Ark Curriculum+

Year 5 Unit 6: Fractions and decimals

Week 2: Exploring decimals

Mathematics
Mastery

Year 5 Unit 6: Fractions and decimals

Mathematics Mastery

This Week

Lesson 6: Fractions and decimals

- To read and write decimal numbers as fractions

Lesson 7: Thousandths

- To recognise and use thousandths

Lesson 8: Comparing fractions and decimals

- To compare and order fractions and decimals

Lesson 9: Improper fractions

- To recognise and use mixed numbers and improper fractions

Lesson 10: Consolidation and review

- See unit narrative (no slides provided)

Ark Curriculum+

Year 5 Unit 6: Fractions and decimals

Lesson 6: Fractions and decimals

Mathematics
Mastery

Fractions on a number line

How many fractions can you place on the number line?
Explain the reasons for your choices.

Do Now

Key learning: To read and write decimal numbers as fractions

Star Words

parts

equal parts

whole

fraction

decimal

place value

place

ones

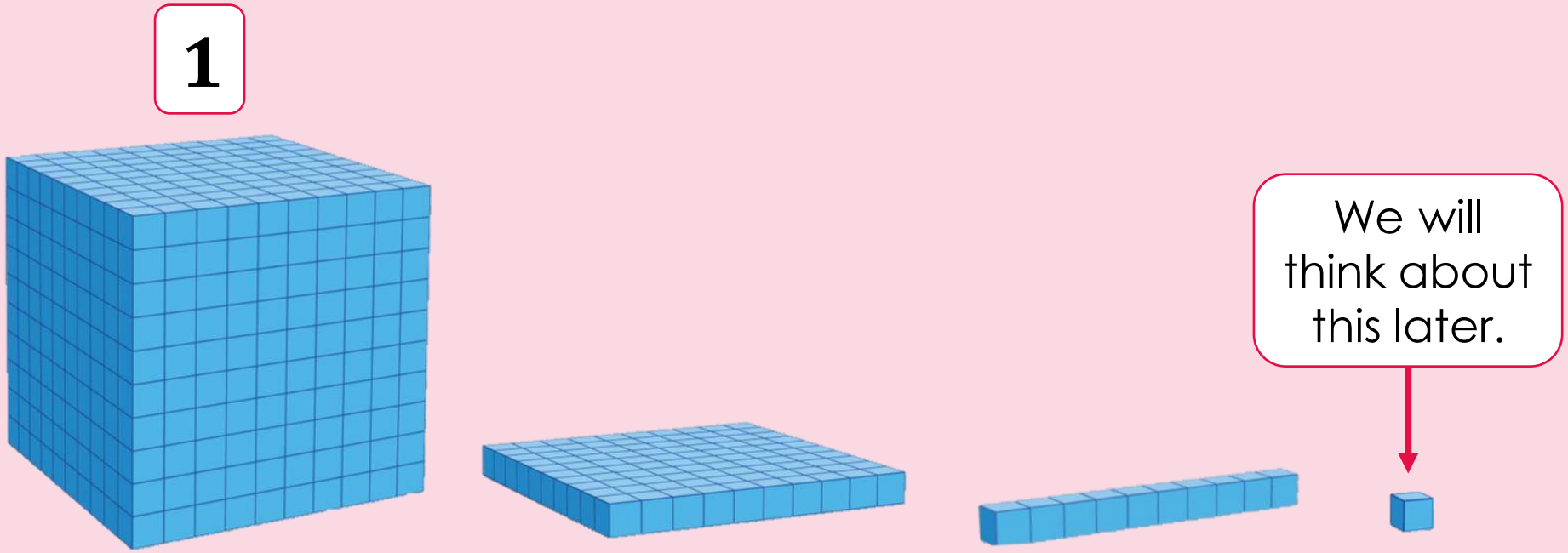
tenths

hundredths

Tenths and hundredths

New Learning

We are going to give Dienes new values.



If the largest block has a value of one, what are the values of the others? Why is that?

