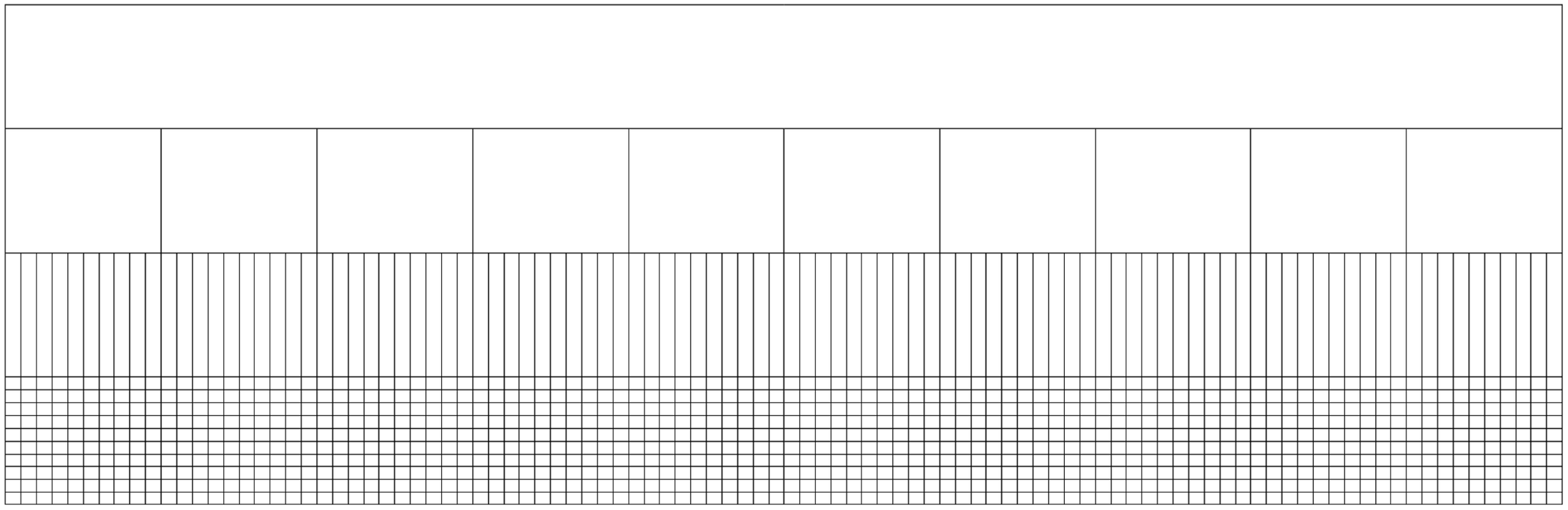
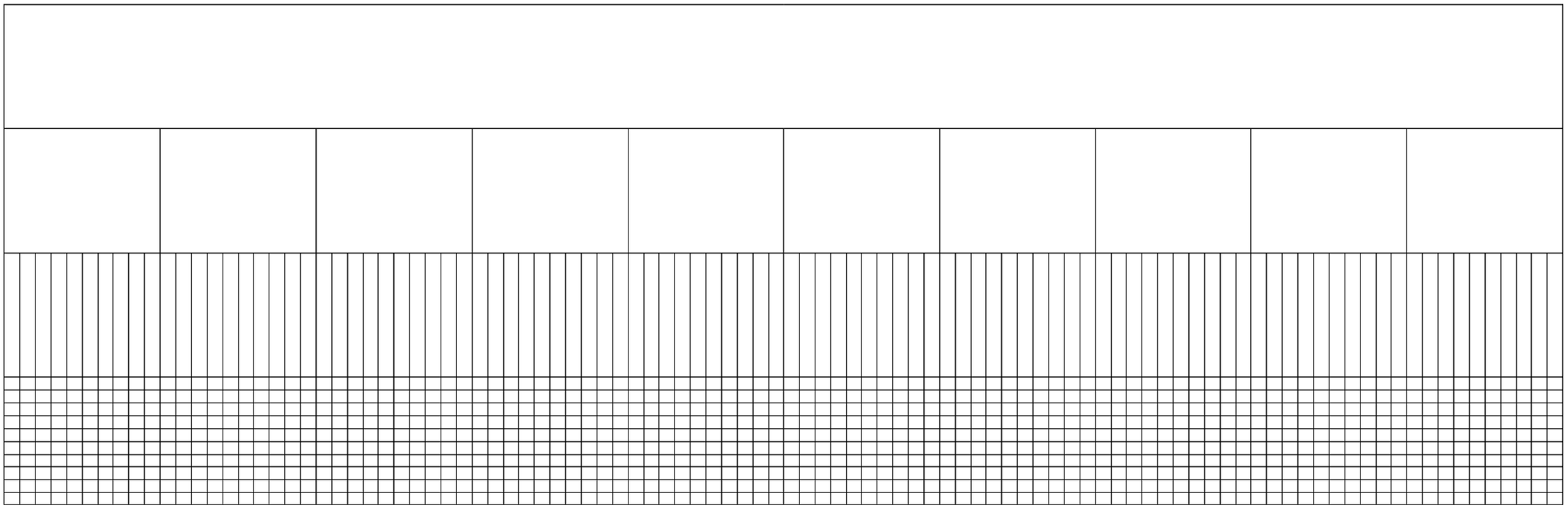
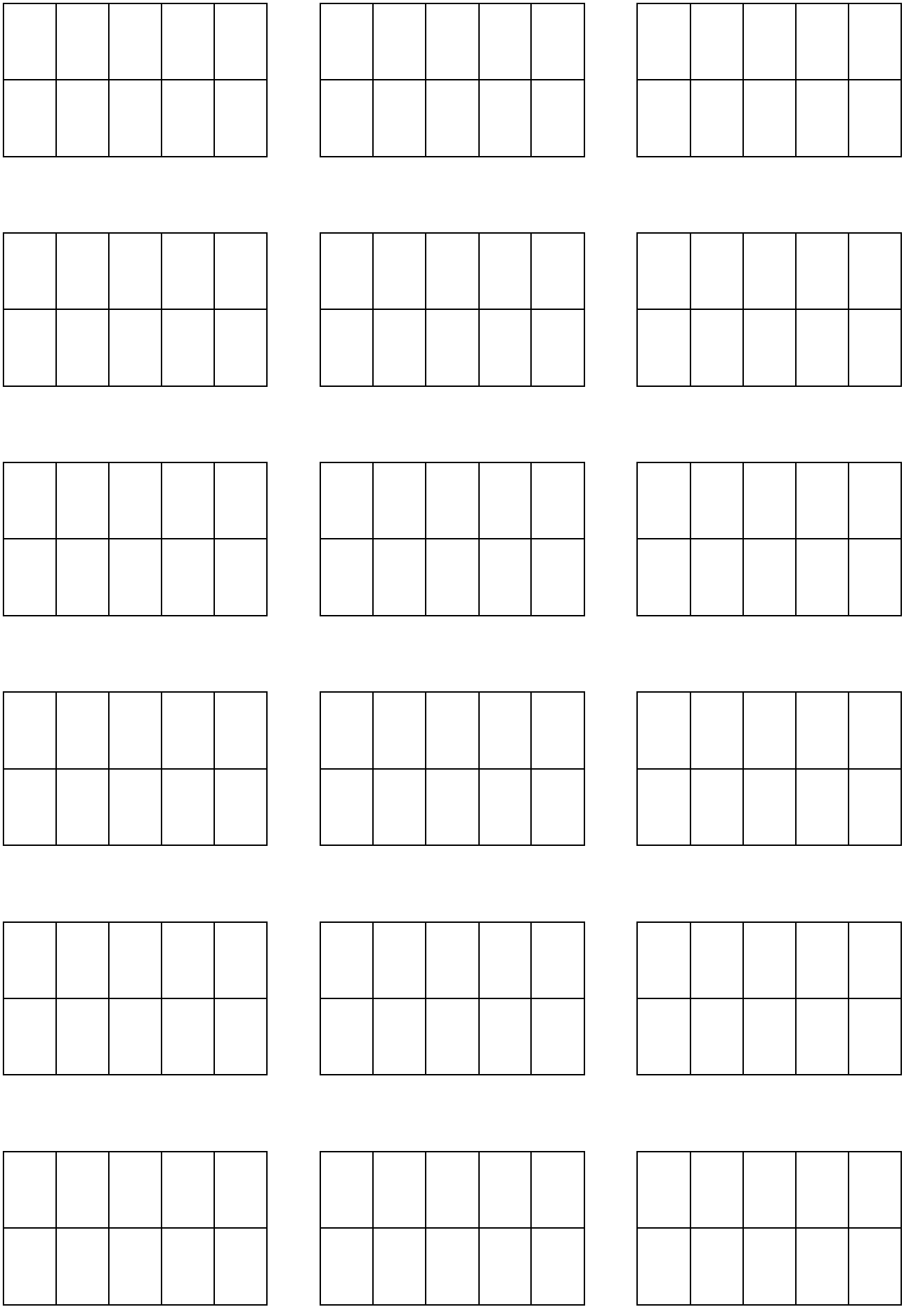
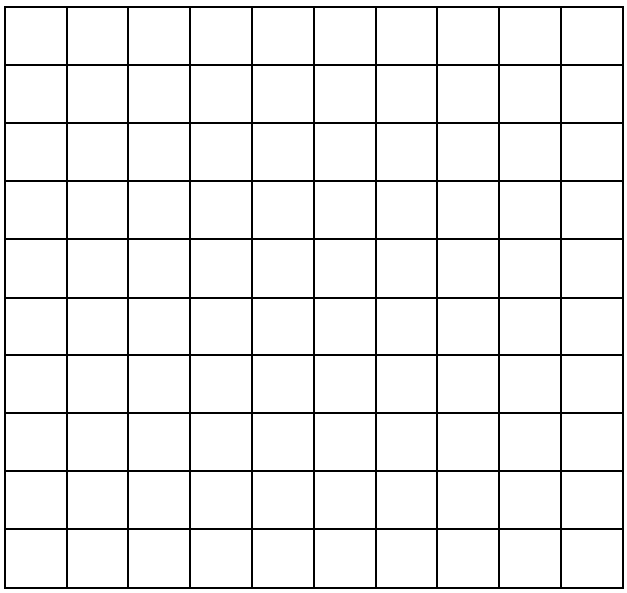
	ones		tenths		hundredths		thousandths
	ones		tenths		hundredths		thousandths
	ones		tenths		hundredths		thousandths
	ones		tenths		hundredths		thousandths
	ones		tenths		hundredths		thousandths
	ones		tenths		hundredths		thousandths

