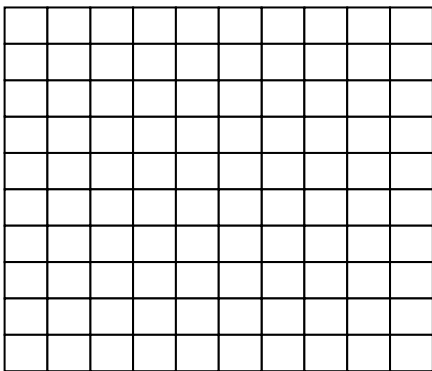
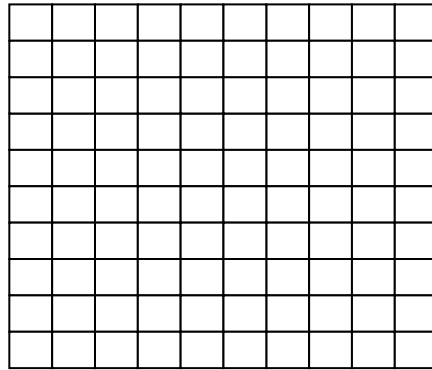


$0.32 + ? = 1$

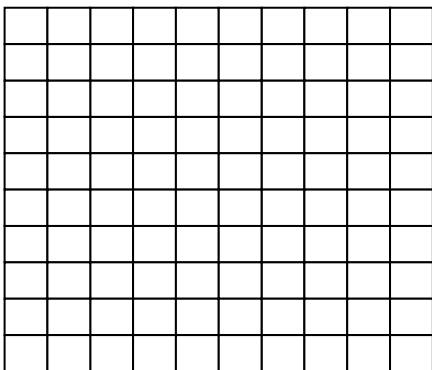
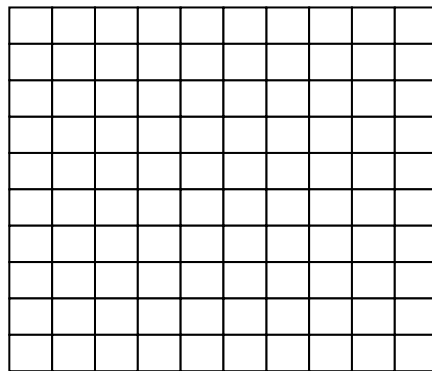
Practice 7: More Addition of decimals



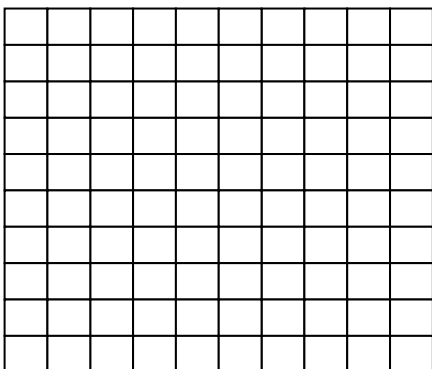
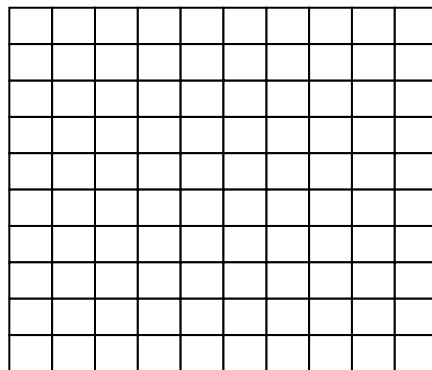
$0.53 + 0.32 =$



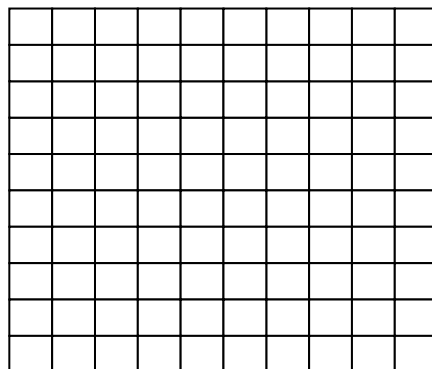
$0.03 + 0.56 =$

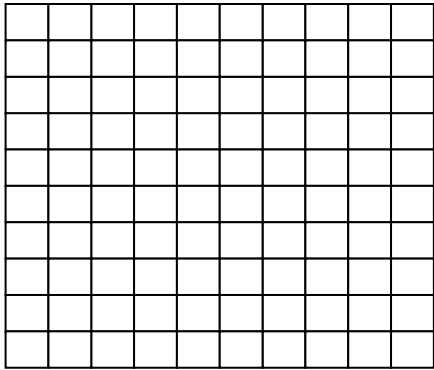


$0.47 + 0.08 =$

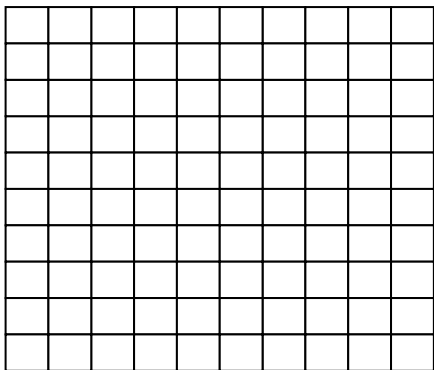
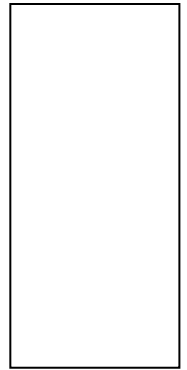
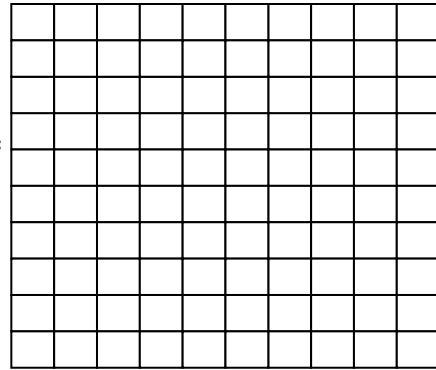