Tenths and hundredths

New Learning

$\frac{\quad}{10}$

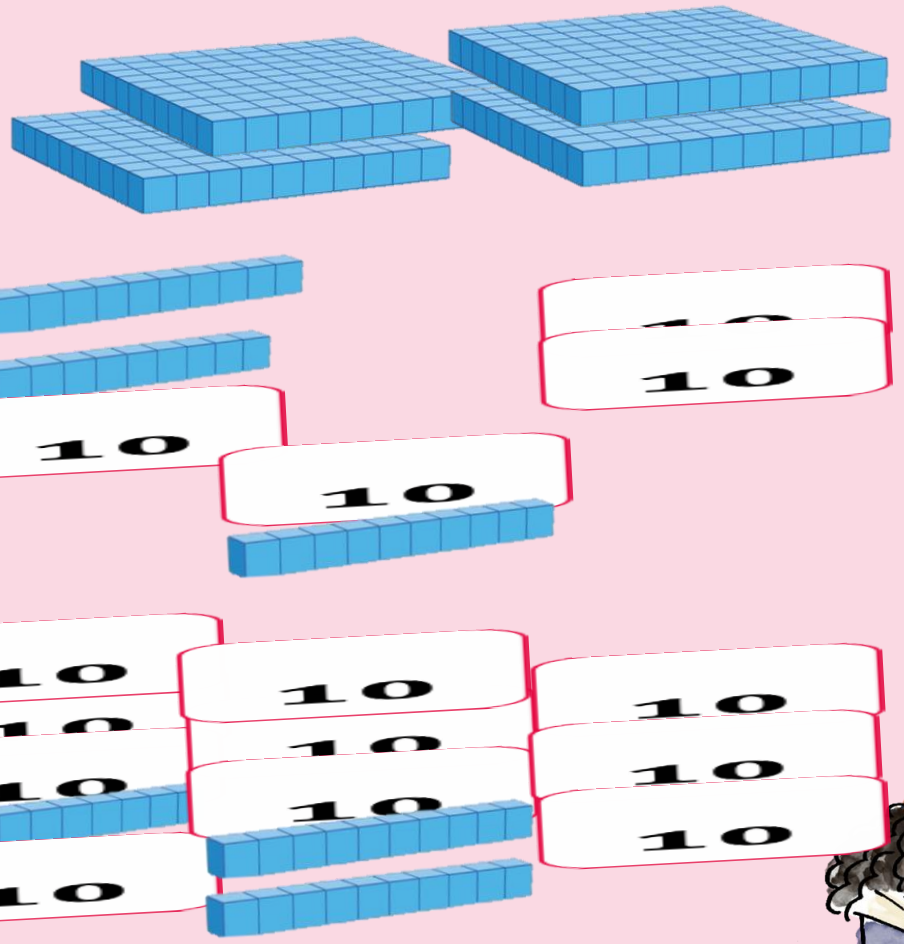
Ones	Tenths	Hundredths

$\frac{\quad}{100}$

Ones	Tenths	Hundredths

$\frac{\quad}{100}$

Ones	Tenths	Hundredths

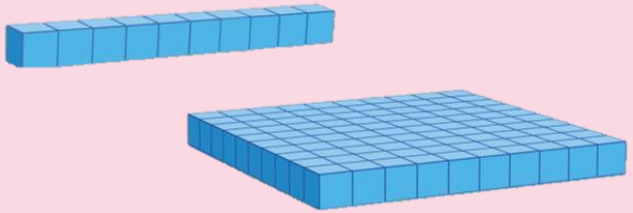


Tenths and hundredths

$$\frac{3}{5} = \frac{\quad}{10}$$

$$\frac{1}{4} = \frac{\quad}{100}$$

Ones	Tenths	Hundredths

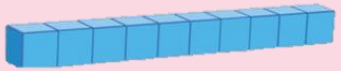


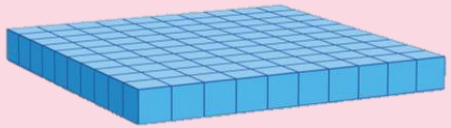
New Learning

Fractions and decimals

Represent each fraction with Dienes blocks and record it as a decimal number.

$\frac{3}{4}$ $\frac{21}{100}$ $\frac{4}{5}$



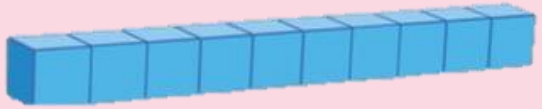


Ones	Tenths	Hundredths

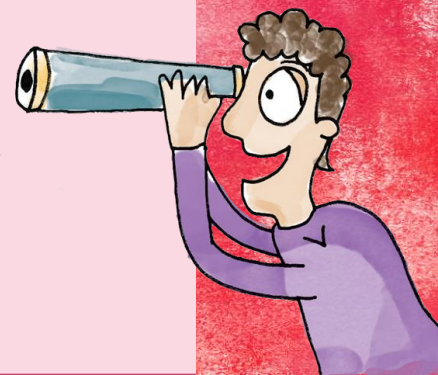
Talk Task

Decimals and fractions

Ones	Tenths	Hundredths



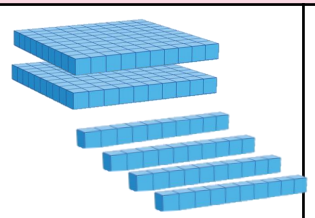
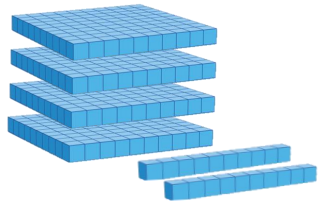
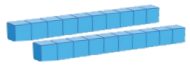
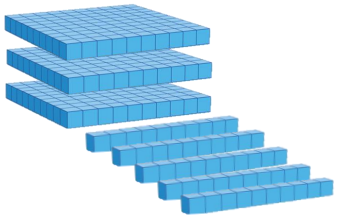
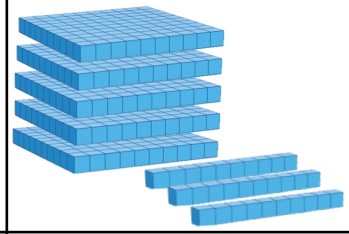
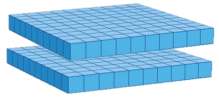
$$\frac{1}{100} = \frac{\quad}{20}$$



Develop Learning

Key learning: To read and write decimal numbers as fractions

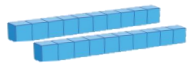
Decimals and fractions

	0.02	0.2	$\frac{42}{100}$	0.35	
$\frac{53}{100}$	$\frac{2}{10}$	$\frac{1}{5}$	$\frac{200}{1,000}$	$\frac{21}{50}$	0.24
$\frac{2}{100}$		0.42			$\frac{24}{100}$
$\frac{1}{50}$	$\frac{20}{100}$	$\frac{35}{100}$	0.53		$\frac{7}{20}$

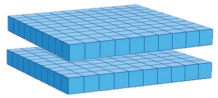
Independent Task

Celebrating success and addressing misconceptions

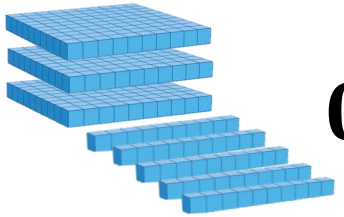
Plenary



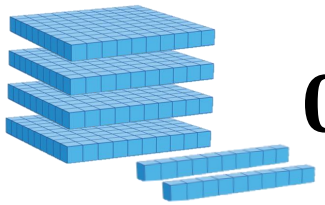
0.02 $\frac{2}{100}$ $\frac{1}{50}$



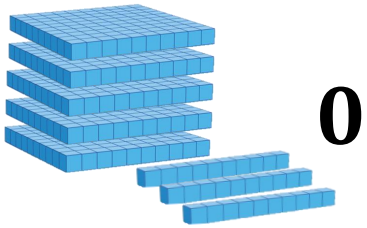
0.2 $\frac{1}{5}$ $\frac{2}{10}$ $\frac{20}{100}$ $\frac{200}{1,000}$



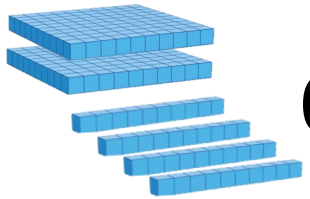
0.35 $\frac{35}{100}$ $\frac{7}{20}$



0.42 $\frac{42}{100}$ $\frac{21}{50}$



0.53 $\frac{53}{100}$



0.24 $\frac{24}{100}$

Ark Curriculum+

Year 5 Unit 6: Fractions and decimals

Lesson 7: Thousandths

Mathematics
Mastery

Equivalent fractions and decimals

Do Now

Complete each statement. How many different ways can you complete each one?

$\frac{4}{10} = \frac{\quad}{\quad}$

$\frac{9}{25} = \frac{\quad}{\quad}$

$\frac{7}{20} = \frac{\quad}{\quad}$

$\frac{45}{100} = \frac{\quad}{\quad}$

Key learning: To recognise and use thousandths

Star Words

parts

equal parts

whole

fraction

decimal

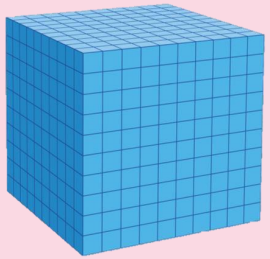
place value

tenths

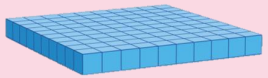
hundredths

thousandths

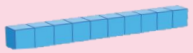
Thousandths



1



$\frac{1}{10}$



$\frac{1}{100}$

?

