

Order Decimals to Thousandths.

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Differentiate and Assess

Not every student will be ready to investigate this concept at this Level and so we will need to differentiate to ensure every student is learning at their leading edge. Select the Differentiate button on this screen.

Integrate

Every mathematical concept is integrally related to other mathematical concepts. Teaching and learning related concepts simultaneously develops deep relational understanding. Select the Integrate button on this screen.

Intervene

Some students may not yet be ready to investigate this concept at any Level, and so we will need to provide some intervention. Select the Intervention button on this screen.

ORDER DECIMALS TO THOUSANDTHS.

EXPLICIT TEACHING PLAN OVERVIEW PAGE

THIS PAGE IS A SUMMARY OF THE EXPLICIT TEACHING PLAN, INCLUDING STRATEGIC QUESTIONS, AND DESCRIBING THE SEQUENCE WHICH WILL OCCUR OVER MULTIPLE LESSONS.

RESOURCES: PLAYING CARDS, SQUARE CENTIMETRE GRID PAPER, PENCIL, PAPER

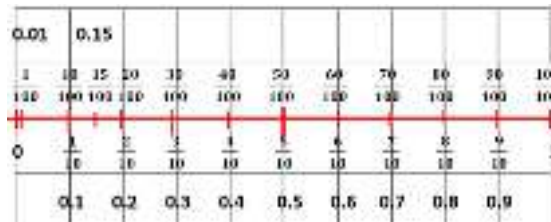
WHAT COULD WE DO?

Children:

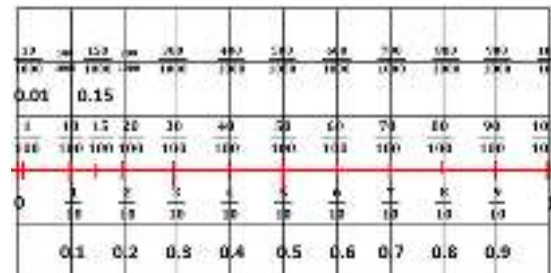
- record a number line between 0 and 1 and place 10ths on it, labelling the 10ths as fractions and decimals, for example,



- place 100ths on the number, labelling the 100ths as fractions and decimals, for example,



- place 1000ths on the number, labelling the 1000ths as fractions and decimals, for example,



WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

Children

- ask one another questions about placing decimals and fractions to thousandths on a number line, for example:

▶ How could we place tenths on a number line?

▶ How could we place hundredths on a number line?

▶ How could we place thousandths on a number line?

ORDER DECIMALS TO THOUSANDTHS.

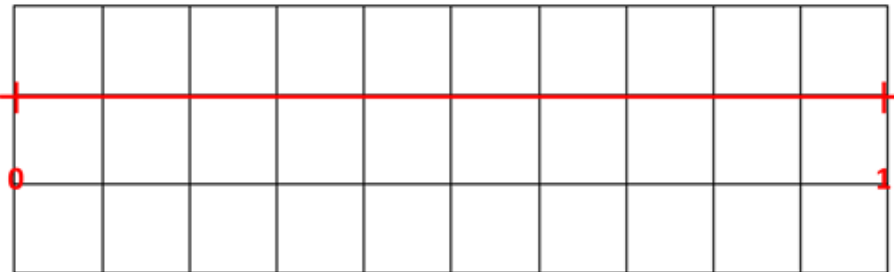
EXPLICIT TEACHING PLAN

FULL EXPLICIT TEACHING PLAN, EMBEDDING DEEP RELATIONAL UNDERSTANDING, METALANGUAGE, AND QUESTIONS THAT MAY BE USED OVER MULTIPLE LESSONS.

WHAT COULD WE DO?

Children think about, talk and listen to a friend about, then have the opportunity to share what they already know.