$0.58 + 0.13 =$

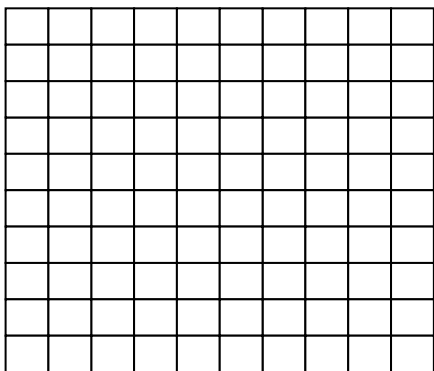
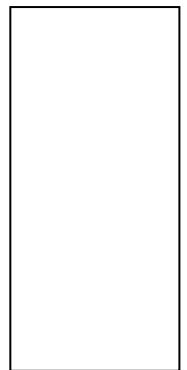
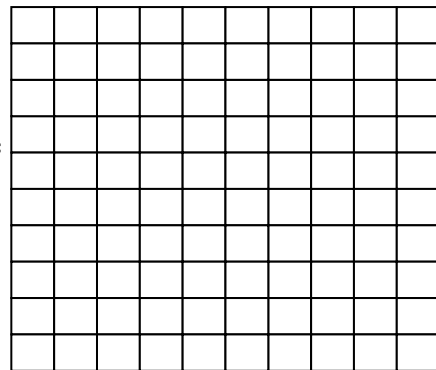




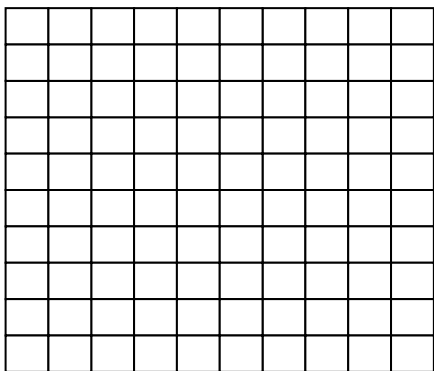
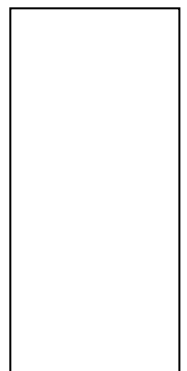
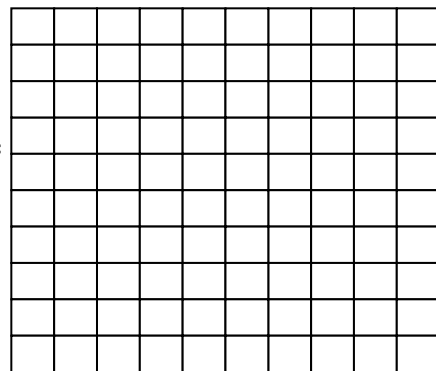
$3.14 + 0.52 =$



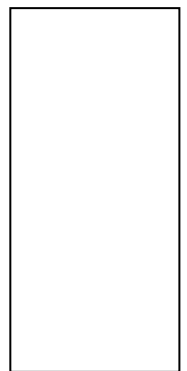
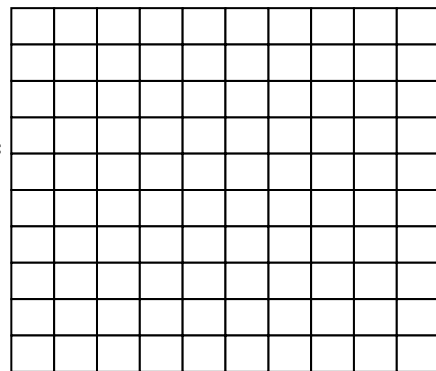
$0.49 + 1.01 =$



$7.21 + 1.32 =$



$5.23 + 6.45 =$



Subtraction of decimals

Subtraction and addition are related. (If you want to refresh yourself on addition and subtraction, you can learn a lot from my Addition and Subtraction lesson collections.)

Subtraction can be looked at with the 100 grids also, in the same way.

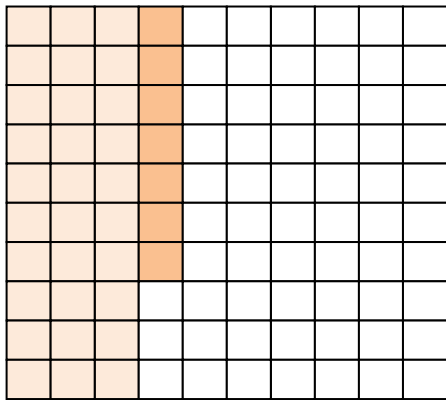
$0.37 - 0.12$ can be looked at as:

