Hillcrest School and Sixth Form

Department of Mathematics

KNOWLEDGE ORGANISER

**KEY WORDS and INFORMATION**

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**Index** – *synonym* ‘power’, indicates the amount of times you multiply a number by itself; e.g. **NOT**

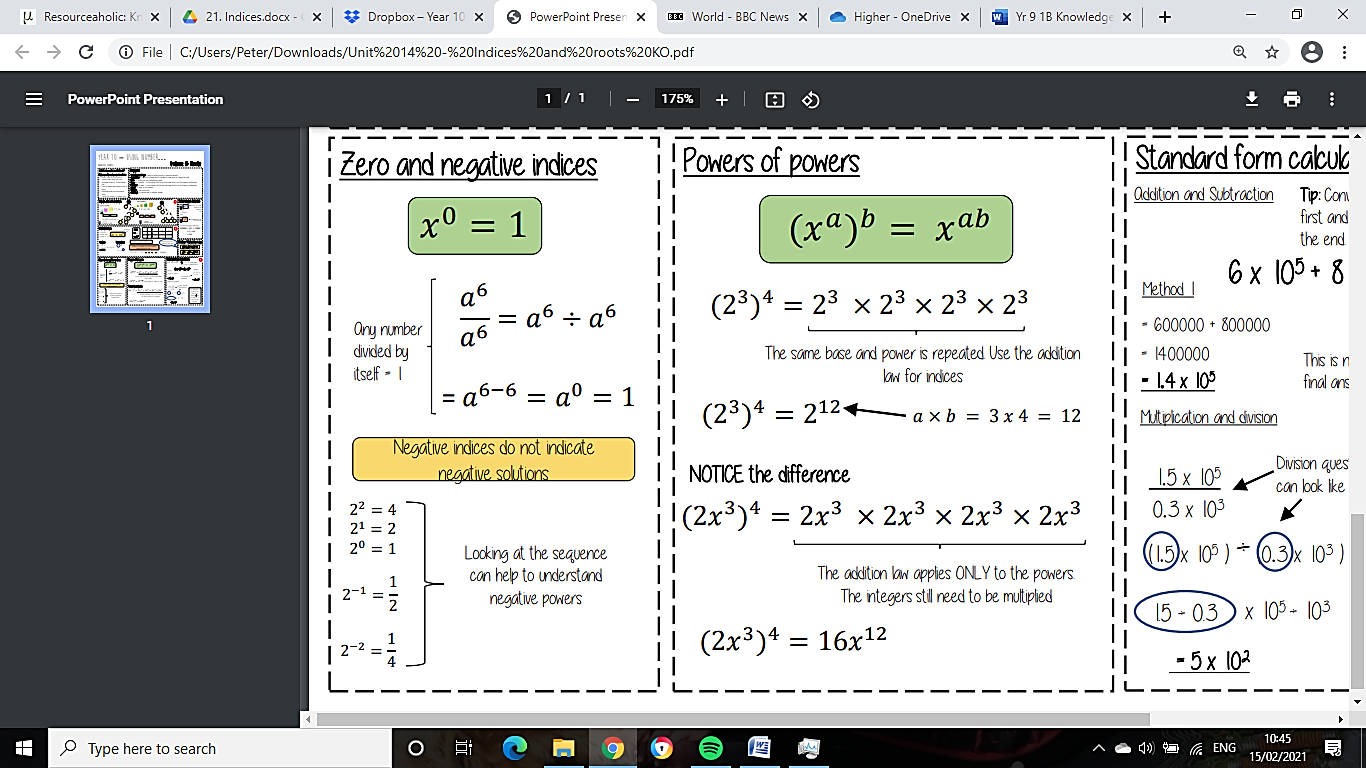
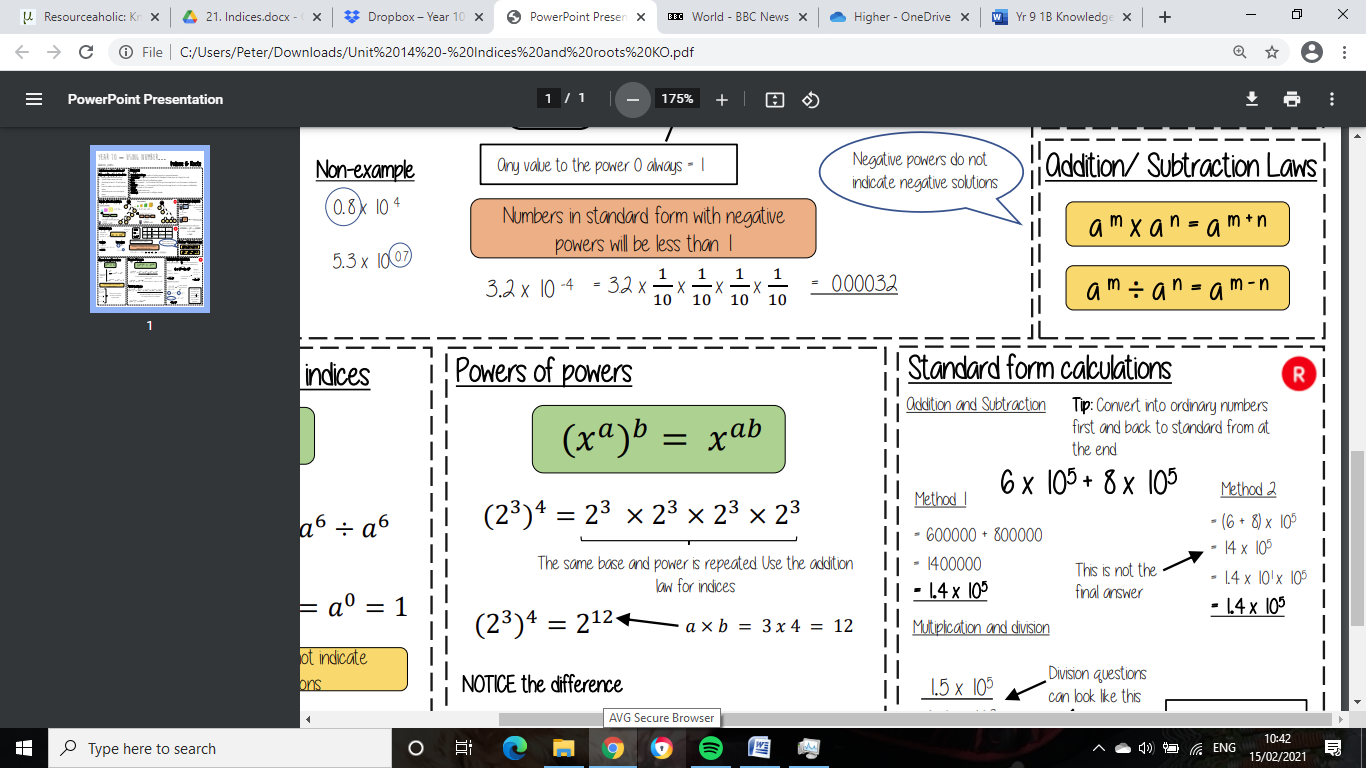
**Standard Form** – A scientific way to numbers, usually used or very large or very small numbers; of the form