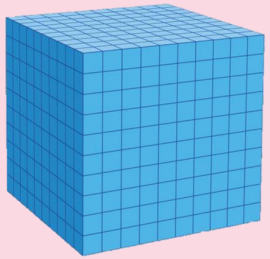
Ones	Tenths	Hundredths
1		

Ones	Tenths	Hundredths

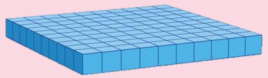
Ones	Tenths	Hundredths

New Learning

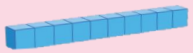
Thousandths



1



$\frac{1}{10}$



$\frac{1}{100}$

$\frac{1}{1,000}$

Ones	Tenths	Hundredths	Thousandths

Ones	Tenths	Hundredths	Thousandths

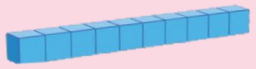
Ones	Tenths	Hundredths	Thousandths

Ones	Tenths	Hundredths	Thousandths

New Learning

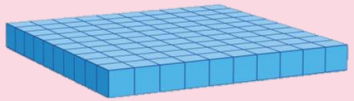
Thousandths, hundredths, tens and ones

Talk Task

- $\times ? =$ 

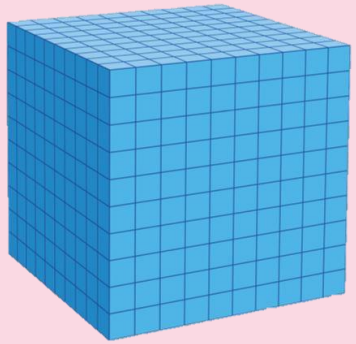
$$\frac{?}{1{,}000} = \frac{1}{100}$$

_____ thousandths is equal to one hundredth.

- $\times ? =$ 

$$\frac{?}{1{,}000} = \frac{1}{10}$$

_____ thousandths is equal to one tenth.

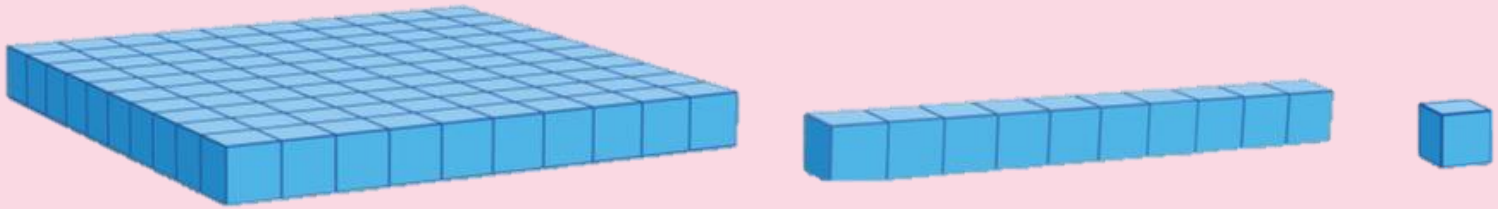
- $\times ? =$ 

$$\frac{?}{1{,}000} = 1$$

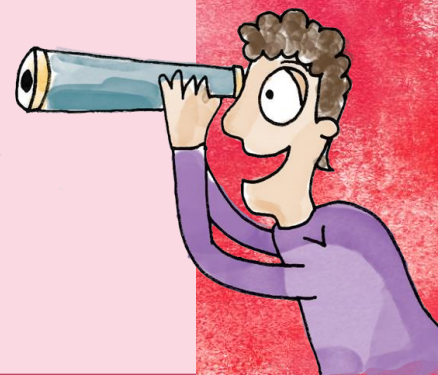
_____ thousandths is equal to one.

Representing thousandths

Ones	Tenths	Hundredths	Thousandths
0			



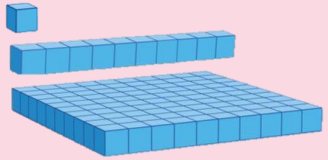
$$\frac{}{1,000}$$



Develop Learning

Representing thousandths

Represent your calculations with Dienes.



$$\frac{\quad}{10} + \frac{\quad}{100} + \frac{\quad}{1{,}000} = \frac{521}{1{,}000}$$

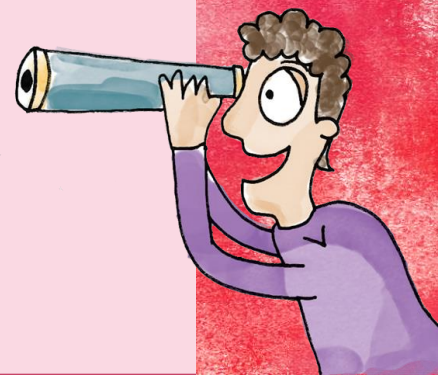
Ones	Tenths	Hundredths	Thousandths
0			

$$0. \quad + 0. \quad + 0. \quad =$$

There are ____ tenths, ____ hundredths and one thousandth.

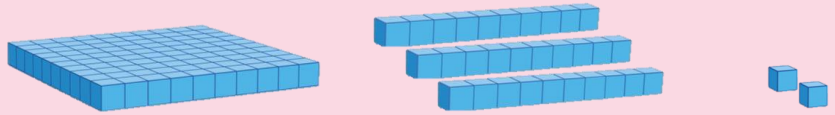
The number is said as zero point _____.

Develop Learning



Key learning: To recognise and use thousandths

Representing decimals



$$\frac{\quad}{10} + \frac{\quad}{100} + \frac{2}{1{,}000} = -$$

Ones	Tenths	Hundredths	Thousandths
0			

$$0. \quad = \quad + 0.03 +$$

There are ____ tenths, ____ hundredths and one thousandth.

The number is said as zero point _____.

Independent Task

Key learning: To recognise and use thousandths

Representing decimals

$$\frac{\quad}{10} + \frac{\quad}{100} + \frac{\quad}{1{,}000} = \quad .$$

Ones	Tenths	Hundredths	Thousandths
0			

0. = + +

There are ____ tenths, ____ hundredths and ____ thousandths.

The number is said as zero point _____.

Independent Task

I'm thinking of a number

I'm thinking of a number.

- It has a place holder in the ones and the tenths place
- It has four hundredths.
- It also contains the digit 2.

I'm thinking of a number.

- It has place holders in the ones and hundredths places.
- It has three thousandths.
- It also contains the digit 7.

Plenary

I'm thinking of a number

I'm thinking of a number.

- It has a place holder in the ones and the tenths place
- It has four hundredths.
- It also contains the digit 2.

0.042

$\frac{42}{1,000}$

I'm thinking of a number.

- It has place holders in the ones and hundredths places.
- It has three thousandths.
- It also contains the digit 7.

Plenary

I'm thinking of a number

Plenary

I'm thinking of a number.

- It has a place holder in the ones and the tenths place
- It has four hundredths.
- It also contains the digit 2.

