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| Percentage Increase and Decrease | |
| Suggested year group | Year 10 (Intermediate/Higher Tier) |
| Suggested time scale | 1 hour |
| Learning objectives | Calculating *(fractional and)* percentage changes (increase and decrease), including the use of multipliers. |
| Learning outcomes | Learners will be able to match a decimal multiplier with the correct verbal description of a percentage increase or decrease.  *(In addition, learners may also match the correct fractional multiplier).* |
| Prior knowledge | Finding the percentage of an amount.  *Converting between fractions and decimals.* |

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| PPT Slide | Teacher Activity | Learner Activity |
|  | Distribute task sheet at the beginning of the lesson.  Facilitate whole class discussion about strategies used to fill in the table. | On arrival to the lesson and without a calculator, learners should complete as much of this task as possible within the allocated time.  Learners to share with the whole class their methods and strategies for filling in the table. |
|  | Ask the questions:  ‘How much will you save?’  ‘What is the sale price?’  ‘Do your final answers make sense?’ | Learners to work in pairs to calculate the amount saved and the sale price. Learners to reflect upon the validity of their answers. Calculator allowed. |
|  | Share the learning objectives. | Discuss the learning objectives. |
|  | You may need to offer some support such as suggesting that learners use calculators or prompt them to think about what happens when you multiply by a number between 0 and 1.    Learners often start this task by stating that it definitely isn’t ‘1.23 x 70’. Allow them time to process this and eliminate the other two options. This promotes a deeper understanding of the process. | Learners to work in groups to identify the correct calculation for the question, note their chosen answer and give a full and detailed explanation of why this calculation works.  Extension: learners can check their findings through creating their own similar questions. |
|  | Ask learners to repeat the previous task but this time with a percentage decrease.  Facilitate a whole class discussion to share findings from both investigations.  Use the next 2 slides as brief repetition and consolidation of the class findings. | In small groups, learners are to investigate the decimal multiplier for a percentage decrease.  Share findings with the class as a whole and listen to peers thoughts and ideas.  Answer the questions on the next 2 slides to check understanding. |
|  | Ask the learners to attempt the matching activity.  Encourage the learners to take an organised approach to this task. They should think systematically and to sort the cards first (e.g. group the multipliers greater than one separate from those less than one). | Attempt matching task to embed the techniques discovered.  Extension – matching fractional equivalences to the decimal multipliers. |
|  | Display solutions and ask learners to peer asses. | Peer assess using the answers on the PPT slide. Learners to identify one positive comment and one target for future learning. |
|  | Ask ‘Which would you prefer?’ This question should to be set as a thought-provoking question and NOT to be discussed during this lesson. Rewards could be given to the learner with the best explanation next lesson. | Learners are to consider the question in their own time and come to their own conclusions. Give feedback on this next lesson. |

Resources required:

*‘In Your Head’ worksheet ‘Matching Task’ worksheet Calculators*