3 tenths – 1 tenth = 2 tenths

7 hundredths – 2 hundredths = 5 hundredths

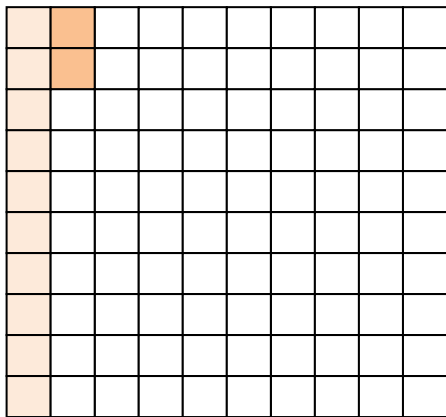
So 0.37

- 0.12
 0.25 which is 2 tenths and 5 hundredths



0.37

-



0.12

0.25

Similarly, $0.23 - 0.16$ can be looked at as:

2 tenths – 1 tenth

and

3 hundredths – 6 hundredths

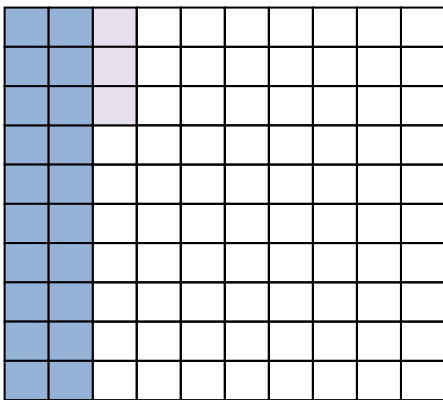
Using a standard algorithm (certainly not the only one) we would “borrow” one tenth from the 2 tenths, and turn the problem into:

1 tenth – 1 tenth = 0 tenths

13 hundredths – 6 hundredths = 7 hundredths

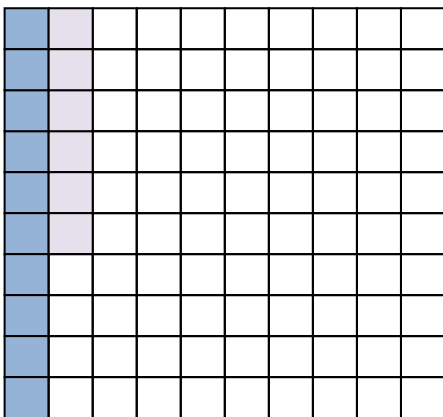
Or

$$\begin{array}{r} 1 \quad 13 \\ 0.\cancel{2}3 \\ \underline{0.16} \\ 0.07 \end{array}$$



0.23

-

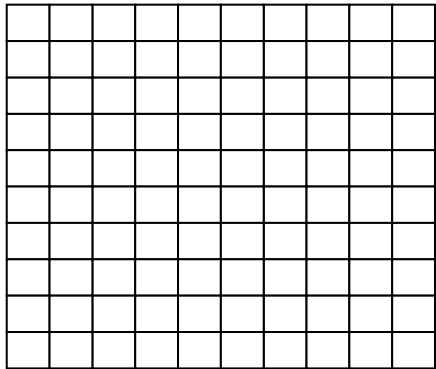


0.16

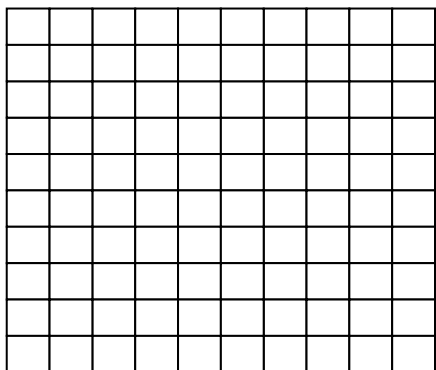
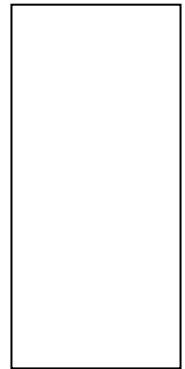
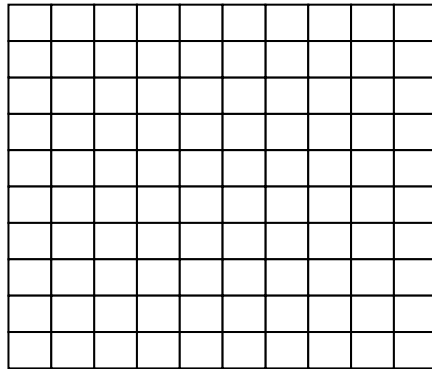
0.07

Practice 8: Subtraction of decimals

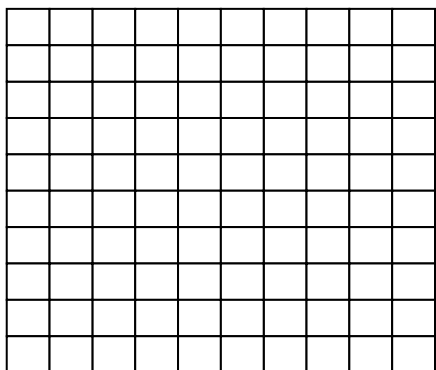
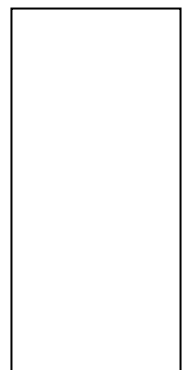
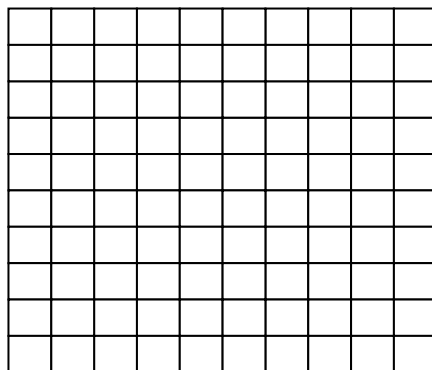
Show the tenths in one color and the hundredths in another color. Show the subtraction on the right side of the grids.



