| Edward Peake Church of England Middle School | | |
|---|---|---|
| **Topic: Fractions and Percentages** | **Year: 8** | **NC Strand: Number** |

| What should I already know? |
|---|
| • How to represent tenths and hundredths as diagrams |
| • How to represent tenths and hundredths on a number line |
| • How to interchange between fractional and decimal number lines |
| • How to convert fractions to decimals and vice versa ( tenths and hundredths) |
| • How to convert fractions to decimals and vice versa (fifths and quarters) |
| • How to convert fractions to decimals and vice versa (eighths and thousandths) |
| • How to use a number square to understand what percentage means |
| • How to represent any fraction as a diagram |
| • How to represent fractions on a number line |
| • How to identify and use simple equivalent fractions |
| • How to understand fractions as division |
| • I How to convert fluently between fractions, decimals and percentages |
| • How to explore fractions above one, decimals and percentages |

| What will I know by the end of the unit? |
|---|
| • How to convert fluently between key fractions, decimals and percentages |
| • How to calculate key fractions, decimals and percentages of an amount without a calculator |
| • How to calculate fractions, decimals and percentage of amounts using calculator methods |
| • How to convert between decimals and percentages greater than 100% |
| • How to calculate a percentage decrease with a multiplier |
| • How to calculate percentage increase and decrease with a multiplier |
| • How to express a number as a fraction or percentage of another without a calculator |
| • How to express a number as a fraction or percentage of another using calculator methods |
| • How to solve problems involving percentage change |
| • How to choose an appropriate method to solve percentage problems |
| • How to find the original amount given the percentage less than 100% |
| • How to find the original amount given the percentage greater than 100% |
| • How to choose an appropriate method to solve complex percentage problems |

| Vocabulary | | | |
|---|---|---|---|
| Fraction | Estimate | Reduce | Factor |
| Decimal | Rounding | Decrease | Round |
| Percentage | Conversion | Multiplier | Integer |
| Equivalent | Equivalent | Increase | Profit |
| Denominator | Hundredth | Growth | Loss |
| Numerator | Tenth | Express | Interest |
| Increase | Decrease | Reverse | Change |
| Multiple | Express | Invest | Original |

| Investigate/Homework tasks |
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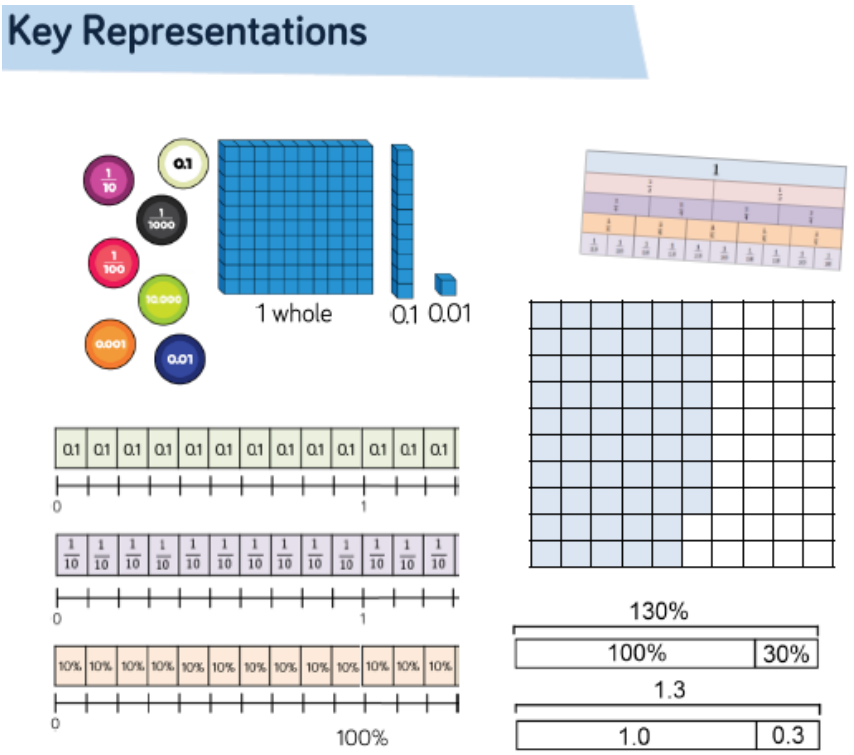
- Homework will be set by your teacher using google classroom
- You should complete at least 30 minutes of maths tasks using the website and log in provided by your teacher. Please attend help sessions if you do not have access to the internet at home
- Additional work you could complete:
  - Find out more about the meaning of the vocabulary list using http://www.amathsdictionaryforkids.com/
- To challenge yourself: Answer the key questions to deepen your knowledge

## Key Information/Diagrams




## Key Questions

Why do we use all three representations of fractions, decimals and percentages?
Explain why one third is not the same as 0.3 or 30%
Can you draw a diagram to show the meaning of 0.7?
Which is greater in value 0.5 or 50%?

Explain how to find $\frac{3}{7}$ of an amount.
Is it possible to find $\frac{6}{5}$ of a number? If so, how?
Explain why is it that when we divide an amount by 10 it gives 10%, but if you divide by 20 it does not give 20%?
Is it true that 45% of 60 is equal to 60% of 45?
Does this work for other pairs of numbers?

How do you use the percentage key on your calculator?
How does this compare to using decimal equivalents?

How do you use the fraction key on your calculator?

What keys could you press to find 23% of 45?

Why can we convert quarters, fifths and tenths easily to a percentage but not thirds?
Why can't we compare a mark out of 20 and a mark out of 25 directly? What are the factors of 100?
Is it possible to convert fortieths to hundredths?

Why is 0.3 the same as 30% and not 3%?
Is it possible to have a percentage greater than 100?
How might 140% look like as a decimal multiplier?
Why does multiplying a decimal by 100 give you an equivalent percentage?
How can you order mixed decimals and percentages?

Why is decreasing by 46% the same as finding 54%?
If I am multiplying by 0.2 why is this an 80% decrease?
What mistakes might happen if we are decreasing by 1.5%?
What happens if I decrease an amount by 0%?
What does the word 'discount' mean?

When increasing an amount by a given percentage, how do we calculate the multiplier?
What is the percentage increase if you double a number?
Will a number always get bigger if we increase it by a given percentage?
Can you represent this question with a bar model?

Why might we need a calculator to calculate the percentage of a test mark out of 30, but not for a mark out of 50?
How do we use a calculator to convert a fraction to a

How can you represent this problem using a bar model?
How can you tell if a question involves finding an amount before a percentage change? How does this affect your approach to the question?

Is the original value greater than or less than the given amount? What percentage is the original amount?
How can we represent this using a bar model?
From the percentage given, what other percentages can we easily work out?
How can we build on these to find 100%?

What's the difference between profit and loss?
How can you represent this percentage change question on a bar model?
Why is it important to identify the original amount before doing the calculation for percentage change questions?

Is the amount given more or less than the new amount?

How can we represent this on a bar model?

What is the same and what is different between these two bar models?

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Why is 0.3 the same as 30% and not 3%?
Is it possible to have a percentage greater than 100?
How might 140% look like as a decimal multiplier?
Why does multiplying a decimal by 100 give you an equivalent percentage?
How can you order mixed decimals and percentages?

Describe the different calculation processes involved in these questions.
How can you represent this on a bar model?
What is the same and what is different in these questions?
What type of percentage question is this problem?
How can you tell?