**Percentage** – symbol , represents a proportion out of 100. Percent is from the Latin phrase *per centum* meaning “by the hundred”.

**Multiplier** – a decimal form for percentage increase and decrease. For example, a percentage increase of 5% has a multiplier of 1.05 (100% + 5% = 105%, 105100 = 1.05, the multiplier). 12% decrease has a multiplier of 0.88.

**Growth** – in mathematics, ‘growth’ often refers to something getting bigger by a repeated proportion. For example, 20% growth year on year is found my multiplying by 1.2 (the multiplier) for every year.

**Decay** – in mathematics, ‘decay’ often refers to something getting smaller by a repeated proportion.

YEAR 9 TERM 2B – REASONING WITH NUMBER:

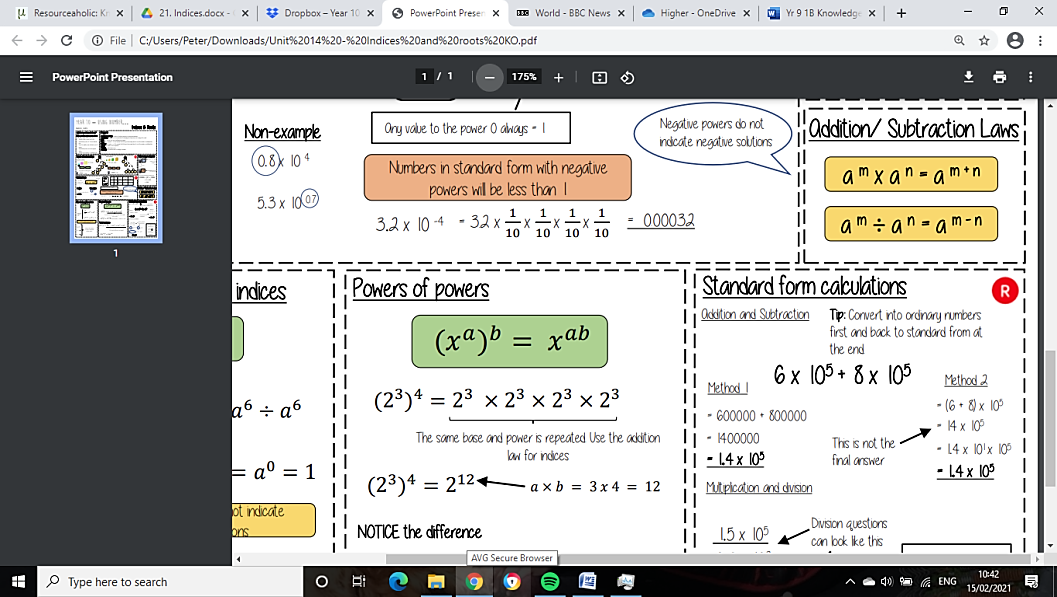
INDICES, STANDARD FORM,

“GROWTH AND DECAY”

(COMPOUND AND REVERSE PERCENTAGES)

**OUTCOMES**

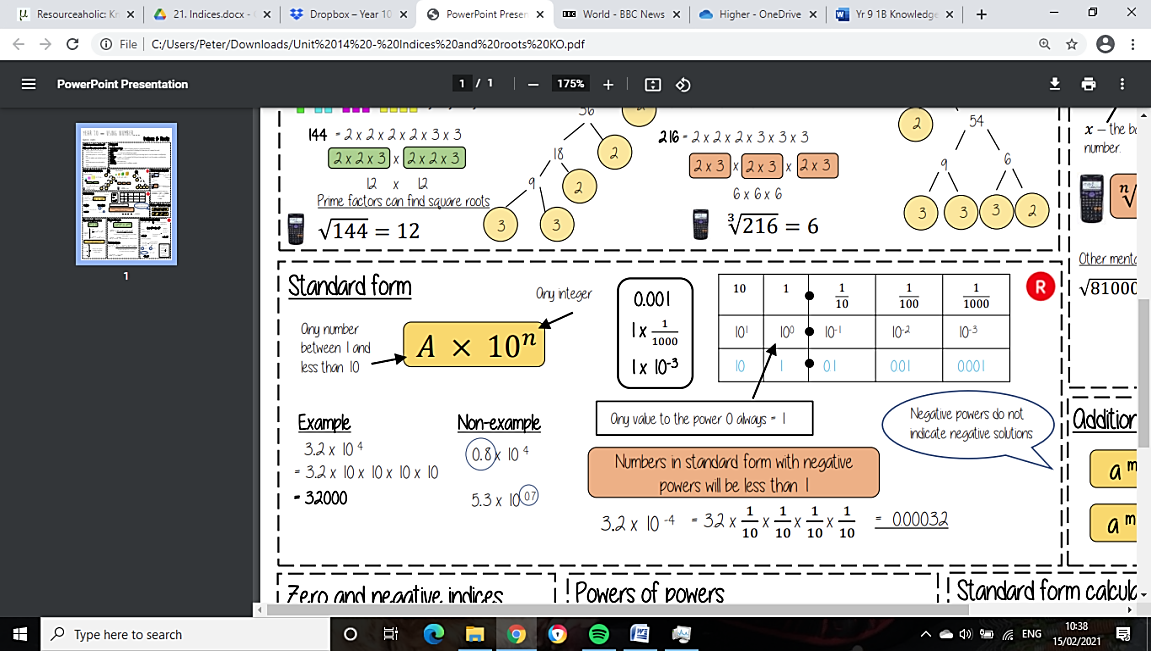
* Index notation
* Linking powers and roots
* Laws of indices
* Fractional and negative and zero indices
* Converting into and out of standard form
* Comparing the size of standard form numbers
* Calculating with standard form numbers
* Compound percentage growth
* Reverse percentages
* Calculator use for indices and standard form