Children record a number line from zero to one, on [square centimetre grid paper](#), for example,

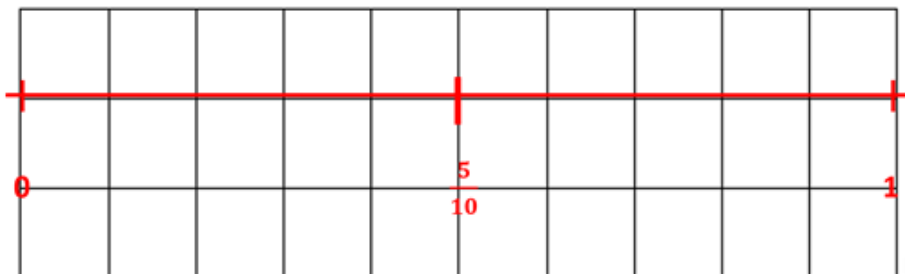


WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

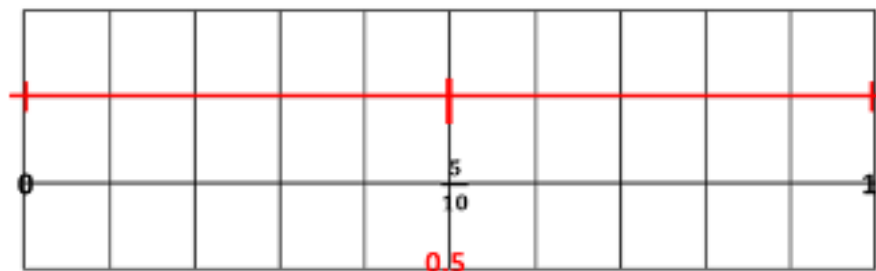
- ▶ Today brings an investigation about ordering decimals.
- ▶ What do you know about ordering decimals?
- ▶ Talk about ordering decimals with a friend.
- ▶ Is anyone ready to share what they are thinking about ordering decimals?

- ▶ We've investigated ordering fractions on a number line.
- ▶ **Today we're going to investigate ordering decimals on a number line.**
- ▶ Let's record a number line between zero and 1 on square centimetre grid paper.
- ▶ If our number line is between zero and 1, what type of numbers will we place on our number line?
- ▶ Will we place fractions and decimals on our number line?
- ▶ Do fractions and decimals come between whole numbers?
- ▶ Where will 5 tenths go on this number line?
- ▶ Is 5 tenths equivalent to a half?
- ▶ Do 5 tenths and a half have the same relationship between the numerator and denominator?
- ▶ Is 5 half of 10?
- ▶ Is 1 half of 2?

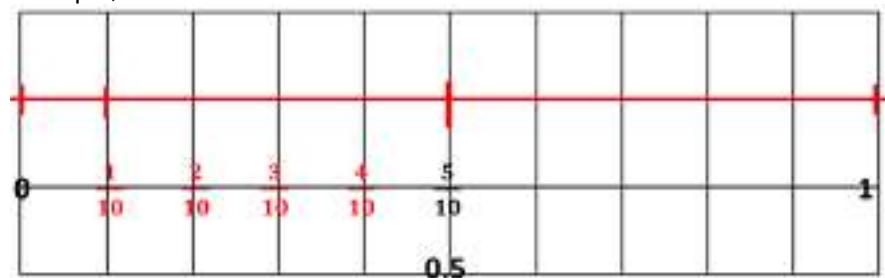
Children record 5 tenths on the number line, for example,



Children record 0.5 on the number line, for example,



Children record 1 tenth, 2 tenths, 3 tenths and 4 tenths on the number line, for example,

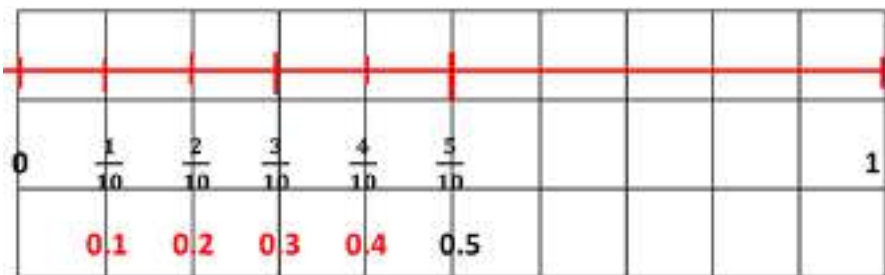


- ▶ So is 5 tenths and a half, equivalent fractions?
- ▶ Let's place 5 tenths half way along the number line.