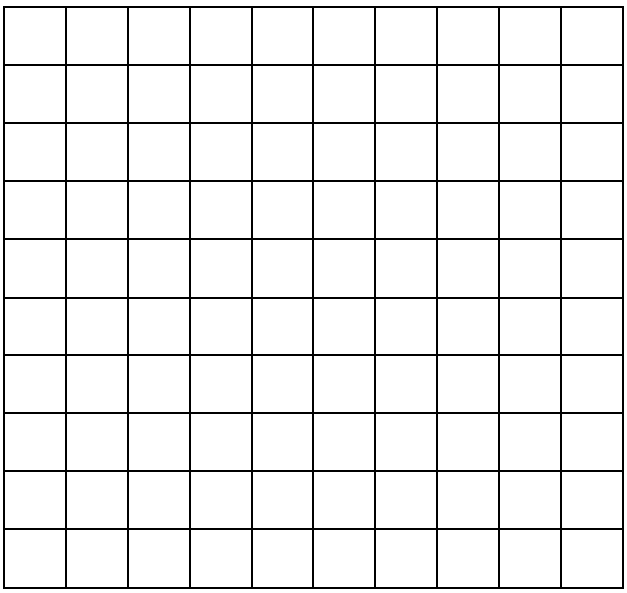
Decimal Comparison Board

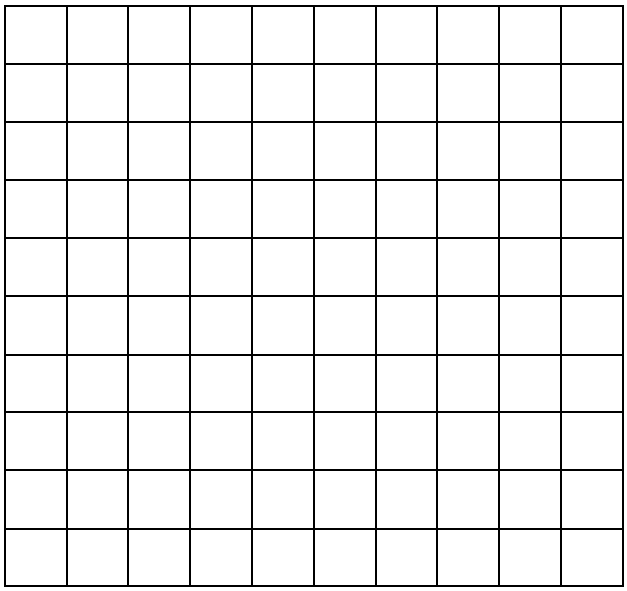


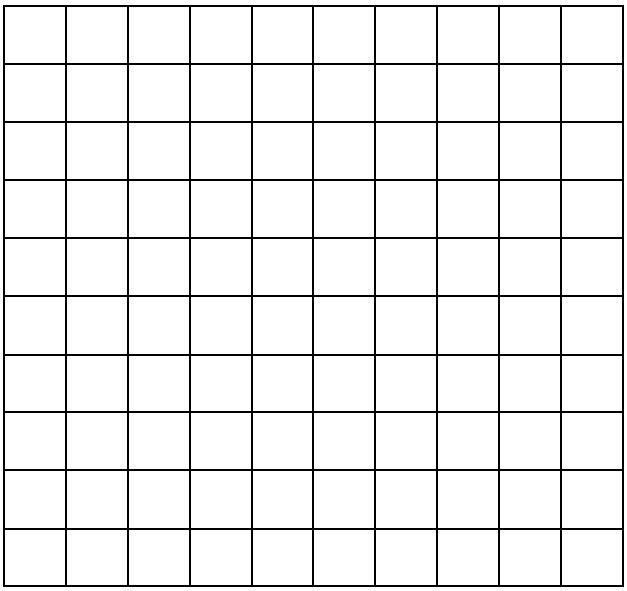


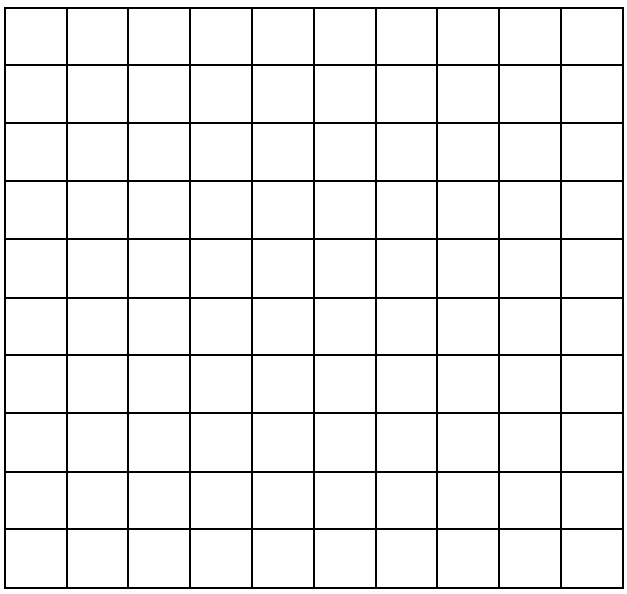


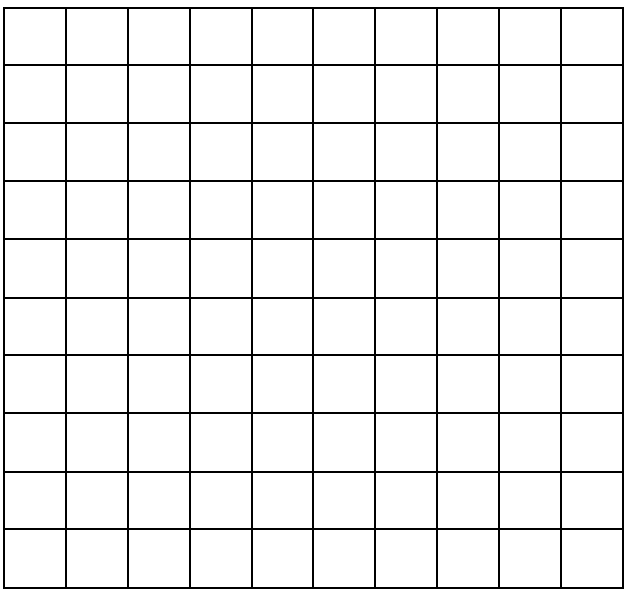












NAME:________________________

For each pair of decimal numbers, circle the one which is LARGER.