**Reverse percentages** – starting with the final amount and calculating the percentage change that must have been applied to get there.

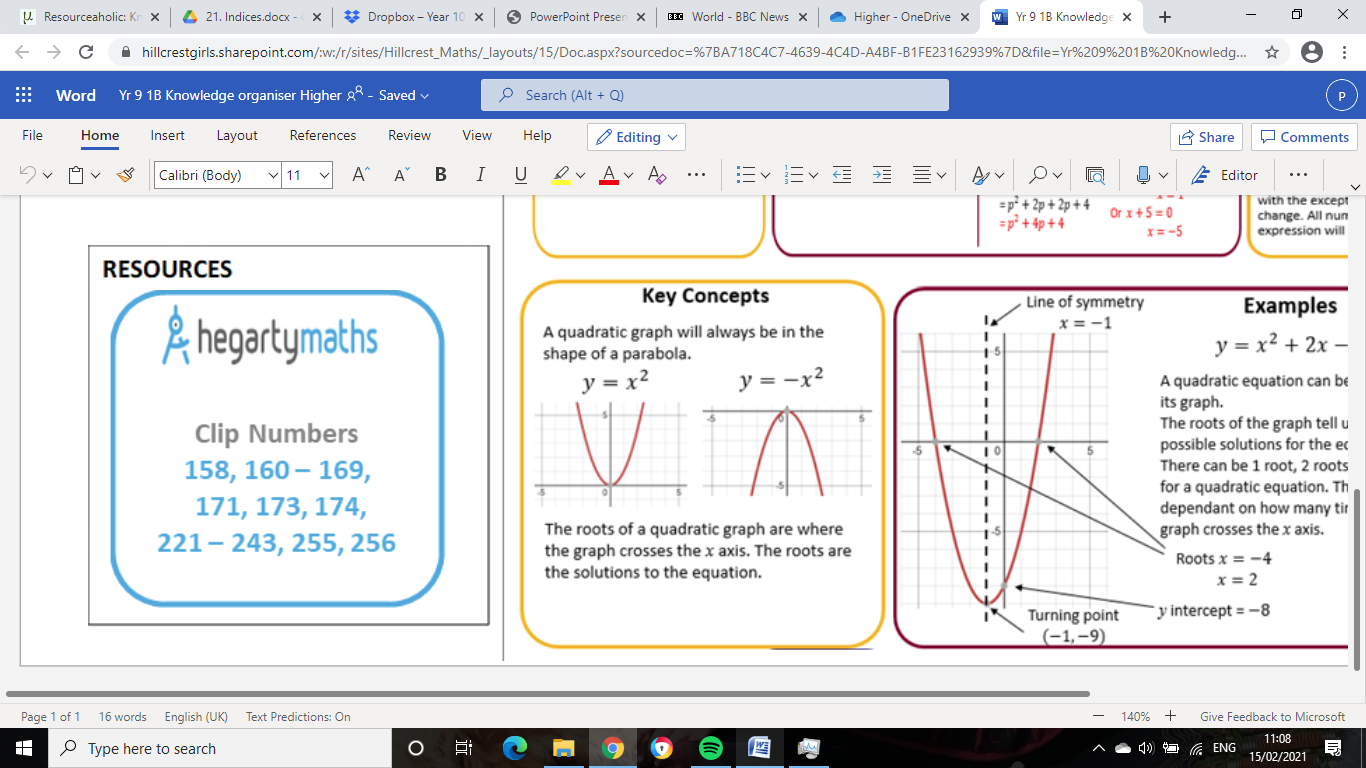
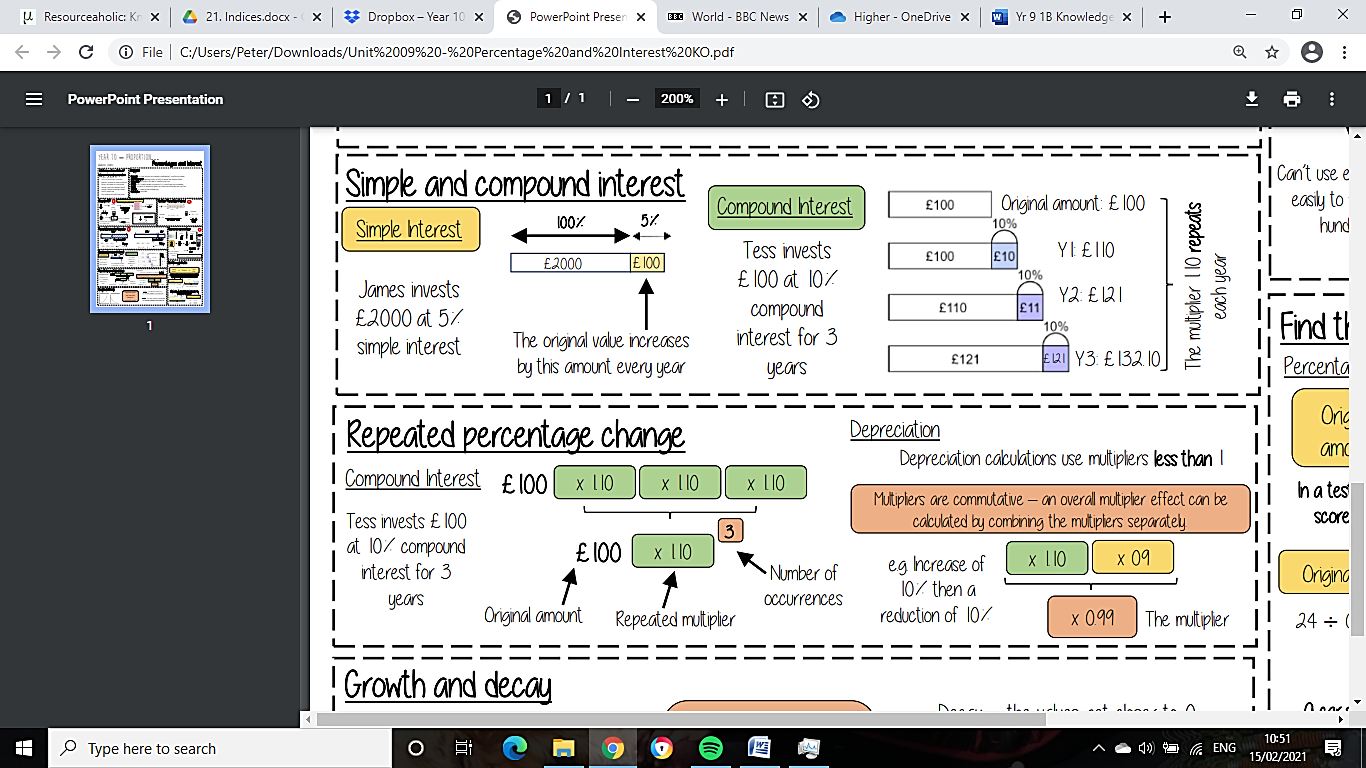
**Interest** – is the amount earnt on an investment (money goes up). If you borrow money from the bank, you have to pay interest on it (so you end up paying back more than you borrowed).

**Depreciation** – how much something goes down in value. For example, a car may depreciate by 10% per year, so at the end of each year it is worth 90% of the value at the beginning of the year.



**Simple interest/depreciation** – a percentage increase or decrease of the same amount every year

**Compound Interest/depreciation** – a percentage increase or decrease based on the starting value that year.



**RESOURCES**

Indices – 102 to 110

Standard form – 121 to 128

Percentages – 90 - 97