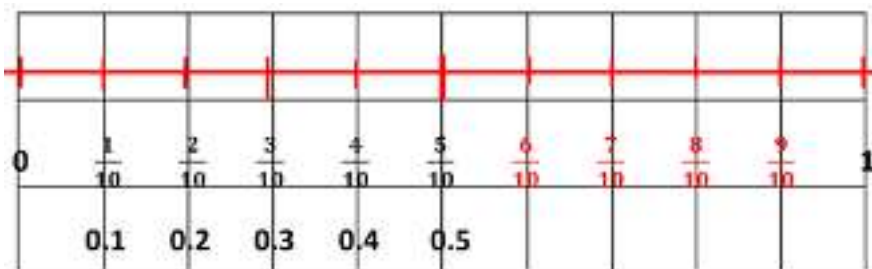
- ▶ How do we record 5 tenths as a decimal?
- ▶ What is the value of the column to the right of the ones column?
- ▶ Is the value of the column to the right of the ones column, tenths?
- ▶ Why?
- ▶ Are we dividing by 10 as we move one column to the right?
- ▶ Is 1 divided by 10, a tenth?
- ▶ So if the value of the column to the right of the ones column is tenths, will we place the 5 in the tenths column?
- ▶ Will 5 tenths as a decimal be 0.5?

- ▶ Now that we have 5 tenths, could we place 1 tenth on the number line?
- ▶ Will 1 tenth be 1 tenth of the way along the number line?
- ▶ Could we place 2 tenths on the number line?
- ▶ Will 1 tenth be 2 tenths of the way along the number line?
- ▶ Could we place 3 tenths on the number line?
- ▶ Will 3 tenths be 3 tenths of the way along the number line?
- ▶ Could we place 4 tenths on the number line?
- ▶ Will 4 tenths be 4 tenths of the way along the number line?

Children record 0.1, 0.2, 0.3, and 0.4 on the number line, for example,

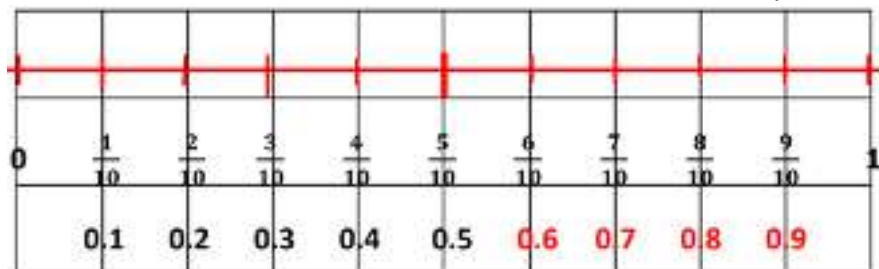


Children record 6 tenths, 7 tenths, 8 tenths and 9 tenths on the number line, for example,

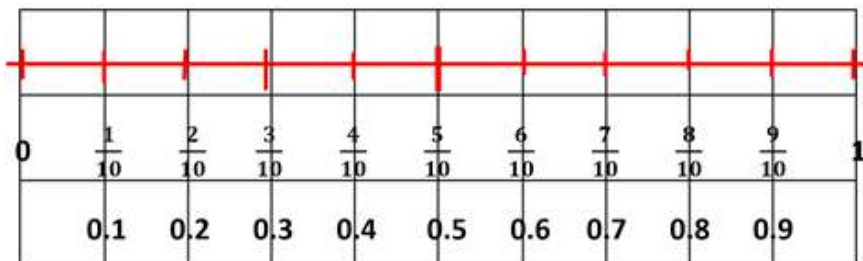


- ▶ How do we record 1 tenth as a decimal?
 - ▶ What is the value of the column to the right of the ones column?
 - ▶ Is the value of the column to the right of the ones column, tenths?
 - ▶ Why?
 - ▶ Are we dividing by 10 as we move one column to the right?
 - ▶ Is 1 divided by 10, a tenth?
 - ▶ So if the value of the column to the right of the ones column is tenths, will we place the 1 in the tenths column?
 - ▶ Will 1 tenth as a decimal be 0.1?
 - ▶ Will 2 tenths as a decimal be 0.2?
 - ▶ Will 3 tenths as a decimal be 0.3?
 - ▶ Will 4 tenths as a decimal be 0.4?
-
- ▶ Now that we have 1 tenth, 2 tenths, 3 tenths, 4 tenths and 5 tenths, could we place 6 tenths, 7 tenths, 8 tenths and 9 tenths on the number line?

