

# THE INDEX CHALLENGE

## Introduction

The purpose of this activity is to introduce the concept of **index numbers** and to illustrate how index numbers are calculated.

You will play a game where you convert onscreen letters into words. Your word will be given a raw score which you will then convert to an index number.

Index numbers are a useful way of expressing data time series and comparing/contrasting information. An index number is a figure reflecting price or quantity compared with a base value. The base value always has an index number of **100**. The index number is then expressed as 100 times the ratio to the base value. **Note** that index numbers have no units e.g. £, Euros or \$.

### How to calculate a raw score

Onscreen you will see 10 randomly generated letters – six consonants and four vowels. Your task is to find a word using only those 10 letters. Your teacher will set some criteria for these words (for example they may prevent you using proper nouns or slang) and give you a time limit for deciding on your word.

Under each letter on screen you will see a score for that letter if it is used.

When you have found a word calculate your score by adding together the value of all the letters that you have used and then multiplying this sum by the total number of letters used.

For example, if you had found the word BUMP, your score would be...

$$(3 + 1 + 3 + 3) \times 4 = 40$$

### Calculating an index number

In round 1 of the game, you do not need to calculate the index number equivalent. Round 1 will be considered the 'base', so your score is simply converted to the number **100**.

In all subsequent rounds, however, your index score should reflect the change in value of the raw scores in comparison to round 1.

For example, if in round 2 you found the word KINGS, your raw score would be...

$$(5 + 1 + 1 + 2 + 1) \times 5 = 50$$

Your new index number for round 2 would reflect the change.

So, the difference between the 2 rounds is (50 – 40) 10. 10 as a percentage of the original raw score is...

$$10/40 \times 100 = 25$$

So, your index number for round 2 would show the increase in 25. The new index number would be...

$$100 + 25 = 125$$

If your new raw score is less than the original, the number would be subtracted from 100.

For example, if you found the word PRINT, your score would be...

$$(3 + 1 + 1 + 1 + 1) \times 5 = 35$$

Converting this would require working out the difference (40 – 35), 5, and then the percentage change. So...

$$5/40 \times 100 = 12.5$$

Because the round 2 raw score is lower than round 1, we subtract the 12.5 from the base score of 100. So...

New index number would be...

$$100 - 12.5 = 87.5$$

## Record your scores

Round 1			Round 2		
Word	Score	Index	Word	Score	Index
		100			

  

Round 3			Round 4		
Word	Score	Index	Word	Score	Index

## Letter values

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>L</b>	<b>M</b>
1	3	3	2	1	4	2	4	1	8	5	1	3
<b>N</b>	<b>O</b>	<b>P</b>	<b>Q</b>	<b>R</b>	<b>S</b>	<b>T</b>	<b>U</b>	<b>V</b>	<b>W</b>	<b>X</b>	<b>Y</b>	<b>Z</b>
1	1	3	10	1	1	1	1	4	4	8	4	10