Percentages in our life

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Around the year 1260, the philosopher Roger Bacon wrote: “ Mathematicsis the door and the key to the sciences... for the things of this world cannot be made known without a knowledge of mathematics”. Centuries later this is as true as ever. Mathematics is unique. It is both a beautiful and fascinating world of abstract structures and ideas and a down-to-earth, practical subject at the heart of modernscience and technology.

Much of its attraction comes from studying the relationship between theory and practice – an elegant theorem on complex functions, for example, also governs the lift on an aircraft wing, and apparently highly abstract algebraic results have important consequences in data security. There is one of the way to express how large/small one quantity is, relative to another quantity in math we use percentage. A percentage is a part of something expressed as a value out of a hundred. Percentages are an important part of our everyday lives. Some examples include: sales and discounts interest rates percentage chance of rainfall xam results statistics and survey results sports statistics. Percentage is a very handy way of writing fractions. Percentages can be compared more easily than fractions(fraction (from Latin: fractus, " broken") represents a part of a whole or, more generally, any number of equal parts, for example, one-half, eight-fifths, three-quarters). A percent can always be written as a decimal, and a decimal can be written as a percent, by moving the decimal point two places to the right. The history of percentages goes back to the ancient Egyptians who wrote numbers (based on tens) alongside pictures called hieroglyphs. The idea of ?? xpressing parts of the whole are constantly in the same proportions, due to practical

considerations, was born in ancient times from the Babylonians, who used the sexagesimal fractions. Already in Babylonian cuneiform tables are problems on the calculation of interest. Interest and have been known in India. Indian mathematicians calculated the percentages, using the so-called rule of three, that is, using a proportion.

Examples:

1. To calculate a percentage value from absolute numbers. Peter scores 25 out of 32 in an exam, what is his result as a percentage? To calculate Peter’s percentage score it is necessary to change '25 out of 32' into '? ut of 100'. So: 25/32=? /100 This is done by multiplying the actual score by 100: 25/32 x 100 = 78% So 25/32 is the same as 78/100 So John got 78% in his exam.
2. To calculate the true value a percentage represents. A camera normally costs ? 120 but in the sale it has been reduced by 15%. How much discount does this represent? (ie 15% of 120) 15% of 120 = 15 'out of 100' of 120. 15 'out of 100' can be written as 15/100 So: = 15/100*120 = 0. 15*120 = 18 Therefore 15% represents ? 18 discount on the camera, the sale price being ? 102 (? 120 less discount ? 18).
3. To calculate percentage increases and decreases. Percent increase and percent decrease are measures of percent change, which is the extent to which something gains or loses value. Percent changes are useful to help people understand changes in a value over time. Let's look at example of percent increase and decrease. A particular brand of milk cost 35 per bag last week. This week it costs 42 per bag. By what percentage has the price risen? Percentage increase = Actual

increase/Original value x 100 In these example: actual increase = 42 - 35 = 7 original value = 35 Therefore: Percentage increase = 7/35 x 100 = 0. 2 x 100 = 20% The price has risen by 20%.

4. To compare or combine results with different base values Dina sat two exams last week. In science she scored 68 out of 100. In maths she scored 39 out of 60. Which subject did she do the best in? This is not instantly clear. The results would be easier to compare if they had the same base - ie they were both 'out of' the same number. The easiest way to do this is to change them both to percentages. Use the same method as with Peter's exam results earlier. Make them both 'out of 100'. Science: 68 out of 100 = 68% This one is easy because the mark is already out of 100. Maths: 39 out of 60 = ? ut of 100 39/60 x 100 = 65% So, Dina did better in her science exam than her maths exam.
5. Percentages more than 100% This can seem confusing. Sometimes 100% represents a whole one. For example, in exams you can’t do any better than 100% as this represents all the marks available. Likewise when looking at percentage chances, there can be no more than a 100% chance of rain. This represents a certainty. However, there are other situations where you can use percentages that are more than one hundred. For example, a country experiencing hyper-inflation can have an inflation rate of, say, 300%. If you think of this as 300 'out of a hundred', this may seem impossible. However, you could think of it as 300 'for every hundred' and then it makes more sense. After all, any percentage gives a score 'for every hundred'. An exam result of 68% is 68 correct answers for every hundred questions. Looking back at the inflation situation, you now need 300 more units of currency for every

hundred units you needed before. If you are not sure whether you can use percentages greater than one hundred in a particular situation, the best way to check is to invent some numbers or an example and see if the result is sensible.

6. A table normally sells for J750; in a sale it is reduced by 180%. Does this make sense? First, what is 180% of 750: 180% x 750 = 1350 So, how much would the table be in the sale (750 – 1350 = - 600)? As the table cannot be sold for less than nothing, it does not make sense, percentages greater than 100 cannot work in this situation. b) A shoe manufacturer sells 10, 000 pairs of trainers in the month of May. During the World Cup demand increases and by August sales have risen by 180%. Does this make sense? First work out 180% of 10, 000: 180% x 10, 000 = 18, 000

So the manufacturer sold 18, 000 more pairs of trainers in August than in May. This would mean that sales of trainers in August totalled 28, 000 (10, 000 + 18, 000). This does make sense, so percentages greater than 100 can be used in this context. Why do we use percentages? The use of percentages in many financial situation is so natural that is is worth spending a few moments considering why this is so. If you need to divide something up into portions so that each person gets an appropriate share of the whole then percentages are a good way to go about it.

If a pie is divided into two parts so that A gets twice as much as B then the appropriate percentages are 66. 66% and 33. 33%. As long as the pie is shared out into these percentages the two-to-one ratio will be maintained. When relative importance is gauged as a ratio then a percentage allocation

is appropriate. However notice that as the total amount to be divided increases the absolute gap between what A and B receive increases. This property of a percentage increase/decrease of keeping ratios fixed is less arguably appropriate when what is being shared is less obvious. For example. f A and B work for an hourly rate of $20 per hour and $10 per hour then a percentage wage rise of 10% will keep the two-to-one payment the same at $22 per hour and $11 per hour. However the differential between the two rates of pay has jumped from $10 to $11. If a percentage increase is repeatedly applied the differential between the hourly rates goes on steadily rising even though the two-to-one ratio remains unchanged. This isn’t necessarily wrong but it is important that all concerned understand that a percentage increase or decrease keeps existing ratios fixed but changes absolute differences.