Children record 0.6, 0.7, 0.8, and 0.9 on the number line, for example,



Display the number line with the tenths as fractions and decimals displayed, for example,



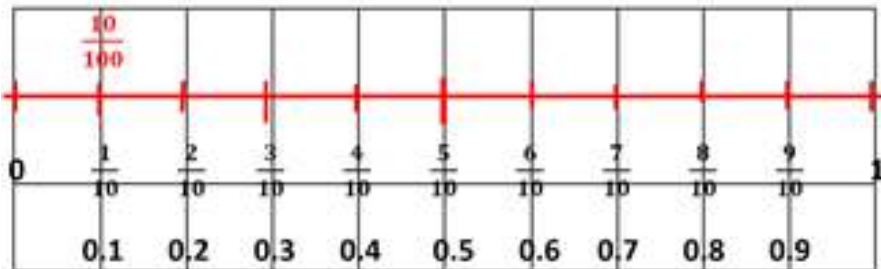
- ▶ How do we record 6 tenths as a decimal?
- ▶ What is the value of the column to the right of the ones column?
- ▶ Is the value of the column to the right of the ones column, tenths?
- ▶ Why?
- ▶ Are we dividing by 10 as we move one column to the right?
- ▶ Is 1 divided by 10, a tenth?
- ▶ So if the value of the column to the right of the ones column is tenths, will we place the 6 in the tenths column?
- ▶ Will 6 tenths as a decimal be 0.6?
- ▶ Will 7 tenths as a decimal be 0.7?
- ▶ Will 8 tenths as a decimal be 0.8?
- ▶ Will 9 tenths as a decimal be 0.9?

- ▶ We've investigated placing tenths as fractions and decimals on a number line.
- ▶ **Today we're going to investigate placing hundredths as fractions and decimals on a number line.**
- ▶ This number line has tenths as fractions and as decimals placed on it.
- ▶ The lowest fraction on this number line is 1 tenth.

Record, for example, $\frac{1}{10} = \frac{\quad}{100}$

Record, for example, $\frac{1}{10} = \frac{10}{100}$

Record 10 hundredths on the number line as a fraction, for example,

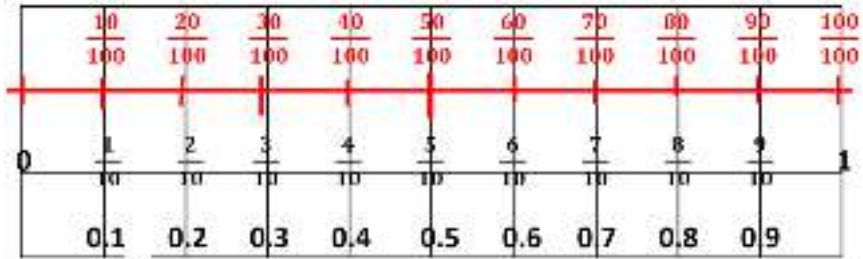


- ▶ 1 tenth is equivalent to how many hundredths?
- ▶ We've investigated equivalent fractions and we found that equivalent fractions have the same relationship between the numerator and the denominator.
- ▶ What is the relationship between the numerator and denominator in one tenth?
- ▶ Is 1 a tenth of 10?
- ▶ So we need to find a tenth of 100.
- ▶ Is 10 a tenth of 100?
- ▶ Will the numerator be 10 if the denominator is 100?
- ▶ Is 1 tenth equivalent to 10 hundredths?

▶ Let's record 10 hundredths on the number line.

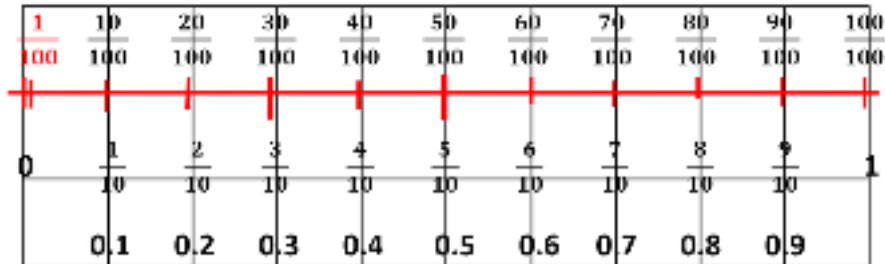
- ▶ How do we record 10 hundredths as a decimal using place value?
- ▶ Is 10 hundredths 0.10?
- ▶ Is 0.10 and 0.1 the same amount?