0.042

$\frac{42}{1,000}$

I'm thinking of a number.

- It has place holders in the ones and hundredths places.
- It has three thousandths.
- It also contains the digit 7.

0.703

$\frac{703}{1,000}$

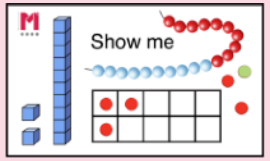
Ark Curriculum+

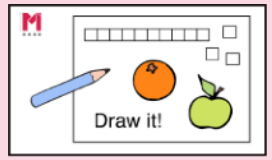
Year 5 Unit 6: Fractions and decimals

Lesson 8: Comparing fractions and decimals

Mathematics
Mastery

Statements of equality and inequality





Do Now

Which of these symbols will make each statement correct?

How do you know?

$<$ $=$ $>$

$\frac{1}{2} \bigcirc \frac{5}{8}$

$\frac{12}{32} \bigcirc \frac{3}{8}$

$\frac{81}{100} \bigcirc \frac{4}{5}$

$\frac{8}{20} \bigcirc \frac{45}{100}$

Key learning: To compare and order fractions and decimals

Star Words

parts

equal parts

whole

equivalent

multiple

compare

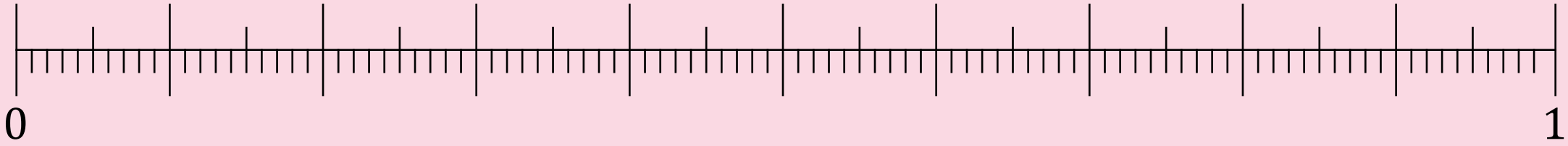
order

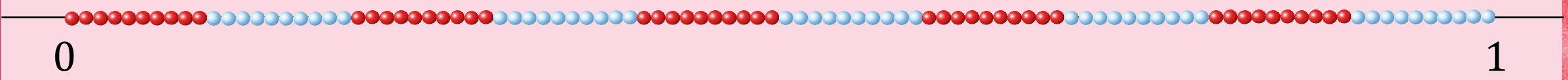
number line

Ordering and comparing fractions and decimals

New Learning

How many decimal numbers can you place on this number line?

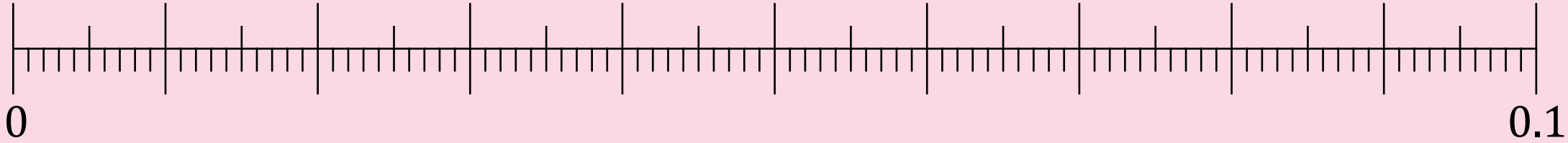




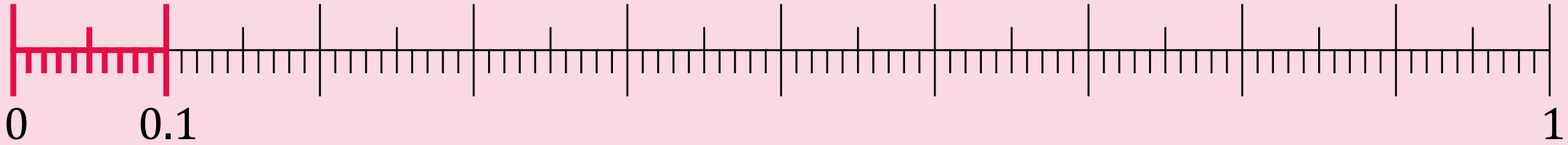
Ordering and comparing fractions and decimals

New Learning

How many decimal numbers can you place on this number line?



We have zoomed in on this section of our first number line.



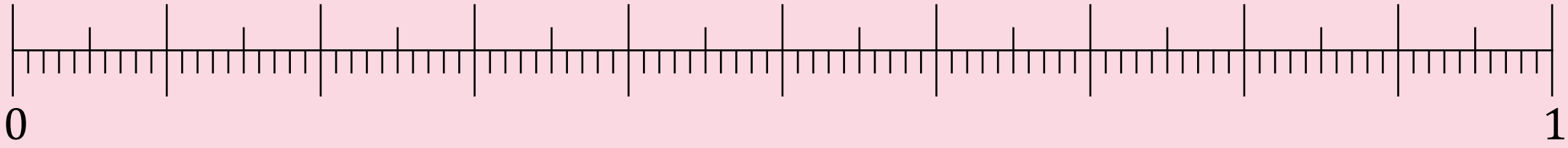
Ordering fractions and decimals

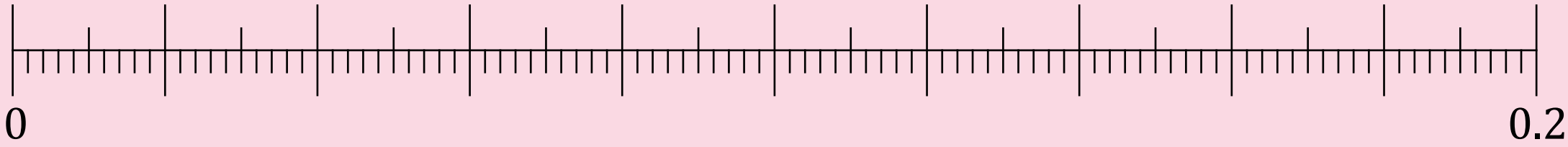
Talk Task

Place each decimal or fraction on a number line.

Which line will you choose for each?