4.8	4.63
0.5	0.36
0.75	0.8
0.37	0.216
3.92	3.4813
5.62	5.736
0.6	0.85
0.426	0.3
2.516	2.8325
7.942	7.63
4.08	4.7
1.85	1.84
17.353	17.35

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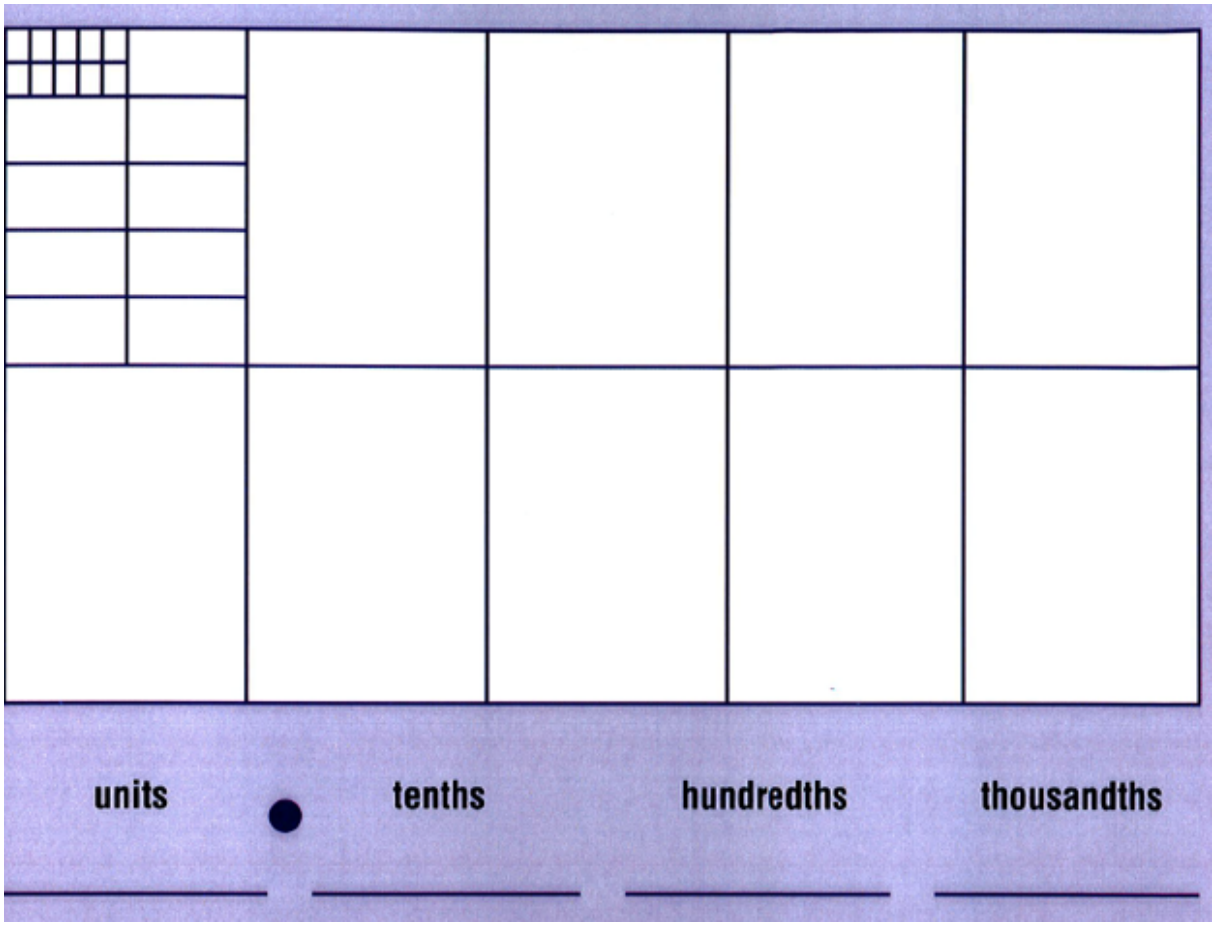
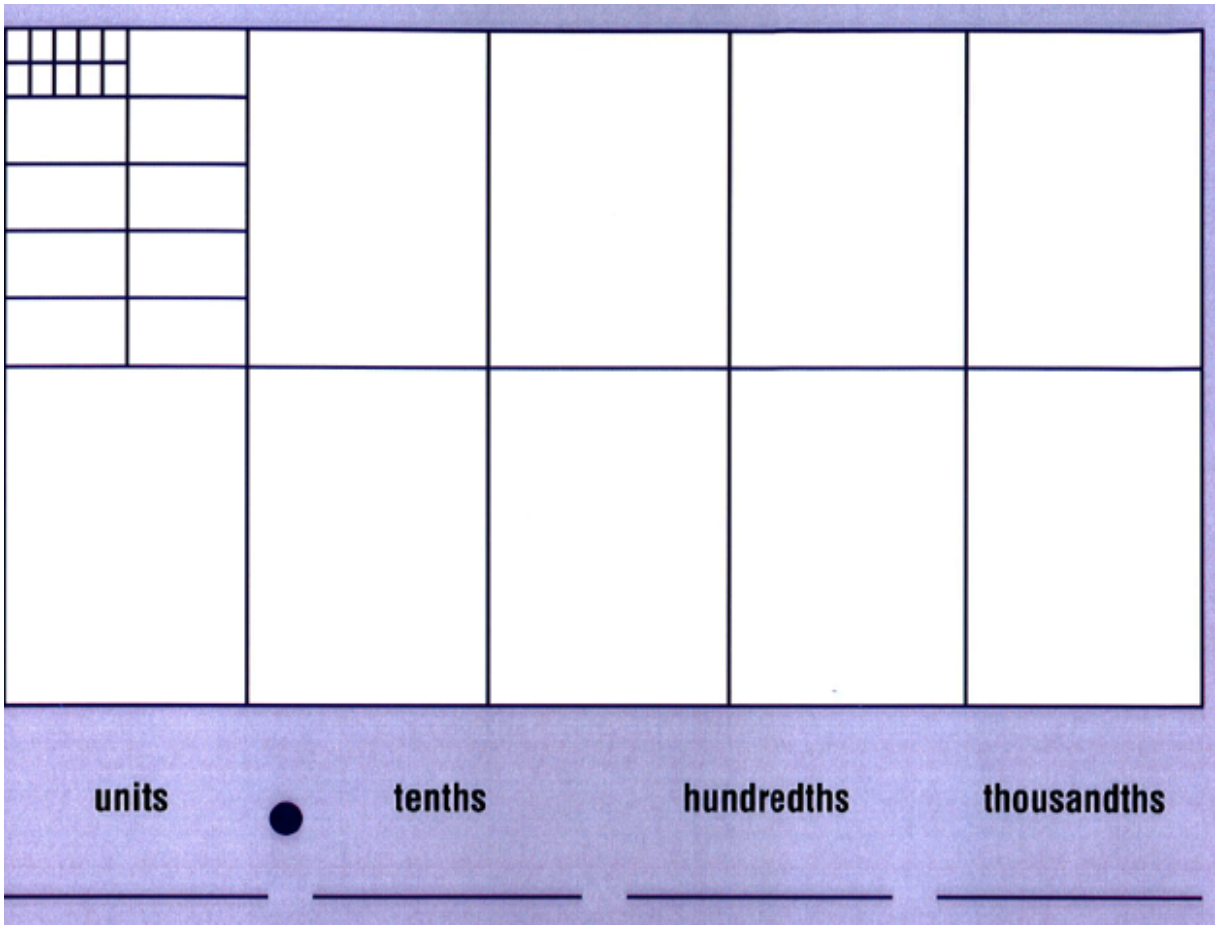
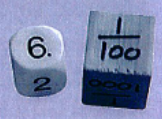
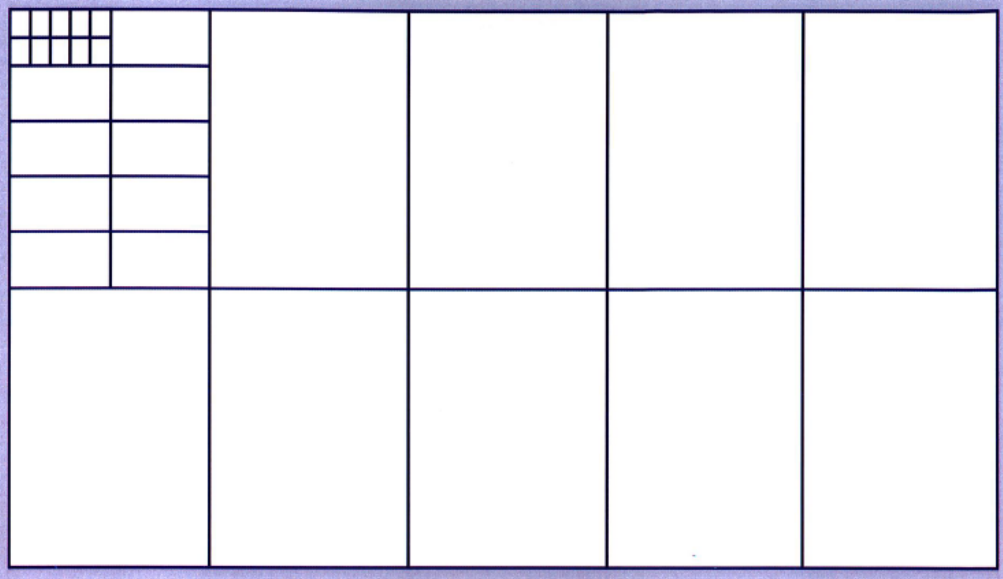

units
tenths
hundredths
thousandths


units
tenths
hundredths
thousandths

Activity Sheet: Colour in Decimats





units ● tenths hundredths thousandths

What I Rolled		How much is shaded altogether?
Fraction	Decimal	Decimal

CURRICULUM, PEDAGOGY AND BEYOND

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What's the point?