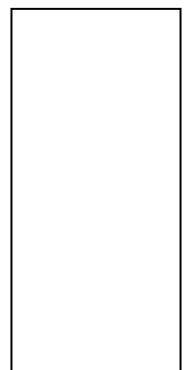
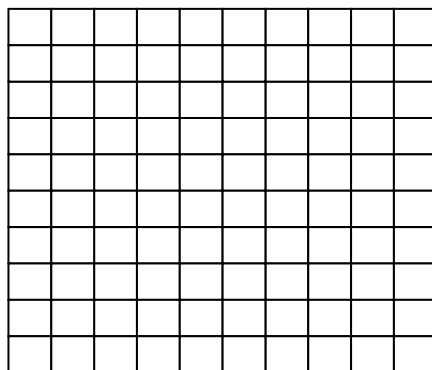
$$0.78 - 0.03 =$$

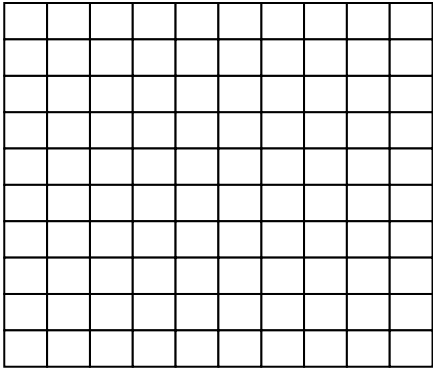


$$0.64 - 0.14 =$$

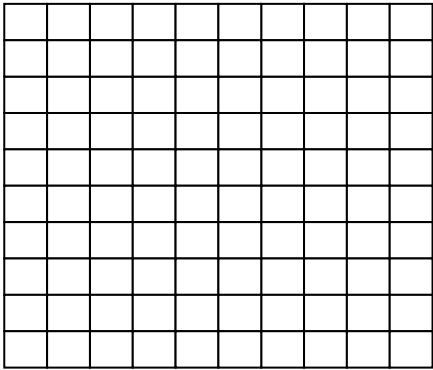
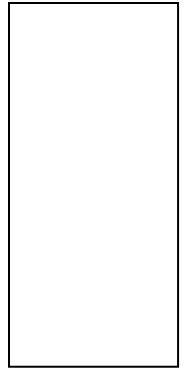
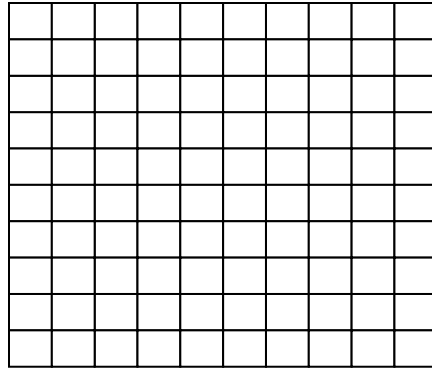


$$0.36 - 0.25 =$$

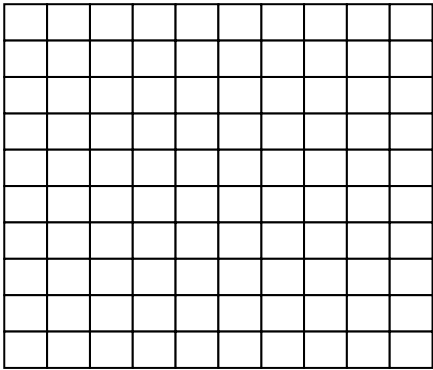
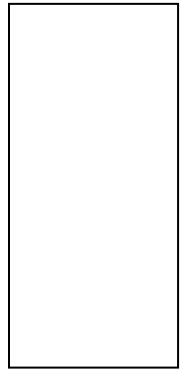
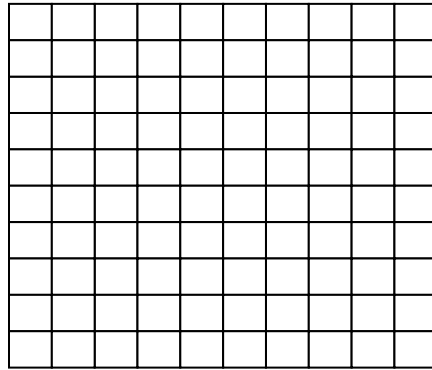




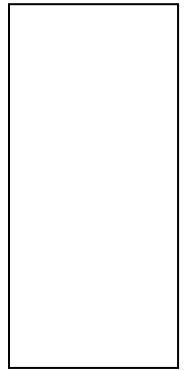
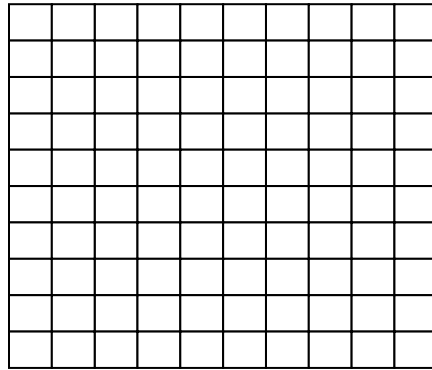
$0.41 - 0.25 =$