0.75 $\frac{3}{20}$ $\frac{5}{8}$ 0.125 $\frac{19}{100}$ 0.65

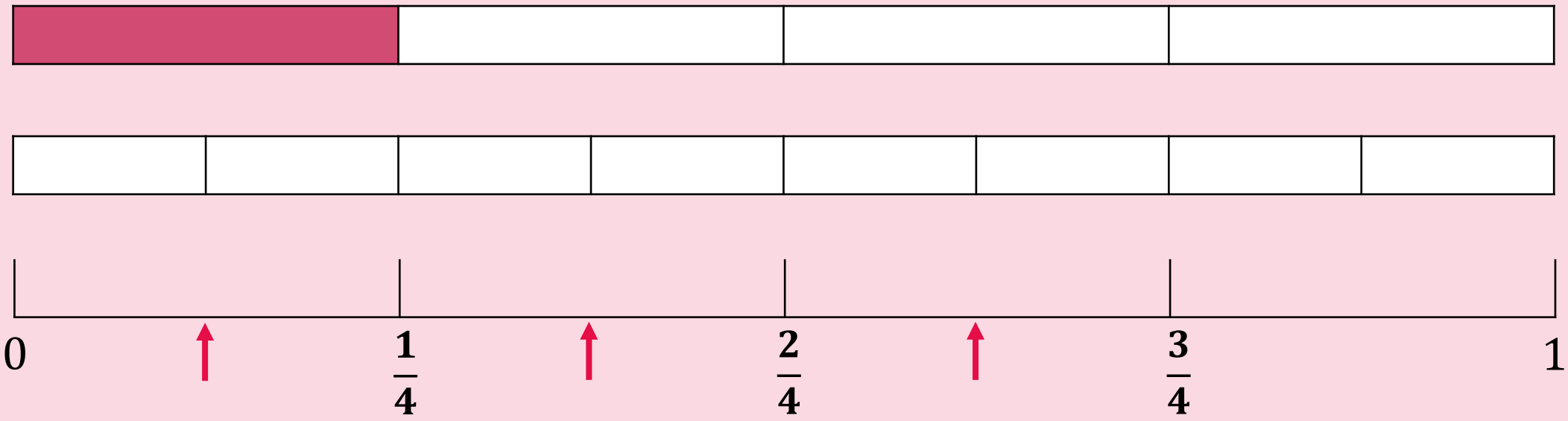




Generate statements using $<$, $=$ or $>$.

Fractions between fractions

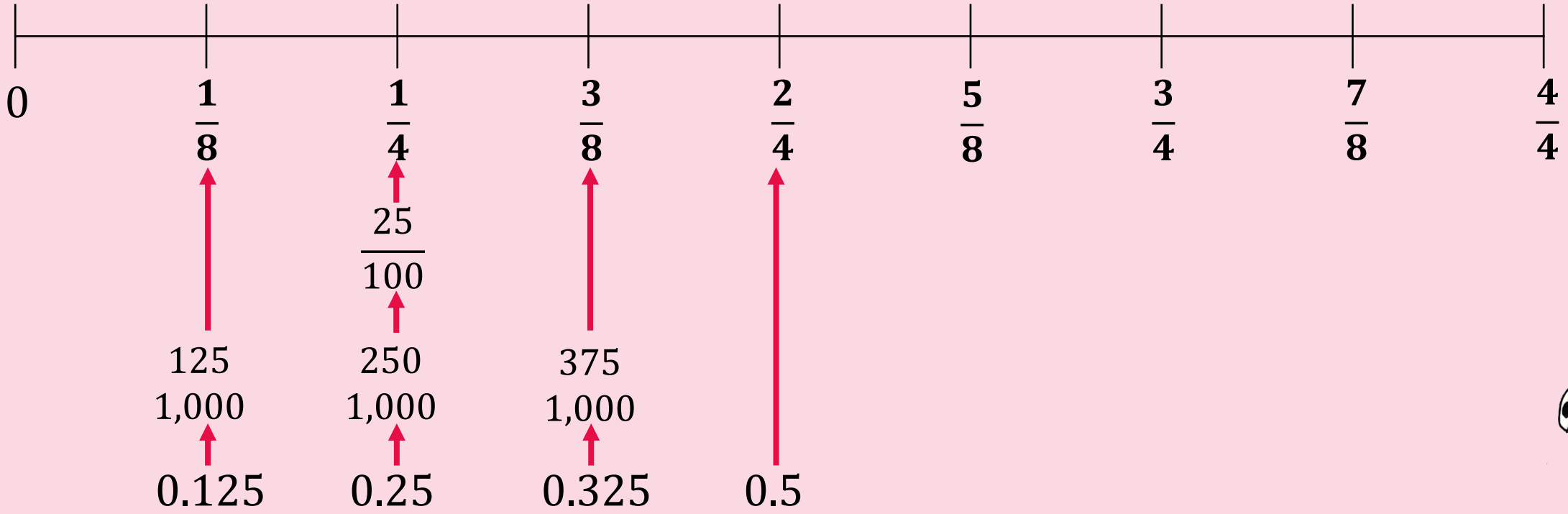
- What fraction is exactly half way between zero and one quarter?
- What fraction is exactly half way between one quarter and two quarters?
- What do you notice? How else could you record these fractions?



Develop Learning

Fractions between fractions

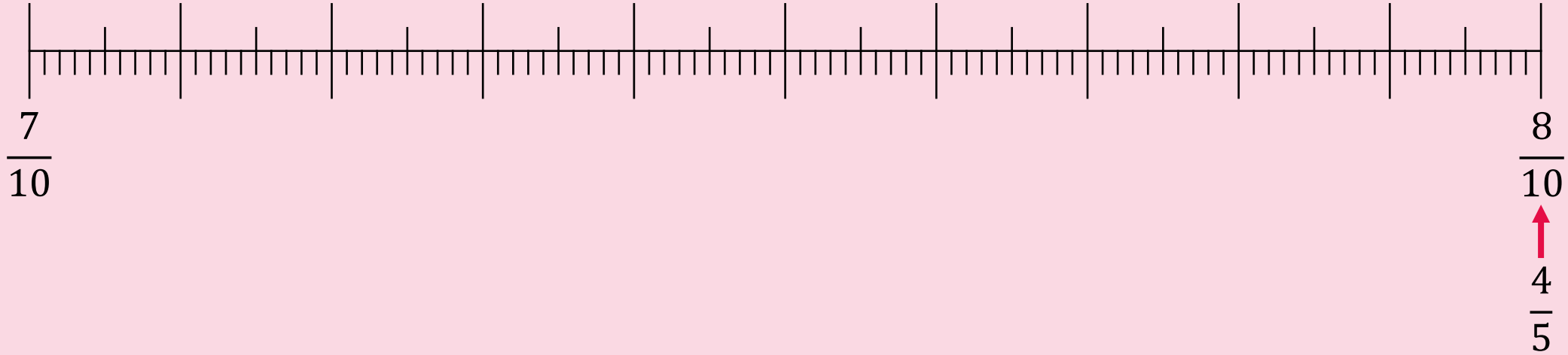
- What do you notice? How else could you record these fractions?
- Can you write this? $\frac{1.5}{4}$
- Can you write this? $\frac{3\frac{1}{2}}{4}$



Develop Learning

Fractions between fractions

Show me that $\frac{3}{4}$ is exactly half way between $\frac{7}{10}$ and $\frac{4}{5}$.