Record multiples of 10 hundredths on the number line as a fraction, for example,



Point to the 0.1 on the number line, for example,

Record 1 hundredth on the number line as a fraction, for example,



Record, for example, $\frac{1}{100} = 0.01$

► Do we already have 10 hundredths as a decimal recorded on the number line?

► Can we place multiples of 10 hundredths on the number line?

► So this is where 10 hundredths is on the number line.

► Where will 1 hundredth go on the number line?

► How many hundredths in a tenth?

► Are there 10 hundredths in a tenth?

► So will 1 hundredth be a tenth of a tenth?

► Let's record 1 hundredth on the number line as a fraction.

► How do we record 1 hundredth as a decimal?

► Which column has the value of hundredths?

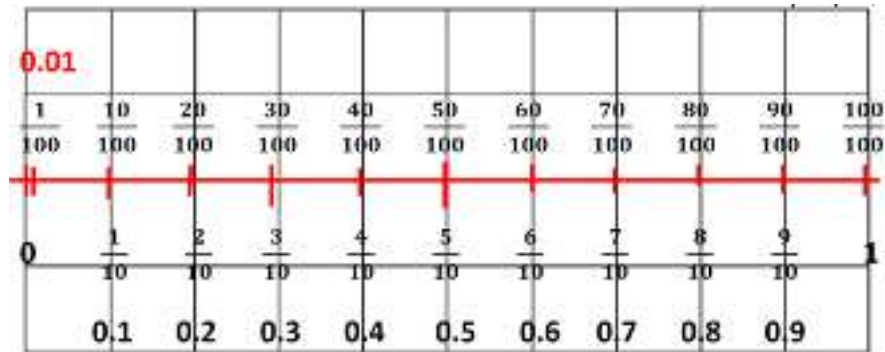
► Does the column 2 to the right of the ones column have the value of hundredths?

► Is that because we divided 1 by 100 to get a hundredth?

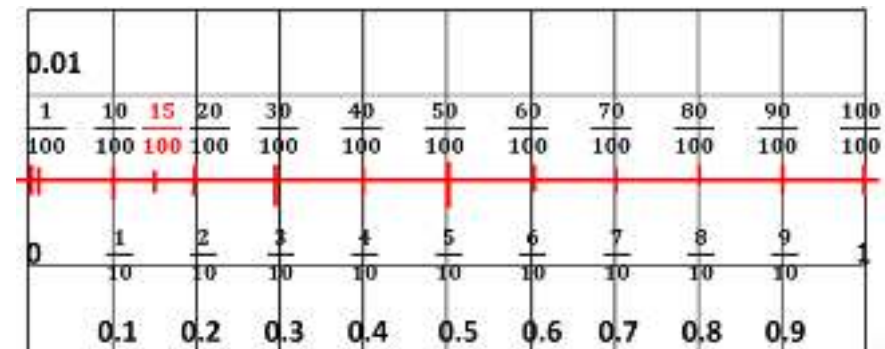
► When we move 2 places to the right, are we dividing by 100?

► Let's record 1 hundredth as a decimal by placing the 1 in the hundredths column.

Record 1 hundredth on the number line as a decimal, for example,



Record 15 hundredths on the number line as a fraction, for example,



► Let's record 1 hundredth as a decimal on the number line.

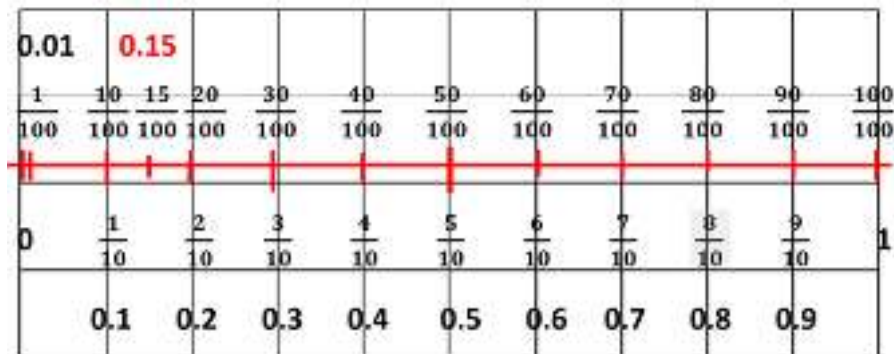
- Where will 15 hundredths go on the number line?
- How many hundredths in a tenth?
- Are there 10 hundredths in a tenth?
- So will we have 1 tenth plus 5 hundredths?
- If 10 hundredths is 1 tenth, is 5 hundredths half of a tenth?
- So will 15 hundredths be 1 tenth plus half of a tenth?
- Let's record 15 hundredths on the number line as a fraction.