Exploring tools for teaching decimals effectively

What's the point? Exploring tools for teaching decimals effectively

MAV Conference 2024

Carmel Mesiti and Kate Copping
cmesiti@unimelb.edu.au; kcopping@unimelb.edu.au

Today's session

THE UNIVERSITY OF MELBOURNE

- Tools to enhance decimal comprehension:
  - Tenths Frame and Hundredths Grid
  - Decimat
  - Decimal Comparison Board
  - Number Expander
  - Decimal Comparison Test
- Considerations: Benefits, limitations, pedagogical potential

Representing tenths

Representing decimal tenths

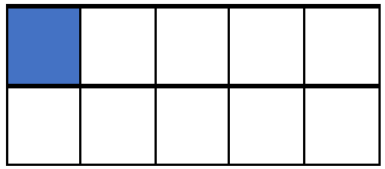
If the entire rectangle is 1 (the whole) what would one of the small parts be called?

Using your rectangles show and write in symbols:

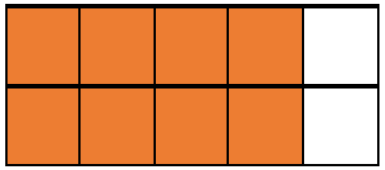
- **one-tenth**
- **three-tenths**
- **eight-tenths**
- **1.4**

Representing decimal tenths

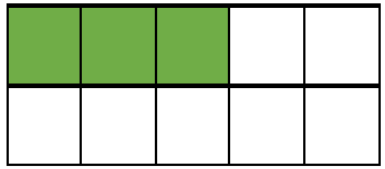
One-tenth or $^{1}/_{10}$ or 0.1



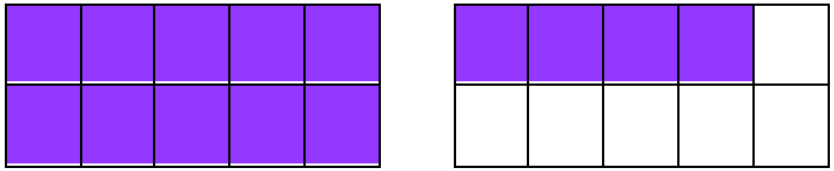
Eight-tenths is $^{8}/_{10}$ or 0.8



Three-tenths can be written as $^{3}/_{10}$ or 0.3



1.4 is $1^{4}/_{10}$ or $^{14}/_{10}$ or fourteen-tenths



Adding decimal tenths

If the rectangle is one (the whole) then 0.5 + 0.2 =

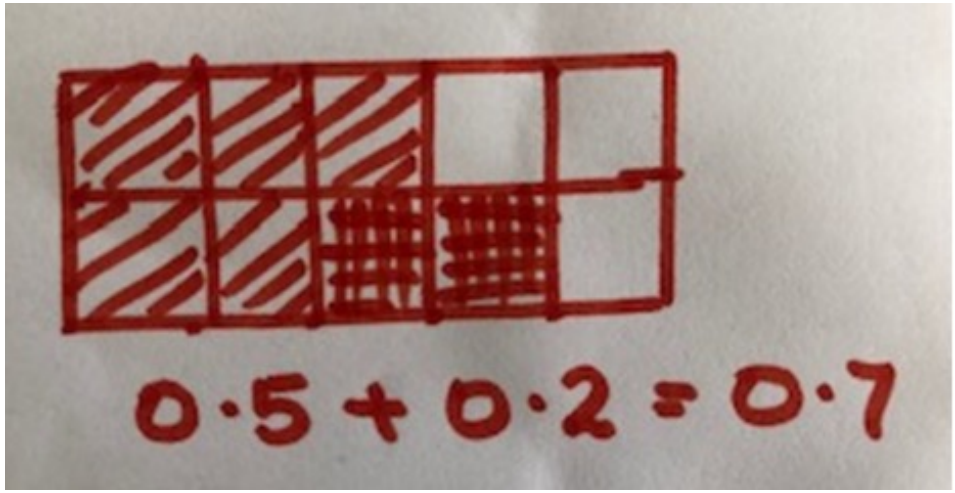
This also shows:

0.2 + 0.5

0.7 – 0.5

0.7 – 0.2

What is 1.0 – 0.7 =



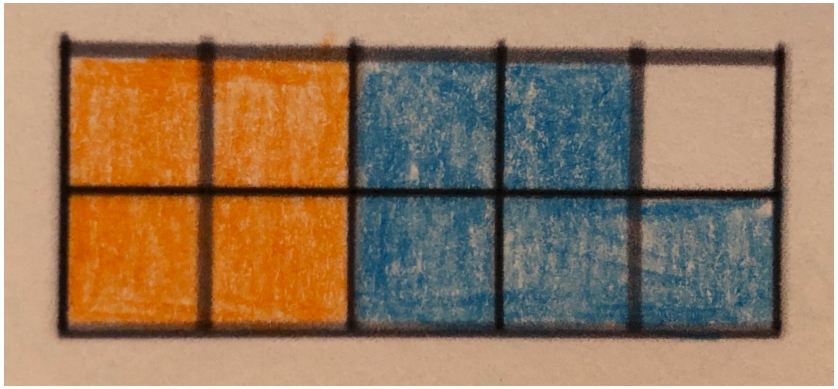
Adding decimal tenths

Show on one rectangle 0.4 + 0.5 =

[shade so you can still see component parts of 0.4 and 0.5]

Adding decimal tenths

Show on one rectangle 0.4 + 0.5 =



Representing operations with decimal tenths

Show the following operations on your paper rectangles folded in tenths

0.9 – 0.3 =

3 × 0.2 =

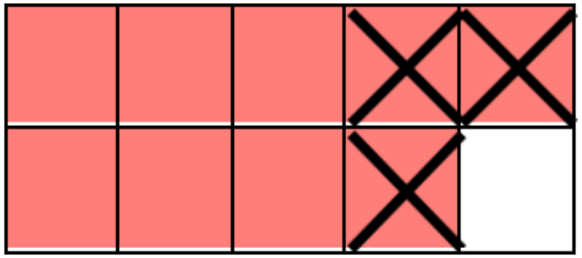
0.3 × 2 =

0.8 ÷ 2 =

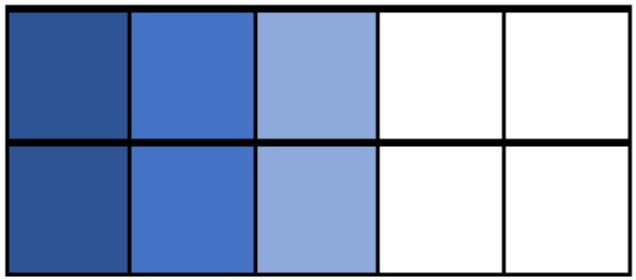
0.9 ÷ 0.3 =

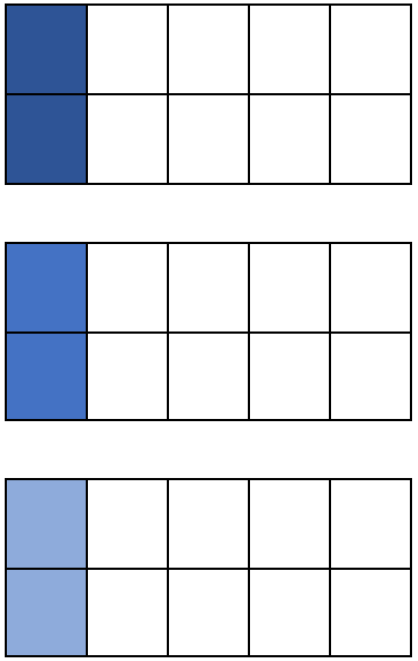
Representing operations with decimal tenths