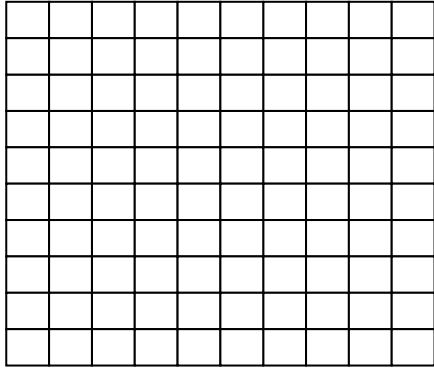


$0.48 - 0.21 =$

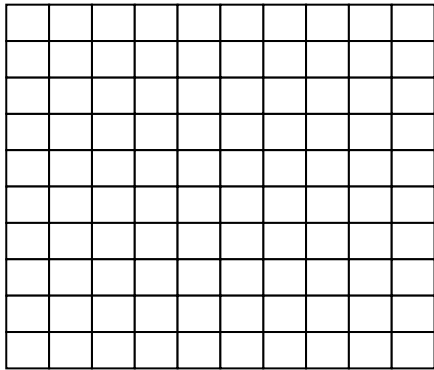
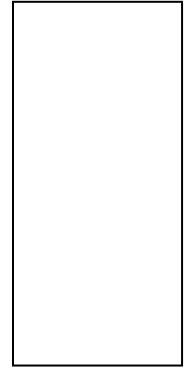
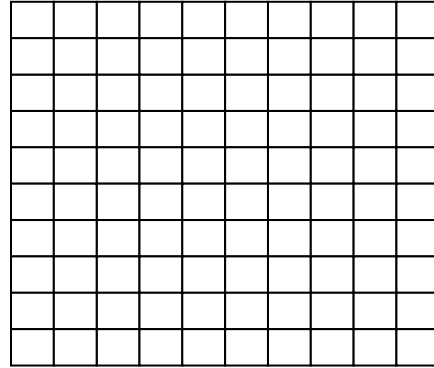


$0.15 - 0.08 =$

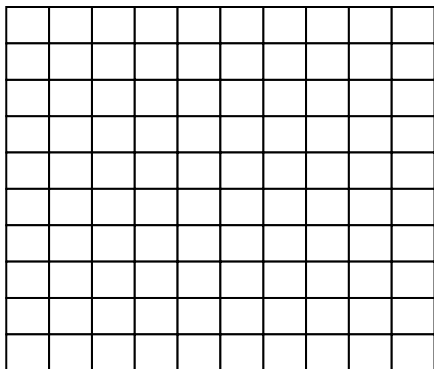
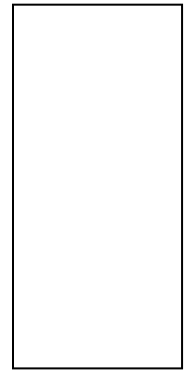
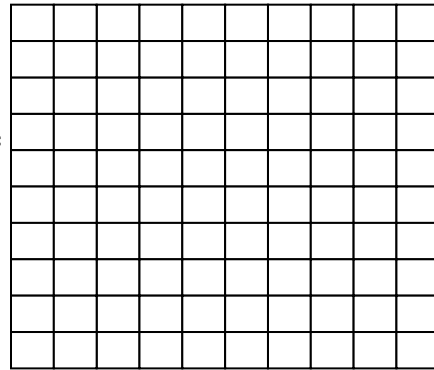




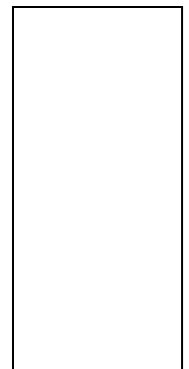
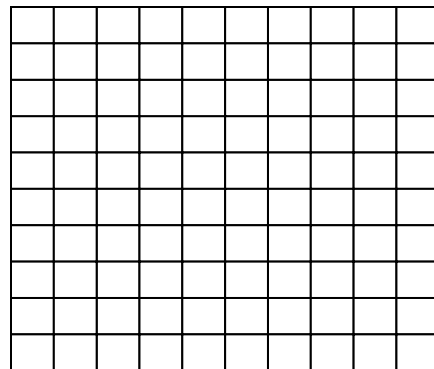
$0.38 - 0.03 =$

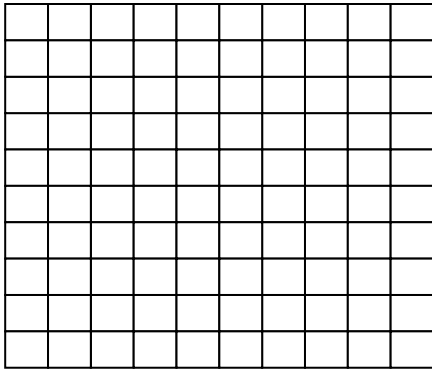


$0.65 - 0.18 =$

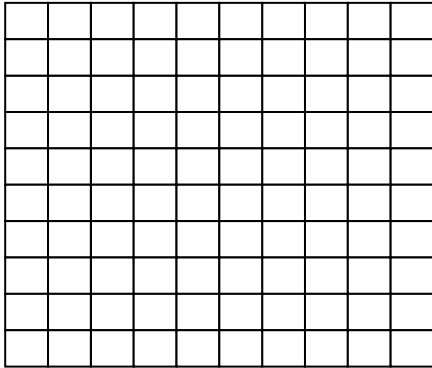
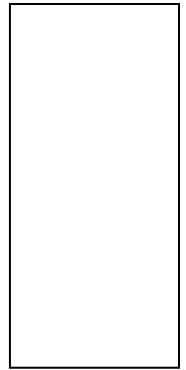
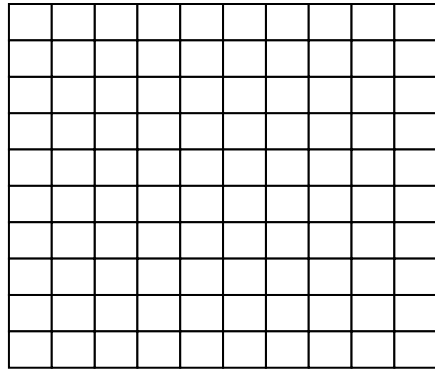


