**Column of pounds**

The aim of this activity is to give learners practice in problem solving using a range of measuring skills including weight and length in a very practical way.

It will also be an opportunity to incorporate assumptions and planning skills.

**Level**: Entry 3 – level 1

**What do I need?**

* Calculators
* Rulers
* Tape measures
* Accurate scales
* Flipchart paper

**How is it used?**

Being in no particular context it should be applicable to all learners but could be contextualised as a further activity. This also means that once completed, the skills and processes practised within the task can be identified and discussed to see where they might be used in other, more practical situations.

I have used this task as an activity during the teaching of measurement to reinforce the conversion between units of measure and to bring in a practical context. I often have the learners decide on something other than coins to compare like £5 notes or stamps.

The numeracy skills in this task are level 1 but even entry 3 learners should, with a little support, be able to complete this task. I have used it in a mixed group with the stronger learners paired up and given further challenges on top such as what height / weight would someone need to be to make it equal?

Arranging the learners into pairs or small groups and asking them to write their annotated calculations and results onto flip chart paper and explaining this to the group, will help them to get into good habits when answering assessment papers.

Some of the useful functional skills that this can be used to highlight and practice are:

* Making a plan of a task – Representing
* Deciding on levels of accuracy required and effect of rounding on the outcome – Analysis of the data
* Assumptions – e.g. could you pile coins that height without them falling over
* Annotating the calculations to show how the maths solves the problem
* Communicating the process to others

To make sure you are practising the functionality of the learners’ maths skills, the numeracy skills required should be checked beforehand to make sure a weakness here is not a barrier to tackling the problem, or be prepared to support the maths so the problem solving is the challenge.

**Misconceptions and common errors:**

Weaker learners may not see the process of planning the task as necessary or useful.

Visualisation of very large amounts – this will become clear when choosing the weight or column.

Confusion between switching from units.

Reading various measuring tools and scales accurately / correctly

Barry Gear

**Lesson Plan**

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| **Time** | **Content** |
| 5 - 10 minutes  | * **Review understanding of measurement** – confirm learners are comfortable using a range of measuring tools such as rulers, tapes and tape measures and scales. Also that they are able to convert between units of length and weight – possibly imperial and metric.
* **Review understanding of area and measurement** – including the importance of using the correct units and level of accuracy required for the task.
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| 15 minutes | 1. **Introduce the task** – Would you rather have a column of £1 coins as tall as ‘whoever’ or the weight of them in 5p pieces?

*You could use yourself, another tutor, someone in the class, but obviously be aware of sensitivity – I have done this with learners in pairs using each other but it needs to be carefully thought out.*Collect some guesses and record them – *try to ask the questions, why? how? To elicit some justification behind the suggestions*.1. **Ask: how could we find out which is the greater in value and what information we need?** *– I usually get the learners into pairs or small groups here to work independently with support and encouragement as they develop their ideas and record them as part of their plan*.
2. **Ask: How will we get this information?** What equipment do we need?
3. **Ask the pairs/groups to write up a plan** with the calculations they need to do to reach a conclusion.
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| 20 minutes | **In their groups, the learners can now start to follow their plan**, weighing the person and the 5p and measuring a £ coin and the height of the person.***It may be helpful to know that the thickness of a £1 coin is 3.15mm, and a 5p coin weighs 3.25g***Learners should follow their plan, adapting it if necessary, and do the required mathematics to find two amounts and compare. |
| 15 minutes | **Who was correct with their guess?*** Draw the class together and compare results and methods.
* Ask them to display their results on the flipchart paper and discuss amongst the group
* What assumptions have been made?
* How would this be used in the ‘real world’ and what skills could be used in other tasks
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These extensions are optional.

They could well be used as another session to follow on or at a later date

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|  | **Content** |
|  | Is there a height and weight where the amounts would be equal?How could we find out? |
|  | What do you think the result would be if we used £5 notes for both?This could be done as a planning exercise and searching for the weight and thickness of a £5 note on the internet reveals some interesting maths facts. |