0.9 – 0.3 =



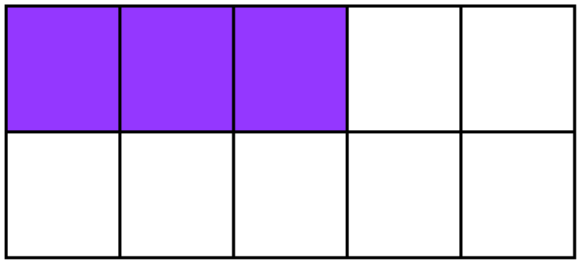
3 × 0.2 =

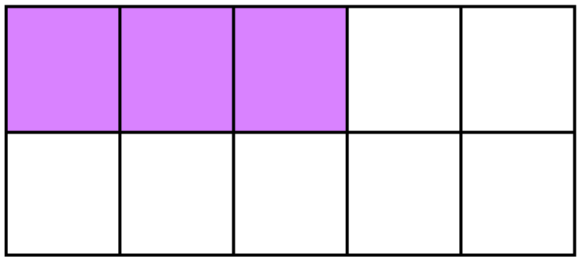


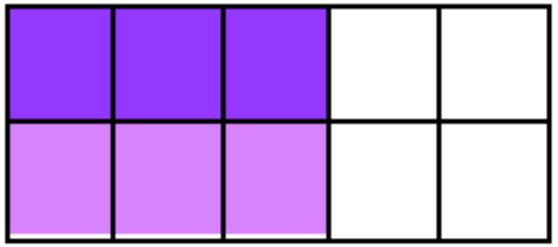


Representing operations with decimal tenths

0.3 × 2 =

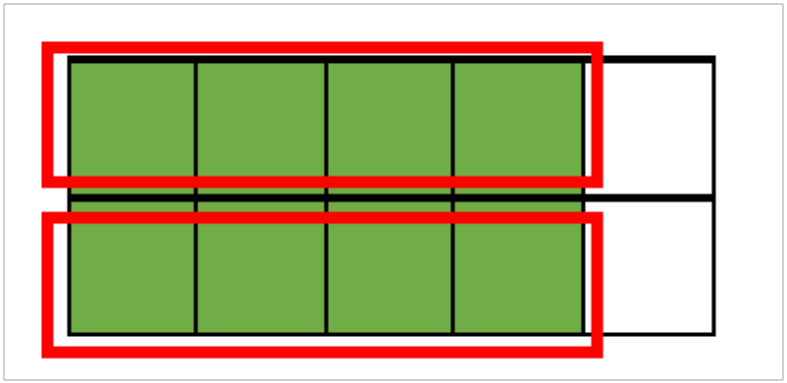






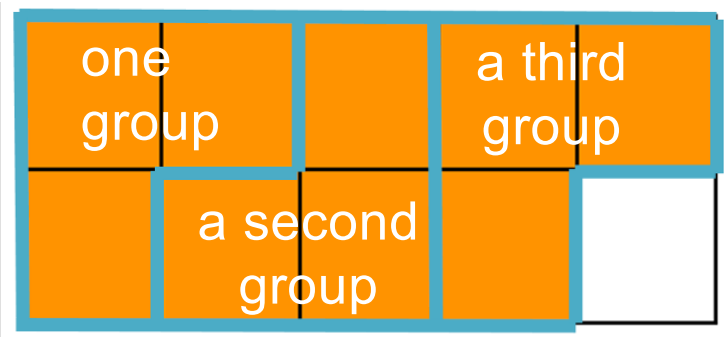
Representing operations with decimal tenths

0.8 ÷ 2 =



partition division, splitting in two groups, how much is in one group?

0.9 ÷ 0.3 =



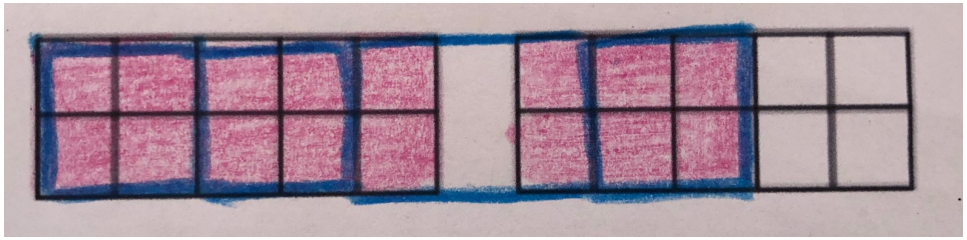
quotient division, how many times does 0.3 going into 0.9?

Now try..

1.2 ÷ 3 =

partition division,
splitting in three groups,
how much is in one group?

1.6 ÷ 0.4 =

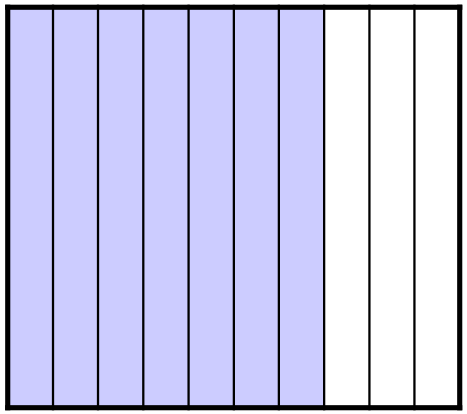


quotient division,
how many times does 0.4 go into 1.6?

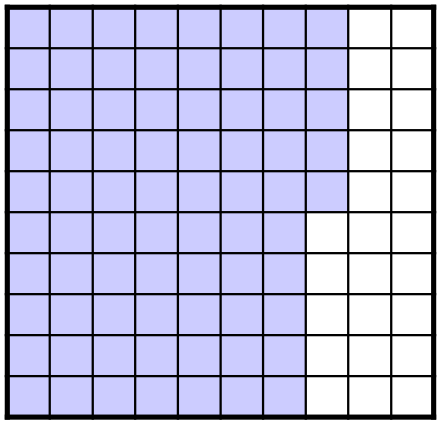
Representing hundredths

Paper folding can connect decimals to fractions

- If a standard kinder square is a whole,
  - Fold it into tenths.
  - Fold a tenths into ten to make hundredths.
  - There's always one or two kids that want to make millionths…



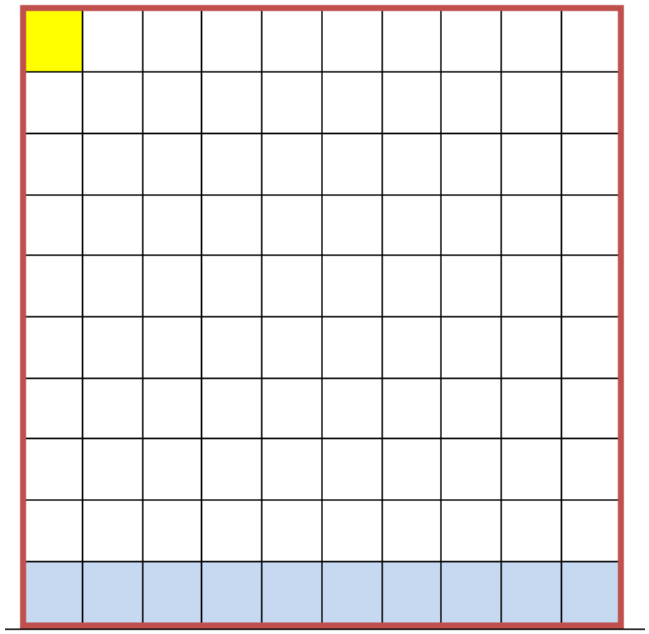
$\frac{7}{10}$



$\frac{75}{100}$

Representing decimals (hundredths)

Draw around one Hundreds Grid with Texta or highlighter to indicate that the Hundreds Grid is one whole.



If the whole Hundreds Grid is one whole what fraction of the whole is the small square highlighted in yellow (one-hundredth or $\frac{1}{100}$ or 0.01)

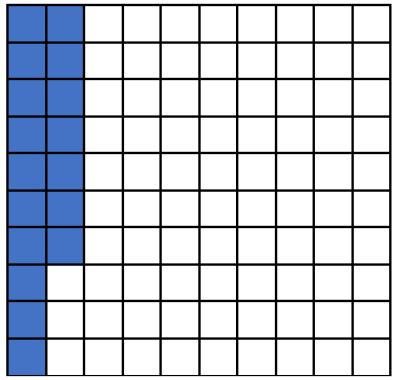
What fraction of the whole is the row of small squares highlighted in blue? (ten-hundredths or one-tenth or $\frac{10}{100}$ or $\frac{1}{10}$ or 0.1)

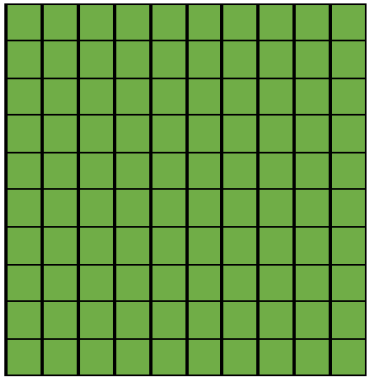
Representing decimals (hundredths)

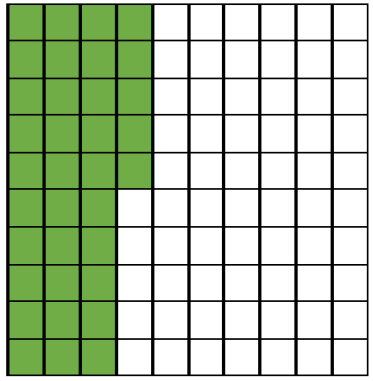
Show

0.17

1.35



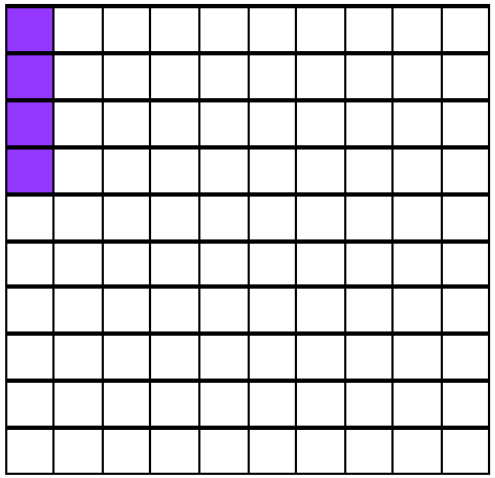




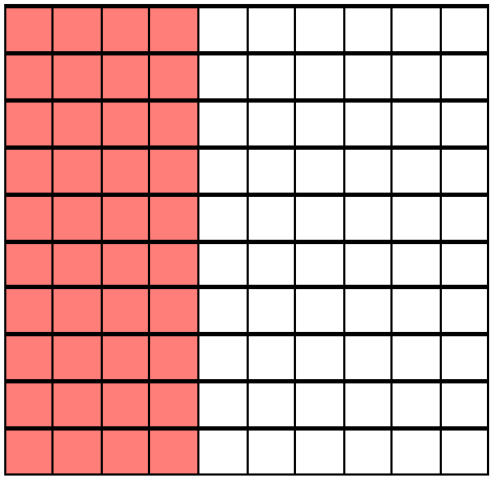
Show

0.04

0.4



What is the difference between 0.04 and 0.4?