Record, for example, $\frac{15}{100} = 0.15$

Record 0.15 in a place value chart with a dotted line from the 1 to the 5 and up to the hundredths label, for example,

ones	tenths	hundredths
0	1	5

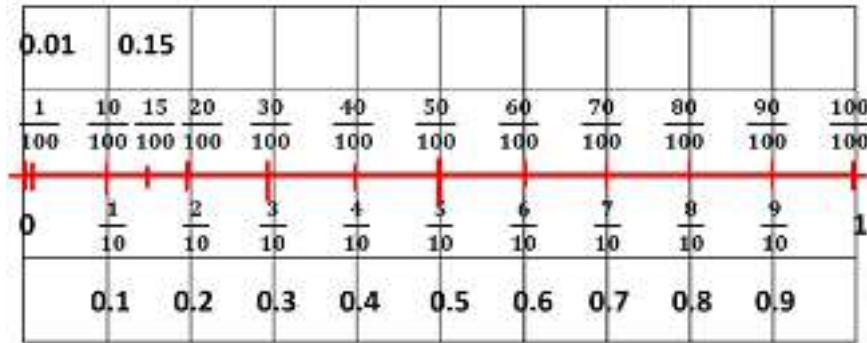
Record 15 hundredths on the number line as a fraction, for example,



- ▶ How do we record 15 hundredths as a decimal?
- ▶ Is 15 hundredths 1 tenth plus 5 hundredths?
- ▶ Which column has the value of tenths?
- ▶ Does the column 1 to the right of the ones column have the value of tenths?
- ▶ Is that because we divided 1 by 10 to get a tenth?
- ▶ When we move 1 place to the right, are we dividing by 10?
- ▶ Which column has the value of hundredths?
- ▶ Does the column 2 to the right of the ones column have the value of hundredths?
- ▶ Is that because we divided 1 by 100 to get a hundredth?
- ▶ When we move 2 place to the right, are we dividing by 100?
- ▶ Let's record 1 tenth and 5 hundredths as a decimal by placing the 1 in the tenths column and 5 in the hundredths column.
- ▶ If we read across the columns using non-standard place value, can we see that we have 15 hundredths?

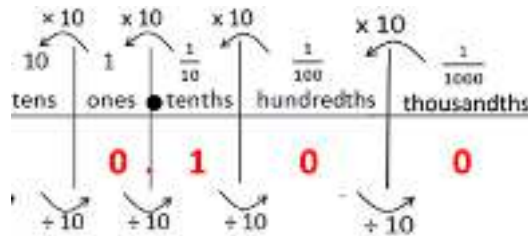
- ▶ Let's record 15 hundredths as a decimal on the number line.

Display the number line with the tenths and hundredths as fractions and decimals displayed, for example,



Record, for example, $\frac{1}{10} = \frac{10}{100} = \frac{\quad}{1000}$

Record 0.1 in a place value chart, for example,



Record, for example, $\frac{1}{10} = \frac{10}{100} = \frac{100}{1000}$

▶ We've investigated placing tenths and hundredths as fractions and decimals on a number line.

▶ **Today we're going to investigate placing thousandths as fractions and decimals on a number line.**

▶ This number line has tenths and hundredths as fractions and as decimals placed on it.

▶ We have 1 tenth and 10 hundredths as equivalent decimals.

▶ How many thousandths is equal to 1 tenth and 10 hundredths?

▶ Let's look at 1 tenth in a place value chart.