Develop Learning

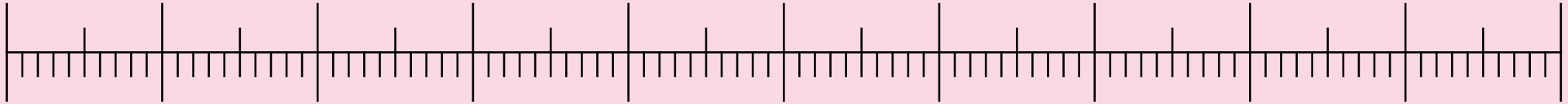
Key learning: To recognise and use thousandths

Fractions between fractions

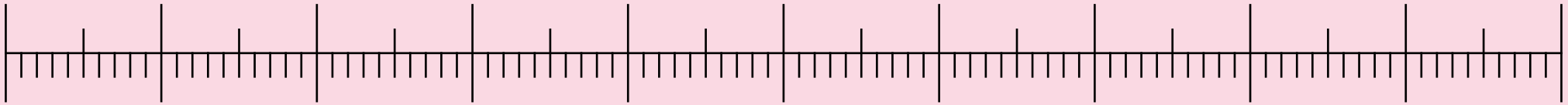
Independent Task

Label the number lines with fractions and decimals to show your understanding.

1) Which fraction is exactly half way between $\frac{1}{5}$ and $\frac{3}{10}$?



2) Which fraction is exactly half way between $\frac{1}{4}$ and $\frac{3}{8}$?



Sharing patterns

- What patterns did you notice?
- How many statements of equality can you generate?

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- How many statements of inequality can you generate?

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Plenary

Ark Curriculum+

Year 5 Unit 6: Fractions and decimals

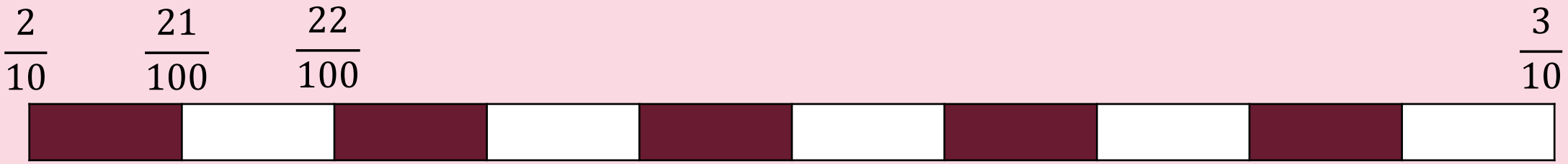
Lesson 9: Improper fractions

Mathematics
Mastery

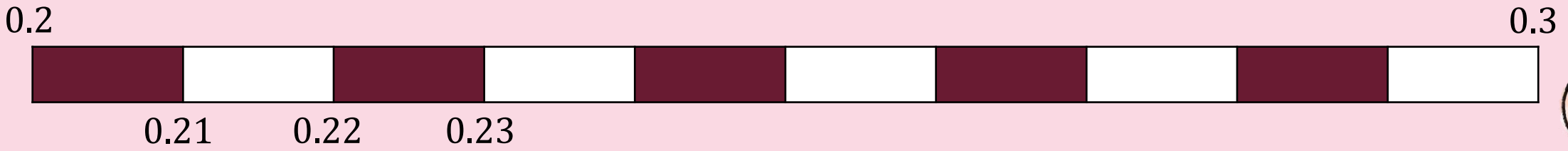
Skip-counting in fractions and decimals

Do Now

Counting in fractions:



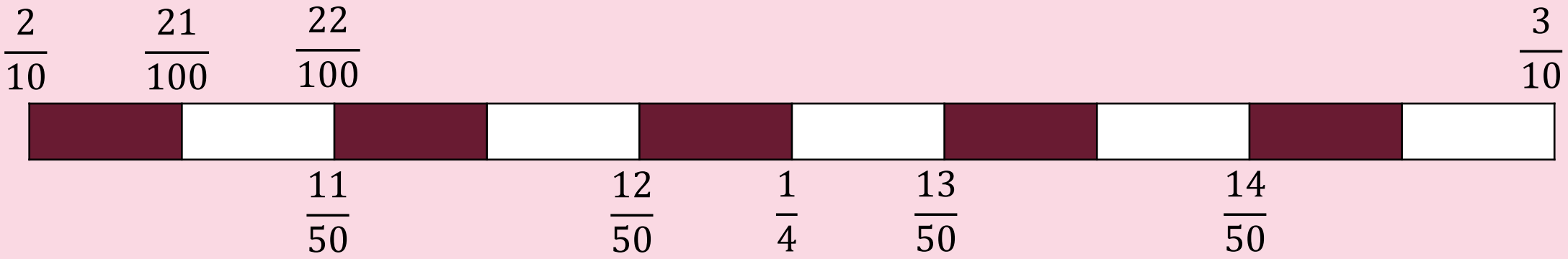
Counting in decimals:



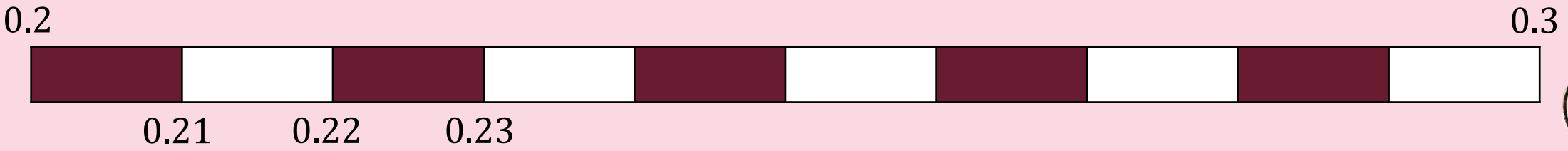
Skip-counting in fractions and decimals

Do Now

Counting in fractions:



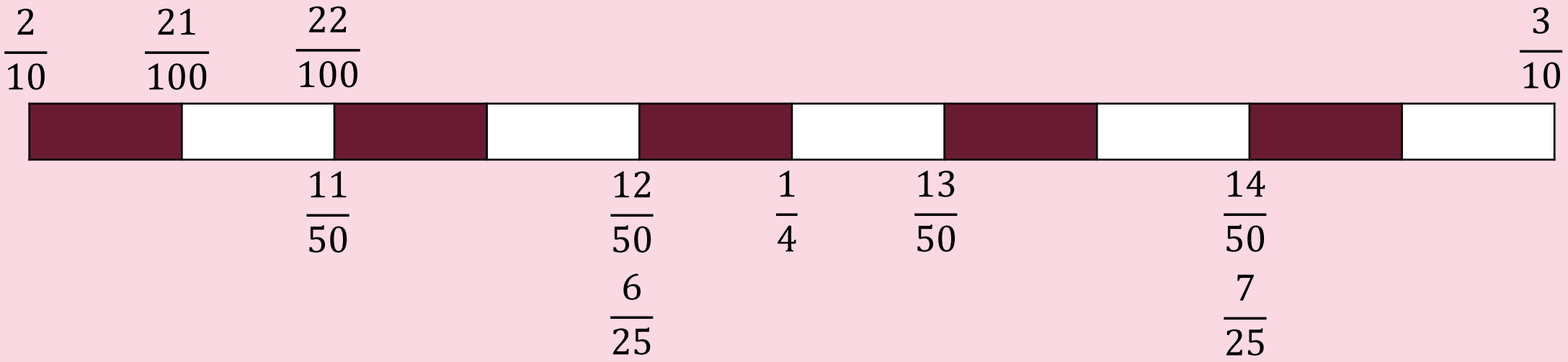
Counting in decimals:



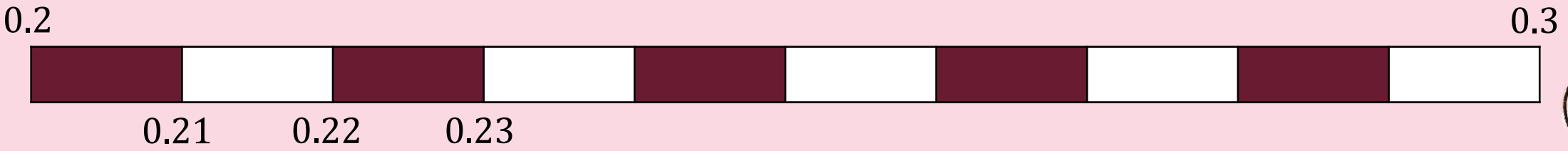
Skip-counting in fractions and decimals

Do Now

Counting in fractions:



Counting in decimals:



Key learning: To recognise and use mixed numbers and improper fractions

Star Words

mixed number

improper fraction

equal parts

whole

place value

ones

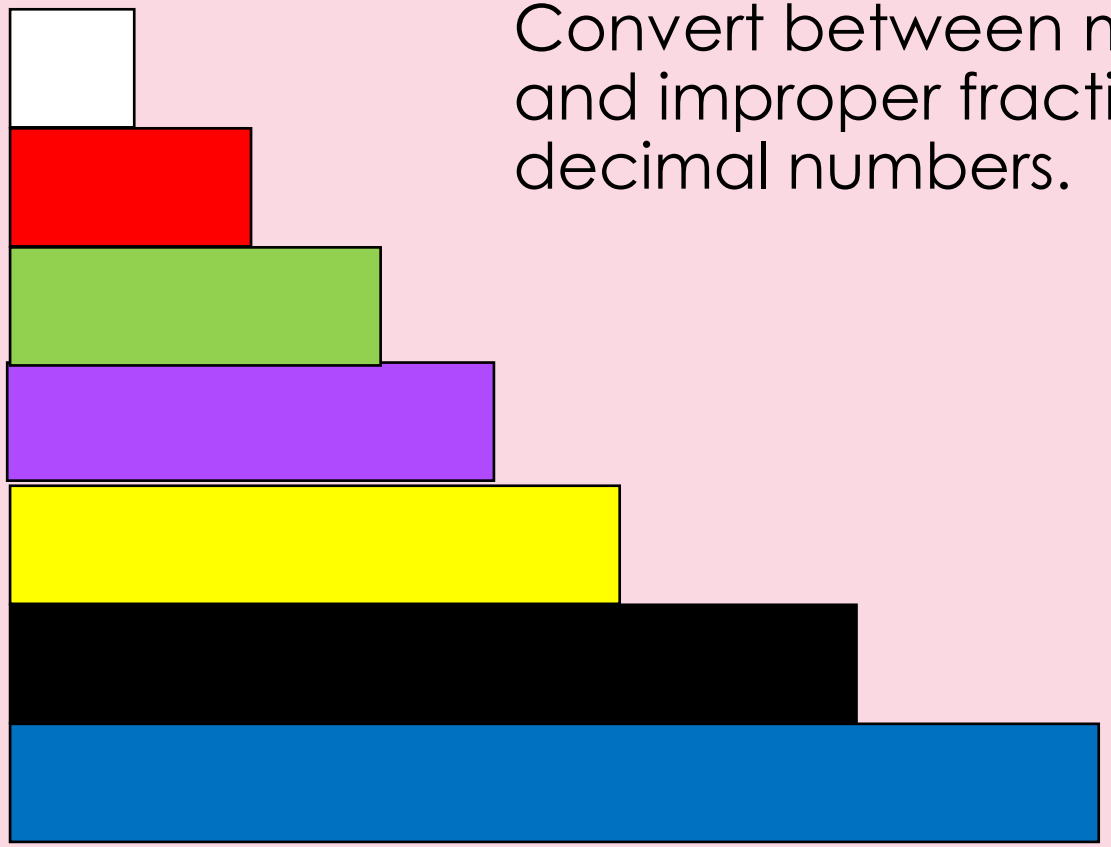
tenths

hundredths

thousandths

Improper fractions and mixed numbers

If the white rod has length $\frac{1}{2}$, what are the lengths of the other rods?



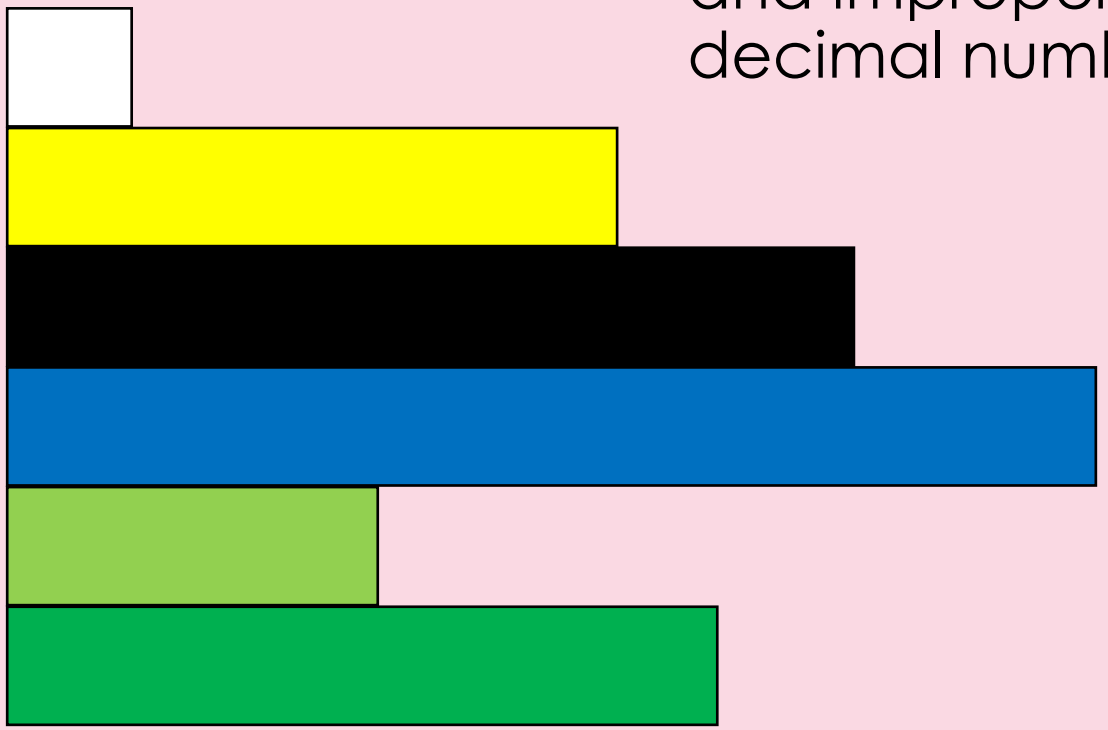
Convert between mixed numbers and improper fractions as well as decimal numbers.