Calculations with hundredths

Show on squares marked in hundredths

0.37 + 0.5

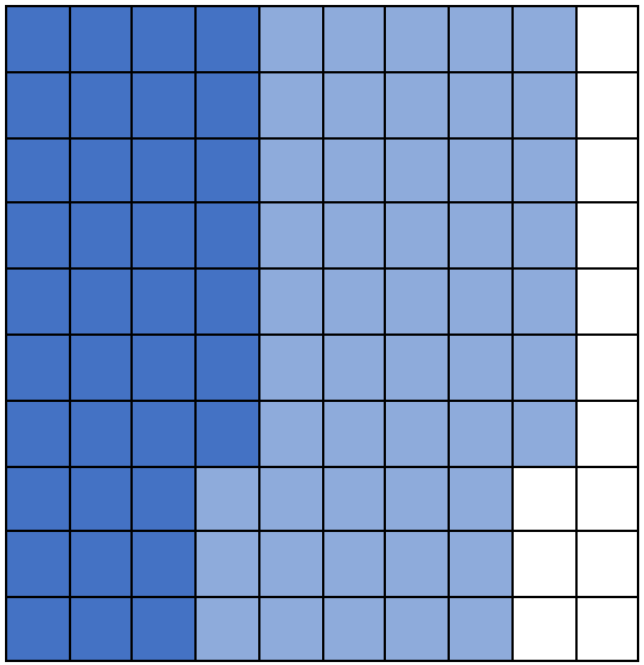
0.63 – 0.28

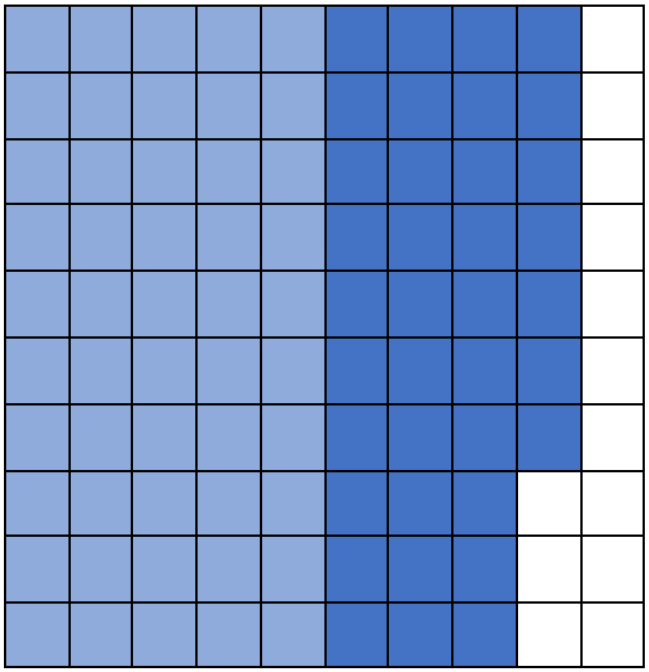
3 x 0.23

0.36 ÷ 4

Representing operations

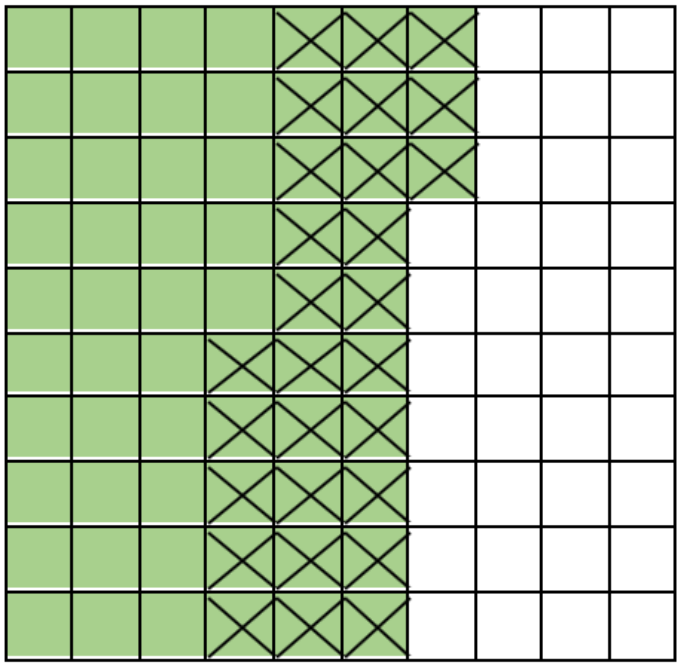
0.37 + 0.5 = 0.87





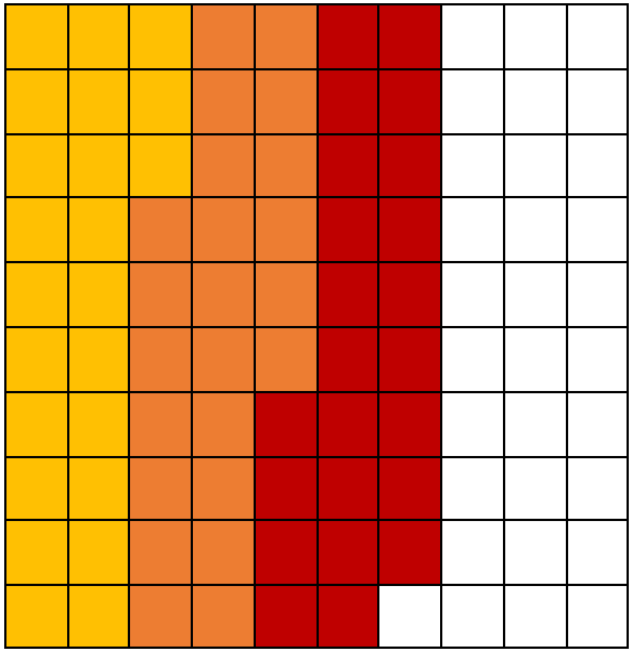
Representing operations

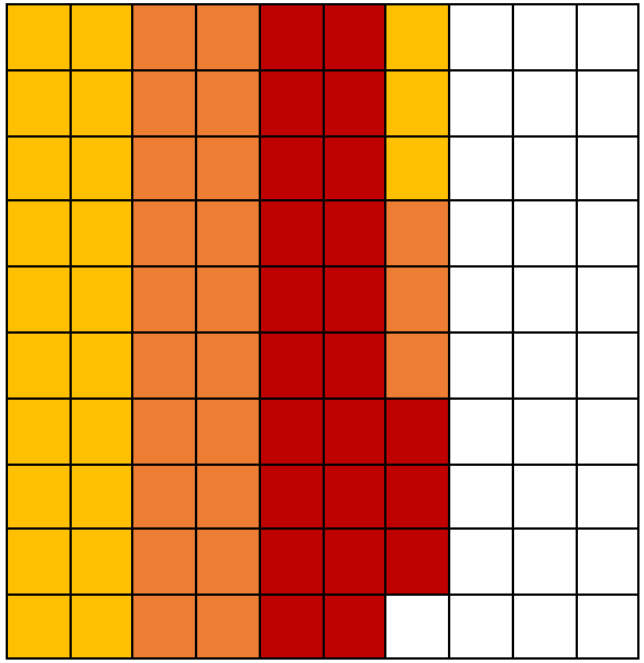
0.63 – 0.28 = 0.35



Representing operations

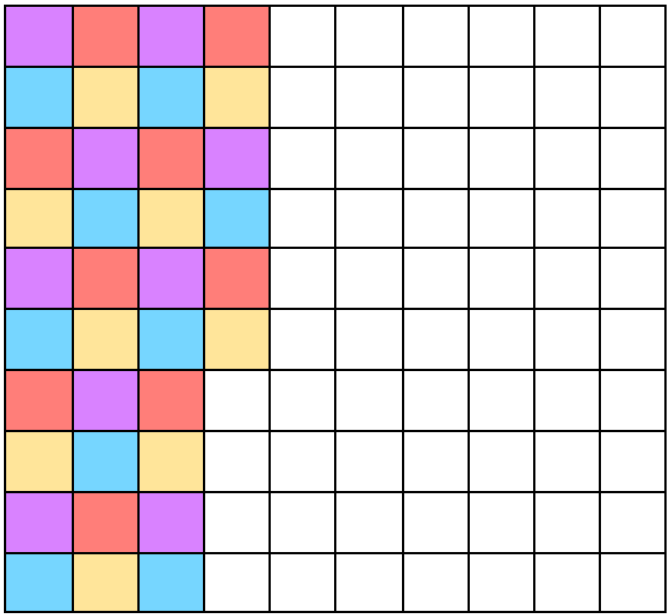