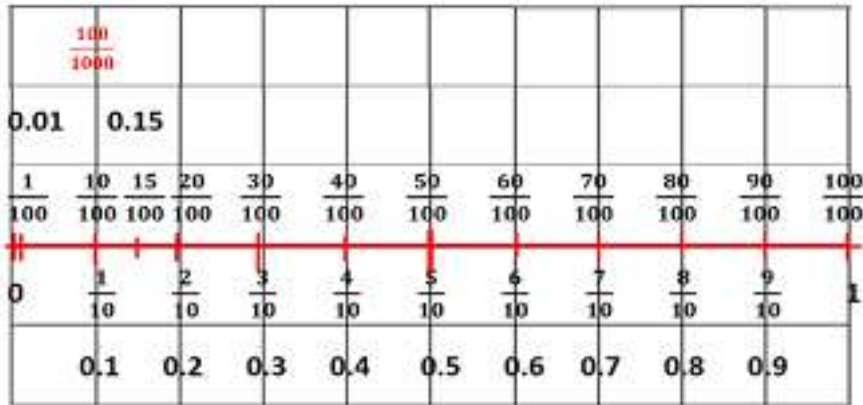
▶ Is 1 tenth equal to 10 hundredths?

▶ Is 1 tenth equal to 100 thousandths?

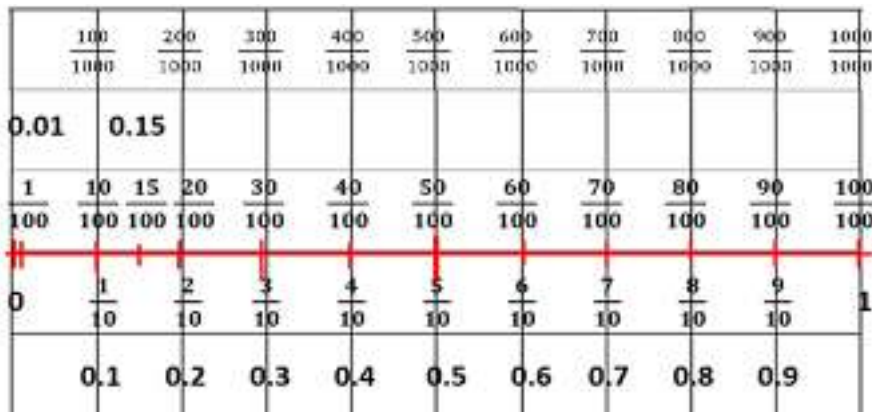
▶ We investigated equivalent fractions, and we found that equivalent fractions have the same relationship between numerator and denominator.

▶ Do 1 tenth, 10 hundredths and 100 thousandths have the same relationship between the numerator and denominator?

Place 100 thousandths on the number line, for example,

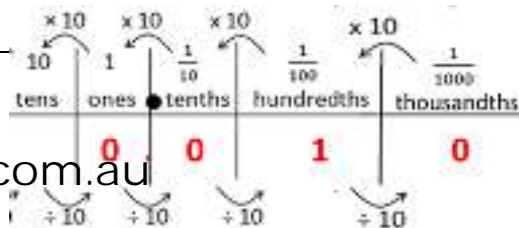


Place multiples of 100 thousandths on the number line, for example,



Record, for example, $\frac{1}{100} = \frac{\quad}{1000}$

Record 0.01 in a place value



- ▶ Can we place 100 thousandths on the number line?
- ▶ Is 100 thousandths 0.100?
- ▶ Is 0.100 and 0.1 the same amount?
- ▶ Do we already have 100 thousandths as a decimal recorded on the number line?

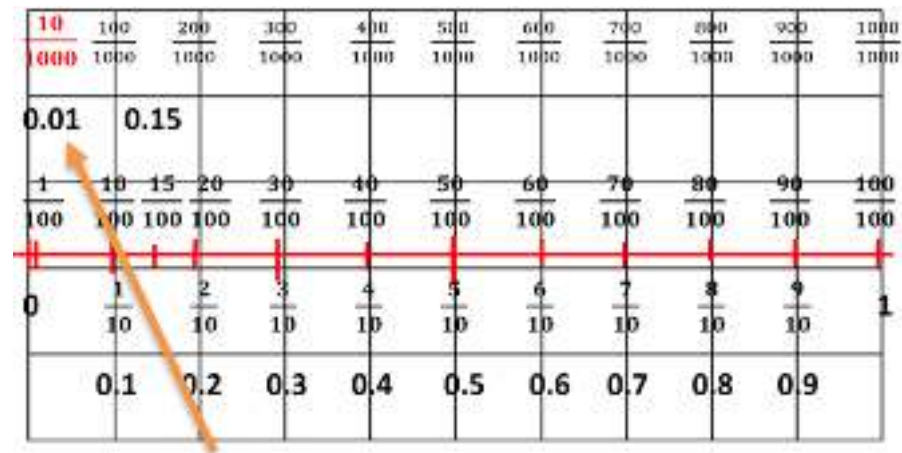
- ▶ Can we place multiples of 100 thousandths on the number line?