$0.32 - 26 =$

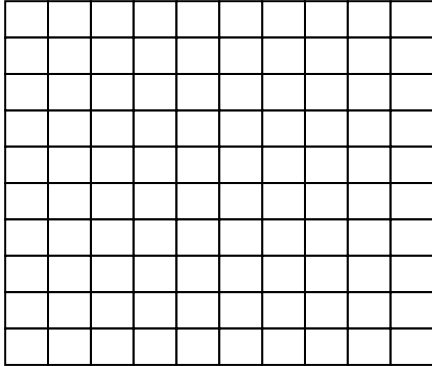
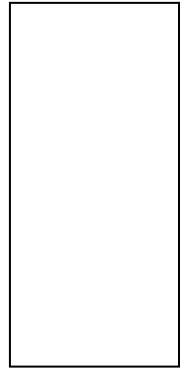
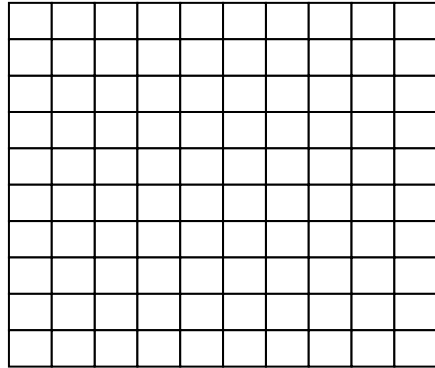




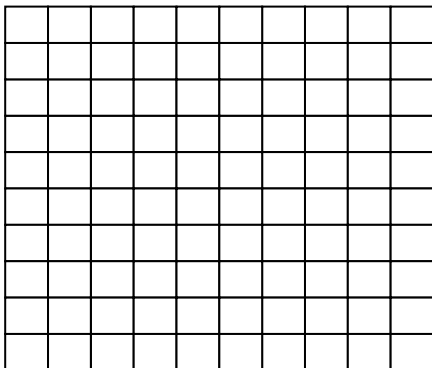
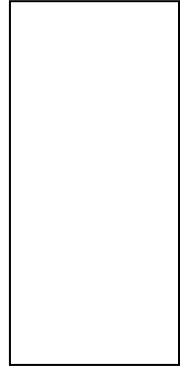
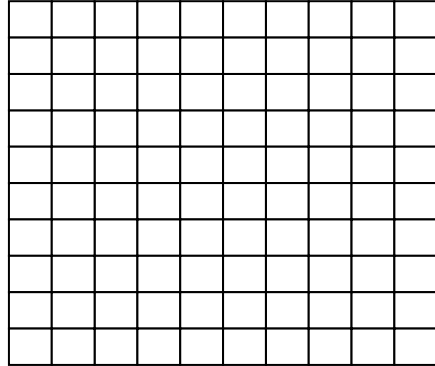
$0.53 - 32 =$



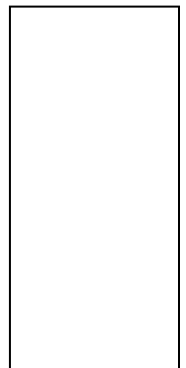
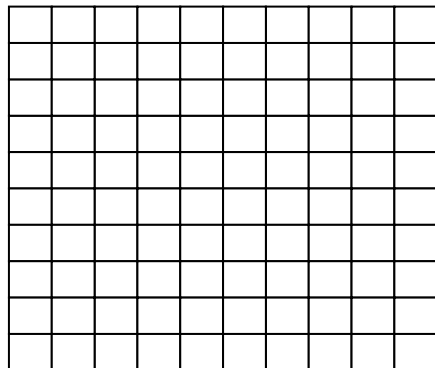
$0.56 - 0.51 =$

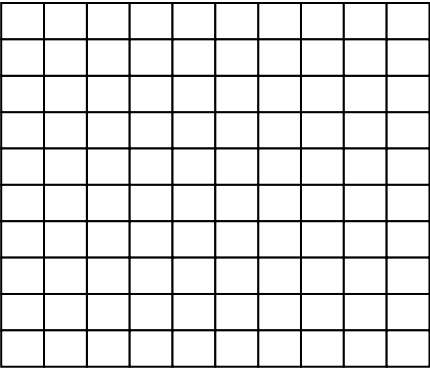


$0.47 - 0.08 =$

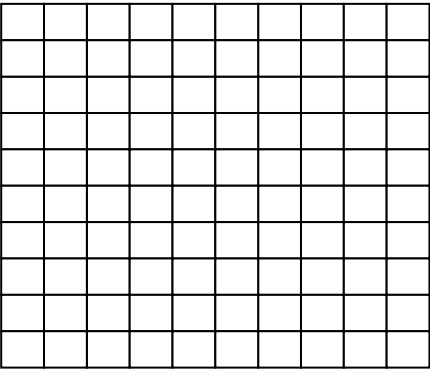
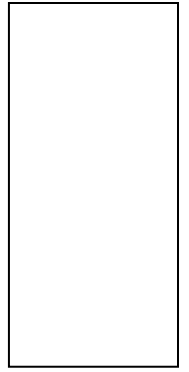
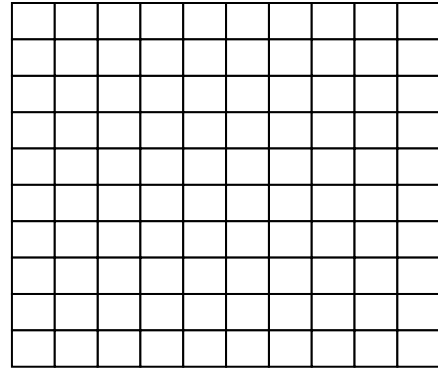