3 x 0.23 = 0.69

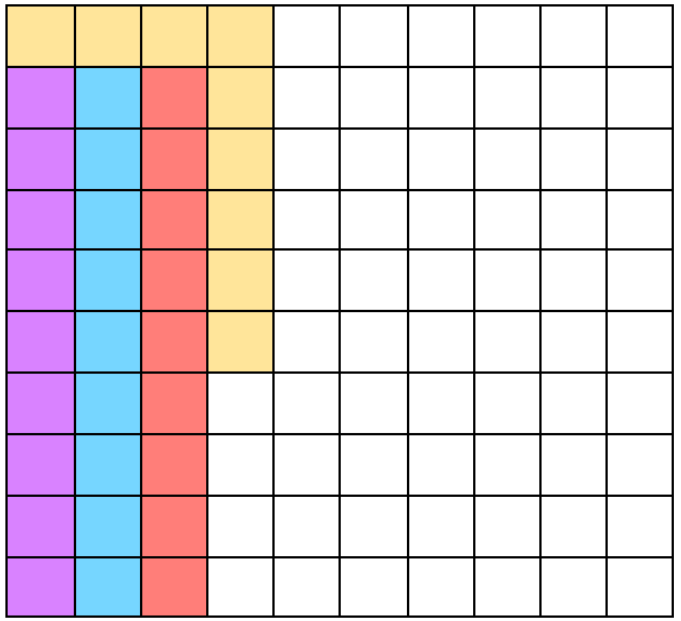




Representing operations

0.36 ÷ 4 = 0.09





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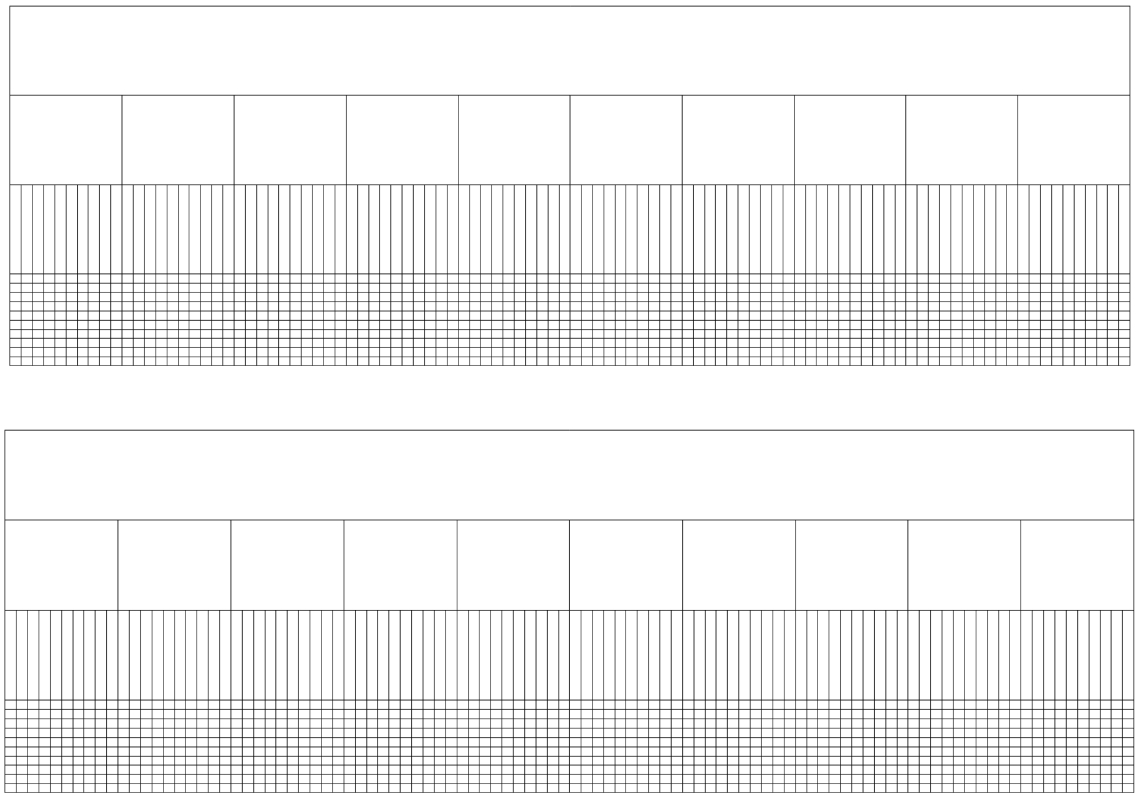
Decimal Comparison Board

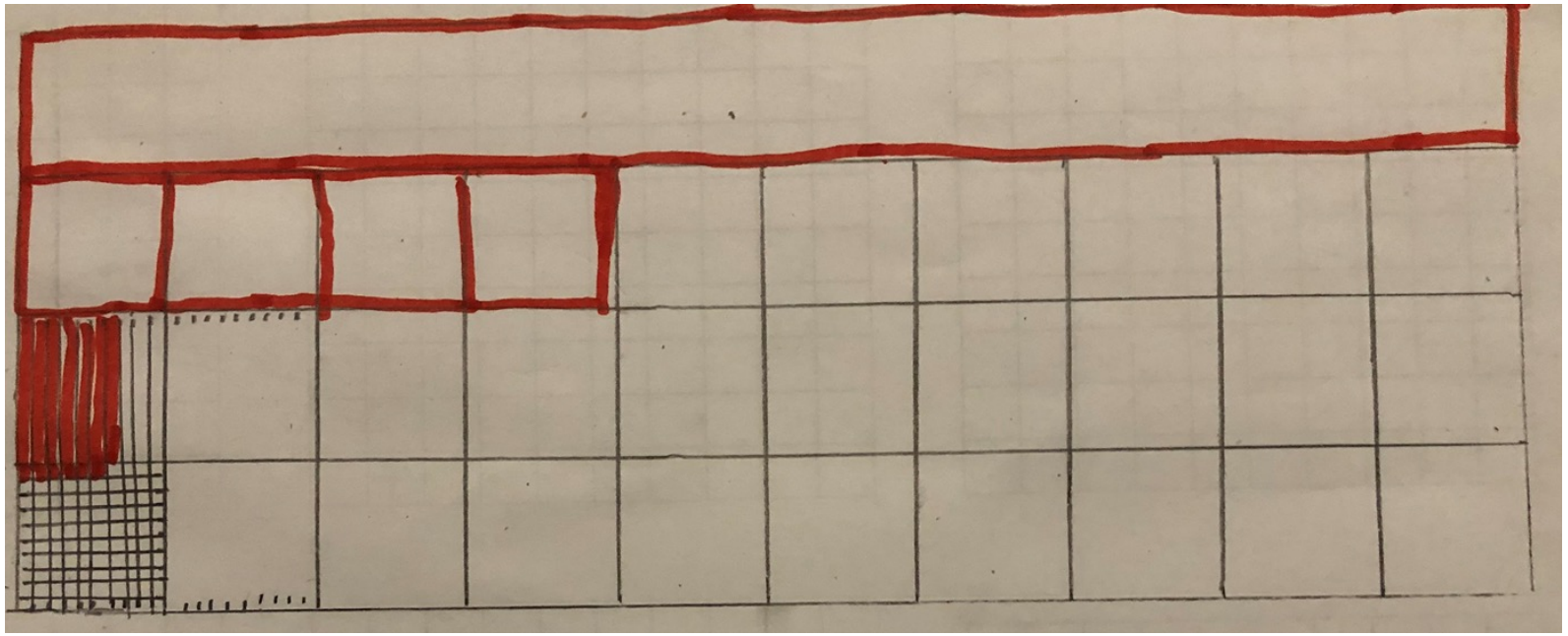
Decimal (Comparison) Board

- The top row represents one whole
- The second row is divided into tenths
- The third row is divided into hundredths
- The bottom row is divided into thousandths