New Learning

Improper fractions and mixed numbers

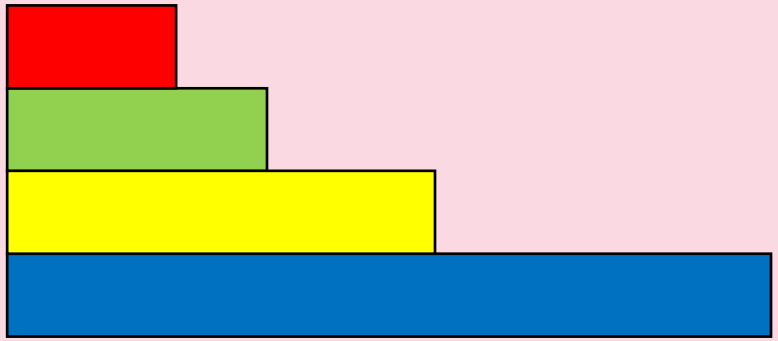
If the yellow rod has length 1, what are the lengths of the other rods?

Convert between mixed numbers and improper fractions as well as decimal numbers.

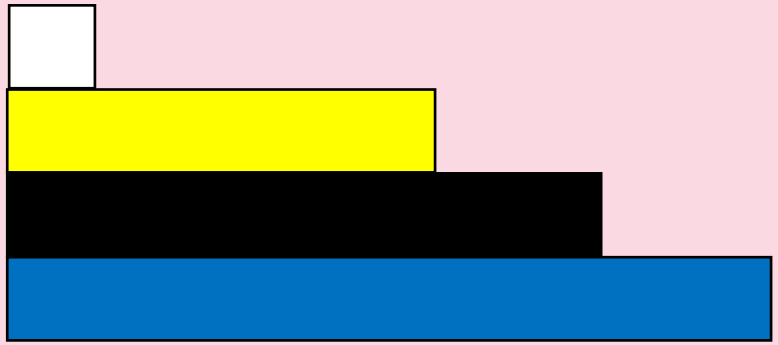


New Learning

Representing improper fractions



If the red rod has length 1, what are the lengths of the other rods?



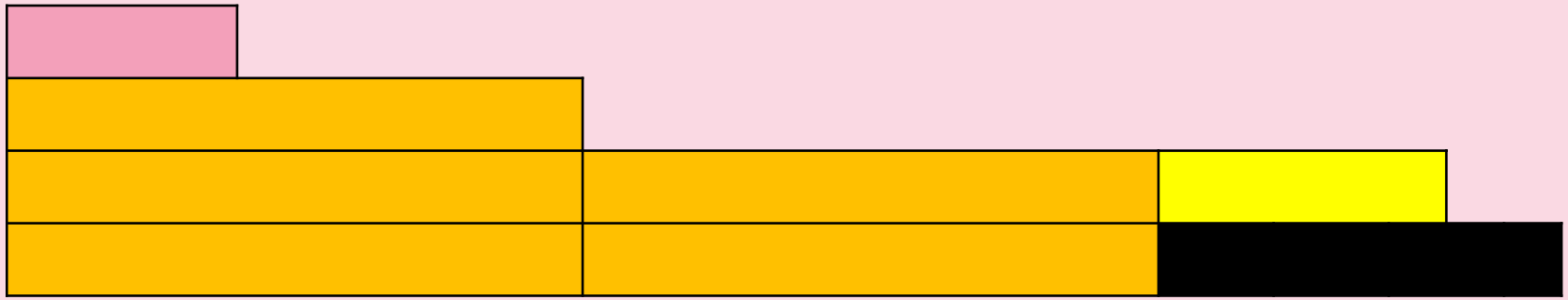
If the black rod has length $\frac{1}{4}$, what are the lengths of the other rods?

Record your answers as improper fractions, mixed numbers and decimal numbers.

Talk Task

Converting between improper fractions and mixed numbers

If the pink rod has length 1, what are the lengths of the other rods?



Convert between mixed numbers and improper fractions.

Develop Learning

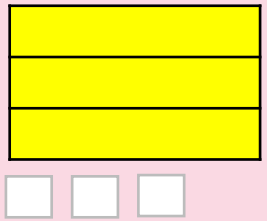
Converting between improper fractions and mixed numbers

Develop Learning

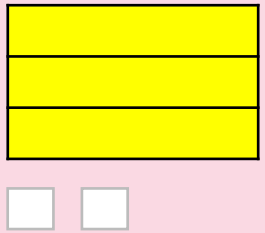
Is each statement true or false? What strategies could you use?

$\frac{18}{5} = 3\frac{2}{5}$

$5.25 = \frac{21}{4}$



$\frac{18}{5} \quad 3\frac{2}{5}$



$\frac{18}{5} =$

$3\frac{2}{5} =$

If a statement is false, change the symbol to make it correct and write two other statements of equality.

Key learning: To recognise and use mixed numbers and improper fractions

Improper fractions and mixed numbers

- Is each statement true or false? How do you know?
- If a statement is false, change the symbol to make it correct.
- What other statements can you generate?

$$4.2 = \frac{20}{5} \qquad \frac{33}{6} = 5\frac{1}{2}$$

$$3\frac{3}{5} = \frac{36}{10} \qquad 2.75 = \frac{20}{8}$$

Independent Task

I'm thinking of a number

I'm thinking of a number.

- It is greater than three.
- It is less than 3.25.
- It has three decimal places.
- It can be represented as $\frac{25}{8}$.

Plenary

I'm thinking of a number

I'm thinking of a number.

- It is greater than three.
- It is less than 3.25.
- It has three decimal places.
- It can be represented as $\frac{25}{8}$.

3.125

Plenary