$0.58 - 0.13 =$

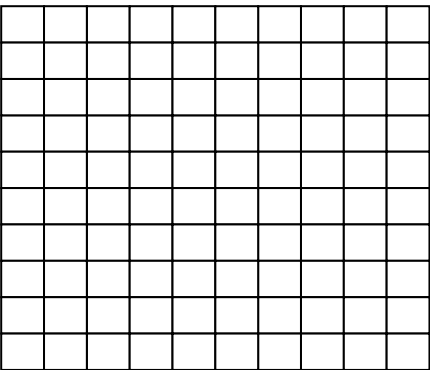
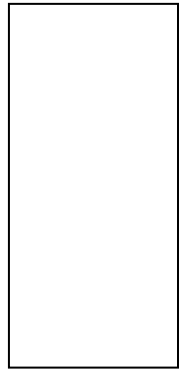
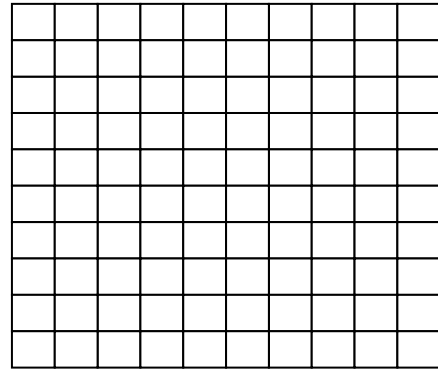




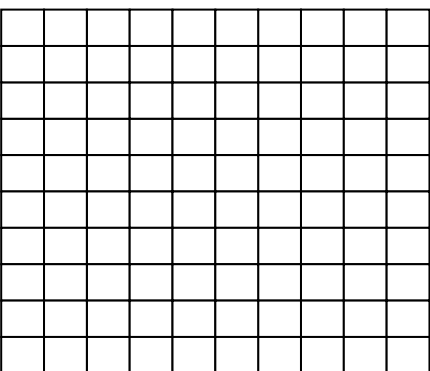
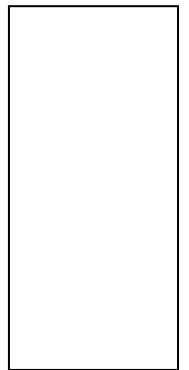
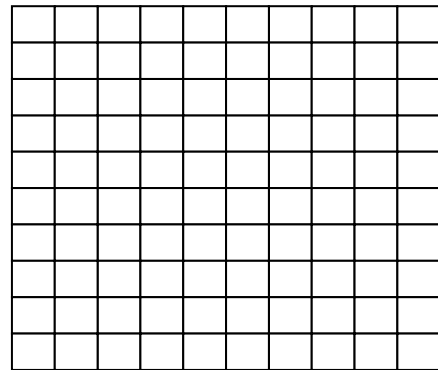
$$3.14 - 0.52 =$$



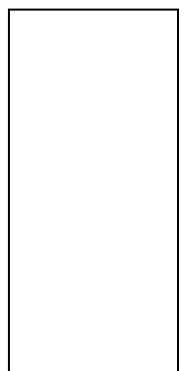
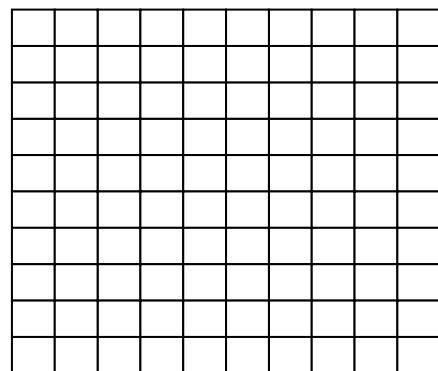
$$1.01 - 0.49 =$$



$$7.21 - 1.32 =$$



$$6.23 - 6.03 =$$



Multiplication of decimals

To make this point, the first activity is done with partners. Each pair will need a calculator.

The teacher provides two factors. Partner A estimates the answer. Partner B puts the digits without decimal points into the calculator and writes down the result. Partner A puts the decimal point. Partner B checks to make sure the result is correct. Then switch. Each partner gets nine practices in each role.

Factors	Estimate	Partner uses calculator writing only the digits, you put in decimal point	Correct?

Multiplication with decimals practice

Practice 9: Multiplication of decimals

a. $1.2 \cdot 3.4 =$

b. $3.4 * 1.8 =$

c. $3.41 * 1.2 =$

d. $1.28 \cdot 5 =$

Practice 10: Coins and decimal system

Our money is based on the decimal system






Both the American and Canadian money systems are based on decimals









= 10¢ = \$ 0.10, dime



= 1¢ = \$ 0.01, penny

	Coins	Decimal value
a		
b		
c		
d		
e		

	Coins	Decimal value
f		
g		
h		
i		
j		

	Coins	Decimal value
k		\$0.42
l		\$0.28
m		\$0.05
n		\$0.45
o		

This is an American dollar:



It has a value of \$1.00.