Decimal Comparison Board



Shade the pieces to show 1.476



$1.476 = 1 + 0.4 + 0.07 + 0.006$

$1\frac{476}{1000} = 1 + \frac{4}{10} + \frac{7}{100} + \frac{6}{1000}$

Using a Decimal Fraction Board

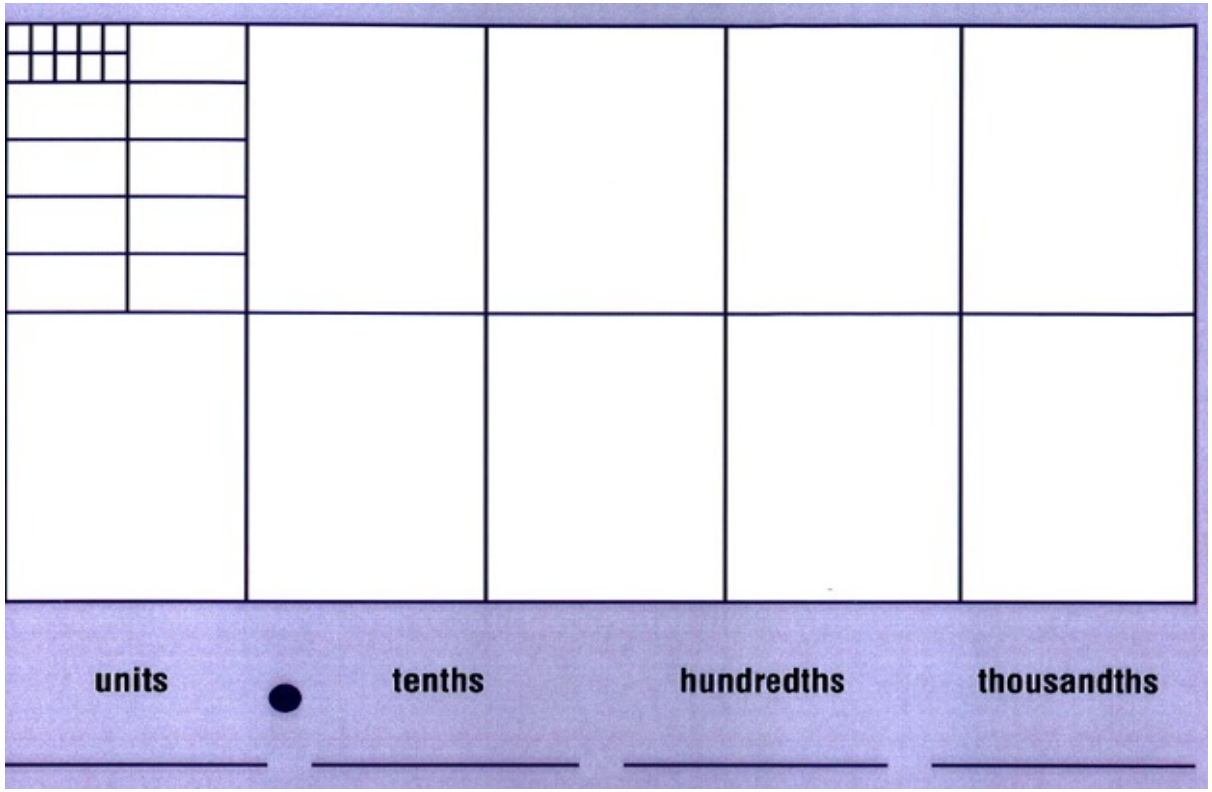
Use a Decimal Fraction Board to show:

1.647
1.305
1.074

Why were these numbers chosen?

Decimat*

* Roche, APMC(2), 2010 for the Decimat game; Wright, Hughes and Storey for Decimat development

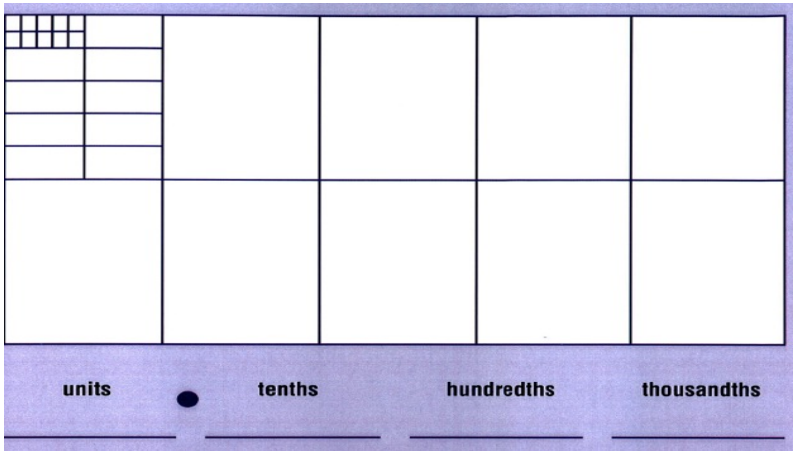


A Decimat shows one whole, tenths, hundredths and thousandths

Using a Decimat

- Take it in turns to roll the dice (6 or 10 sided, real or online)
- Your aim is to create the largest decimal you can with 4 rolls of the dice
- Record each number on one line under the Decimat as you roll (these cannot be changed if you roll a higher number)
- The winner is the person with the largest number.

After you have created your number then colour in your Decimat to show that number.



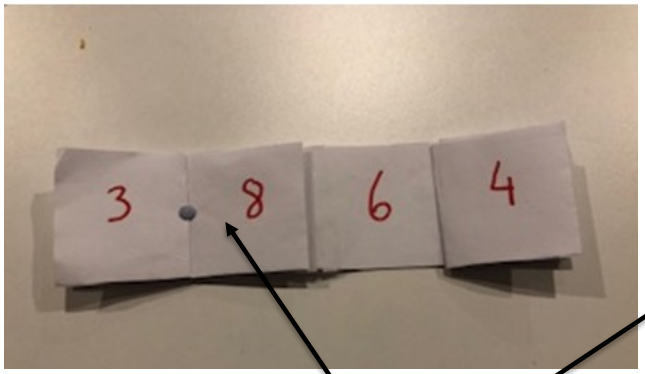
Decimal Number Expander

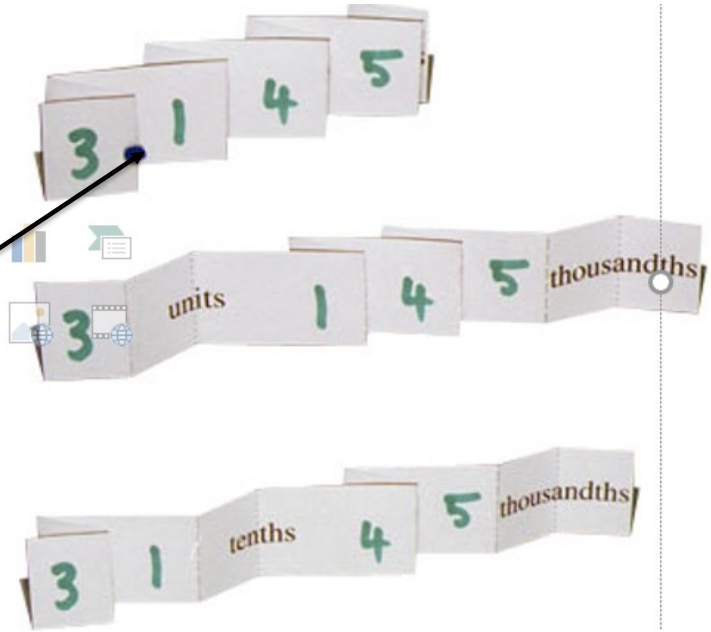
Decimal number expanders

Different expansions of 3.145

- A number expander is a simple aid to show the many ways of writing a number using expanded notation.
- Expansions can be written in words and/or fractions, e.g. 0.342 is 34 hundredths + 2 thousandths OR 34/100 + 2/1000.
- Including zeros in the number expander can help students to understand which zeros are essential, and which can be omitted

A decimal number expander





Please note the use of a removable dot when using the decimal number expander

	ones		tenths		hundredths		thousandths

Decimal Comparison test

Decimal Comparison Test

NAME:_____

For each pair of decimal numbers, circle the one which is LARGER.

4.8	4.63
0.5	0.36
0.75	0.8
0.37	0.216
3.92	3.4813
5.62	5.736
0.6	0.85
0.426	0.3
2.516	2.8325
7.942	7.63
4.08	4.7
1.85	1.84
17.353	17.35

Comparison of responses

NAME: STUDENT A

For each pair of decimal numbers, circle the one which is LARGER.

4.8	4.63
0.5	0.36
0.75	**0.8**
0.37	0.216
3.92	3.4813
5.62	5.736
0.6	0.85
0.426	**0.3**
2.516	2.8325
7.942	**7.63**
4.08	**4.7**
1.85	**1.84**
17.353	**17.35**

NAME: STUDENT B

For each pair of decimal numbers, circle the one which is LARGER.

4.8	**4.63**
0.5	**0.36**
0.75	0.8
0.37	**0.216**
3.92	**3.4813**
5.62	**5.736**
0.6	**0.85**
0.426	0.3
2.516	**2.8325**
7.942	7.63
4.08	4.7
1.85	1.84
17.353	17.35

Resources

Tenths frame
Tenths grid
Hundredths grid
Decimat
Decimals Comparison Board
Number Expander
Decimals Comparison Test

Questions

THE MATHEMATICAL ASSOCIATION OF VICTORIA

MAV24 CONFERENCE

Event App

App Download Instructions

Step 1: Download the App 'Arinex One' from the App Store or Google Play

App Store

Google Play

Step 2: Enter Event Code: **mav**

Step 3: Enter the email you registered with

Step 4: Enter the Passcode you receive via email and click 'Verify'. Please be sure to check your Junk Mail for the email, or see the Registration Desk if you require further assistance.

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Be in it to WIN!

B12 - (Year 3 to Year 8) What's the point? Exploring tools for teaching decimals effectively

Curriculum

Remove from Favourite

Complete the Survey

Description

Speakers

Dr Carmel Mesiti
The University of Melbourne

Kate Copping
Faculty of Education, The University of Melbourne

Thank you

THE UNIVERSITY OF
MELBOURNE

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