- ▶ The lowest fraction on this number line is 1 hundredth.
- ▶ 1 hundredth is equivalent to how many thousandths?
- ▶ Let's look at 1 hundredth in a place value chart.

chart, for example,

Record, for example, $\frac{1}{100} = \frac{10}{1000}$

Record 10 thousandths on the number line as a fraction, for example,



Point to the 0.01 on the number line, for example,

► Is 1 hundredth equal to 10 thousandths?

► Let's record 10 thousandths on the number line.

► How do we record 10 thousandths as a decimal using place value?

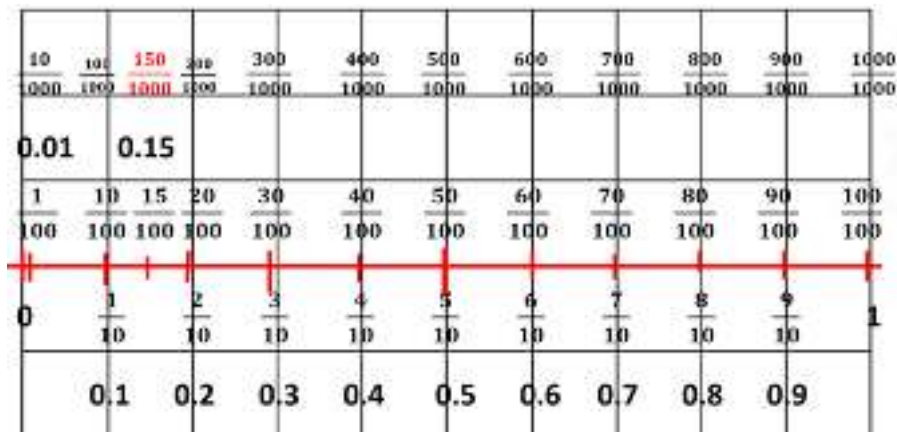
► Is 10 thousandths 0.010?

► Is 0.010 and 0.01 the same amount?

► Do we already have 10 thousandths as a decimal recorded on the number line?

Record, for example, $\frac{15}{100} = \frac{150}{1000}$

Record 150 thousandths on the number line as a fraction, for example,



Record 0.150 in a place value chart with a dotted line from the 1 to the 0 and up to the thousandths label, for example,

ones	tenths	hundredths	thousandths
0	1	5	0

Record a dotted line from the 1 to the 5 and up to the hundredths label, for example,

ones	tenths	hundredths	thousandths
0	1	5	0

- ▶ So this is where 10 thousandths is on the number line.
- ▶ We know that each hundredth is 10 thousandths.
- ▶ So where will 150 thousandths go on the number line?
- ▶ If each hundredth is 10 thousandths, will 15 hundredths be 150 thousandths?

▶ Let's record 150 thousandths on the number line as a fraction.

- ▶ How do we record 150 thousandths as a decimal?
- ▶ We know that 150 thousandths equivalent to 15 hundredths?
- ▶ And we know that 15 hundredths is 1 tenth plus 5 hundredths?
- ▶ Which column has the value of tenths?
- ▶ Does the column 1 to the right of the ones column have the value of tenths?
- ▶ Is that because we divided 1 by 10 to get a tenth?
- ▶ When we move 1 place to the right, are we dividing by 10?
- ▶ Which column has the value of hundredths?
- ▶ Does the column 2 to the right of the ones column have the value of hundredths?
- ▶ Is that because we divided 1 by 100 to get a hundredth?
- ▶ When we move 2 place to the right, are we dividing by 100?
- ▶ Let's record 1 tenth and 5 hundredths as a decimal by placing the 1 in the tenths column and 5 in the hundredths column.
- ▶ If we read across the columns using non-standard place value, can we see that we have 150 thousandths?
- ▶ Do we need to record the zero in the thousandths place?
- ▶ Do we have the same number whether we record the zero or not?



Point to the 0.15 on the number line, for example,

► Have we already recorded 150 thousandths as a decimal on the number line.

Square centimetre grid paper ([back](#))