It has the same value as ten dimes. $10 * (\$ 0.10) = \1.00



Example:










= \$2.13






= \$1.02

Practice 11: More practice with money

	Coins	Decimal value
a		
b		
c		
d		

	Coins	Decimal value
f		
g		
h		

i		
j		
k		

	Coins	Decimal value
l		\$2.15
m		\$2.51
n		\$2.05
o		\$2.50

Making change

There are two valuable lessons to be learned here. One is the useful life skill of being able to make change or make sure the change you receive is correct. The second is practice with addition and subtraction.

There are several ways to figure this out. Here are three:

I'll show them with this example:

How much to get to one dollar?



Method 1. Plain old subtraction

I see three dimes, with total of \$0.30. $\$1.00$

$$\begin{array}{r} \$1.00 \\ - \quad 0.30 \\ \hline 0.70 \end{array}$$

Method 2. Use of anchor problems

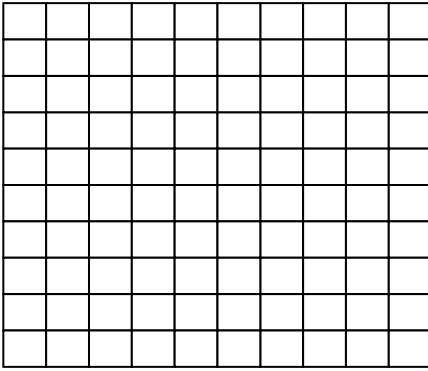
I find it easy to remember a few problems. These are my anchors.

One anchor is 50 cents, \$0.50. This is half a dollar. If I have \$0.50, it will take another \$0.50 to make a dollar.

So when I see \$0.30, I know I have less than \$0.50. I am able to see that it will take me another \$0.20 to get to \$0.50. I put the \$0.20 with the \$0.50 and get \$0.70.

This is a great method for me – if it works for you it makes your life easy.

Method 3.



How much to get to one dollar?

a.  0.70 $\$0.30 + \$0.70 = \$1.00$

b. 

Practice 12: Using anchors

Bernice

I think the explanation on page 57 should be here



**MATH
WHISPERER**
Where math makes sense

For educators

Why don't middle school and high school students have number sense about decimals?

Often textbook publishers place the study of decimals in an early chapter, believing students will easily pick up the algorithms and processes associated with decimals due to their similarity to the algorithms and processes students already know about whole numbers. Usually decimals are taught strictly as place value.

We believe the best way for students to develop meaningful number sense concerning decimals is for them to first understand fractions as less than one and between wholes. In this set of lessons we use 100-grids as the whole and first have students name varying shaded portions of 100-grids in fraction form. After students are comfortable naming shaded portions of 100-grids in varying fraction forms, we then introduce the extended place value chart as a method for naming fractions, as well as demonstrating that as place values move to the right, we can determine the next place value name as we divide by ten. When we get to the part of the place value chart behind the decimal point, we are naming fractional amounts.

In order for this idea to settle into students' minds, students translate between visual form, fraction form, place value form, decimal form, and word form. Percent form can be added in, if desired. The ability to quickly and easily translate between these forms is a manifestation of decimal number sense.

Decimals should ideally follow fractions, as it is not possible for students to understand that a decimal can represent part of a whole unless they first understand part of a whole using fractions. If students do not yet completely understand fractions, this can help them with fractions when they study them

Pagesprovide a spatial model that proportionately relates hundredths, tenths, and ones. Finding an everyday analogy for the spatial model that will make sense to the students enables them to link the fraction amounts to words that help their brains understand the related parts. This makes use of prior experience as number portions are identified with physical objects and familiar processes in the child's world.

Once students can describe fraction amounts using fractions, pictures, and the words associated with those pictures, we introduce the decimal place value chart as a short cut way of naming fractions. This ties the newly encountered place values to the associated fraction names and the pictures and words.

By having students translate between all forms so that whether they see a fraction or a decimal, they can picture the spatial amounts in their minds. When a student can translate between all forms easily, he or she can be said to truly have number sense for decimals.

Help for Helpers



I know how much teachers and parents want to help their students be successful at math. It can be upsetting to us as adults to see a student for whom we care being upset. However, the very very best way to help your student is to offer encouragement, such as “I know you can do this. I believe in you.” And then leave the student alone to do the work.

As a metaphor, if you yourself want to become physically fit and choose to run a mile, having someone drive you in a car isn’t going to really help you long term. Yes, you will cover the distance. But there is no substitute for the physical exertion, the sweating and huffing and puffing. Learning to be successful in math requires mental exertion, self-soothing during the frustrating times, and mental stamina.

The time of being a student is largely to prepare for adulthood. As an adult needing math in real life or on the job, there is no great answer book that falls from the sky. We don’t generally want to ask our boss or friend: “Am I right? Am I right?” As an adult, we have to know the answer is right ourselves. The time of being a student is the appropriate time to learn these skills. So, difficult as it may be for you, and it can be very difficult, I respectfully urge you to do nothing except offer encouraging words. These materials are carefully scaffolded and I guarantee you that your student is capable of doing the work himself or herself. The right answer is only half the goal—your student needs to know the answer is right independently.

My heartfelt wishes to you, the parent, teacher, or important grownup in your student’s life. You will gain confidence in your students as you watch them be successful on their own.

The goals for this lesson collection is for students to :

1. Understand the operation of addition.
2. Be able to add single digits quickly and reliably.
3. Be able to use an algorithm for double digit addition.