



# The Use of Weighing Scale in Determining Ascending Or Descending Order of Fractions: A Practical Approach

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## ABSTRACT

This paper talked about a practical approach in arranging fractions in ascending or descending order by the use of a weighing scale. Materials used include molded clay of different sizes and a scale balance made of wood, graduated rule, strings and two bowls. The method intends to achieve, the three domain (cognitive, affective and Psychomotor) of the learner, interest building in the subject on the part of the learner, catching the attention of the learner and learner's participation.

**Keywords:** Ascending Order, Descending Order, Learner's Interest, Learner's Attention, Learner's Participation, Clay and Weighing Scale (Weighing Balance).

## INTRODUCTION

Learning is composed of the learner, the guardian, the teaching materials, learning materials and the environment. The learner is someone who is learning about a particular subject or how to do something (Collins Dictionary,2018) and to achieve that he must be a good listener and a quick learner (the Sun,2016). The guardian referred to the Teacher as one who helps others to acquire knowledge (Guardian-Wikipedia, 2018).

Teaching materials are the tools which the teacher uses in helping students to learn a foreign language through visual or audio perception. Good teaching materials will help greatly to reinforce the students' initial desire to learn the language and to sustain their enthusiasm throughout the course, (Teaching Materials-Wikipedia, 2018).

Cognition according to Google (2019), is a process of thinking that involves identifying, understanding and perceiving of knowledge. In Affective domain, SERC-Carleton (2019) said "...We want to find teaching methods that encourage students and draw them in. Affective topics in educational literature include attitudes, motivation, communication styles, classroom management styles, learning styles, use of technology in the classroom and nonverbal communication. SERC-Carleton (2019) added that it is also important not to turn students off by subtle actions or communications that go straight to the affective domain and prevent students from becoming engaged. Leslie (2019), sees Psychomotor (Kinaesthetic) Domain as those specific objectives that deals with discreet physical functions, reflex actions and interpretive movements, where the gross and fine muscles are used in expressing concepts.

The process of knowing the order of fractions involves Ascending order, Descending order, learner's interest, attention and participation, use of clay and Weighing Scale (Weighing balance).

Rayna (2019), making Ascending Order definition explicit, started with a question, “have you ever heard someone count from 1 to 10 or 1 to 50?, he said, this type of counting is called ascending order, which involves arranging a group of numbers from the smallest to largest”. Rayna (2019) also defined descending order as a countdown starting with the largest number then decreasing down to smallest number. He cited practical example of a basketball game where everyone counts down the last ten seconds of the game starting with 10 to 0. The order is either in sequential or non-sequential order.

On the Learner, McCarthy (2014) focused on Interest and said, the ‘student’ interest in a topic holds so much power. When a topic connects to what the student like to do, engagement deepens as he willingly spends time thinking, dialoging, and creating ideas in meaningful ways. On the other hand, Vohra (2015), posited on Learner’s Attention, that the world is full of distractions and that is very important to grab the attention of the Learner. The author went ahead reflecting on Gagne’s nine events of instruction, saying “Gain Attention” should be the first key step to consider when designing a training program/ course. The idea behind this is to grab the Learner’s attention...the first few seconds/minutes of a program plays a crucial role in deciding the fate of the learner. The Learner, if his attention is not gained at the first few seconds or minutes, he may leave the training in the middle or click “next” continuously to complete the program, if the first impression is not positive; and at the end, the great Instructional Design Strategies may fall on deaf ears. In Learner’s participation (2019), Education Scotland, Foghlam Alba, stated that there is consideration evidence from research supporting the view of learner participation; that it makes for effective policy making, enhances school life and improves a range of outcomes for learners. The article further indicated that a recent Scottish study has shown that schools achieving better than their expected examination results, have given their catchments in areas of deprivation, where all schools are making comprehensive efforts in addressing learner participation across school life.

The role of clay in this practical approach can’t be overlooked. The perception “Clay Station, Sadashivanagas” 2018, had on clay is that, “anything is possible with a ball of clay and imagination. As the sun streams into our rooftop studio, we explore the infinite possibilities of clay with you, through hand modeling and on the wheel. We’re different things to different people”. To this practical approach, a ball of clay is a weight of different sizes.

In identifying scales, Huebsch (2019) saw weighing scales as devices used in measuring weight and/or mass of object. Huebsch (2019) further stated a report of United State Department of Agriculture that dozens of types of scales exist, but that the simplest scale uses a bean and a pivot to balance the weight of one known object with another. To Huebsch (2019), the original intent of scales developed were to facilitate accurate commerce in trade routes but thanks to research, scales are now critical parts of the work of medical and scientific professional areas, beside the commerce. And that has informed this article in using the weighing scale to determine the ascending or descending order of fractions.

## **METHODOLOGY**

### **Materials**

Materials needed are a big weighted clay object, smaller weighted clay objects, numbering from 1 – 9, a scale balance with graduated rule from 1 to 10 calibration, two smaller pans and a cloth bag (to contain the clay balls).

The fractions given for the practical are collected, i.e  $\frac{3}{4}, \frac{2}{3}, \frac{5}{6}, \frac{1}{3}$  and  $\frac{1}{2}$ . The LCM of the fractions is 24; meaning the LCM of the denominator of the fractions given will first be calculated before the practical starts. One clay ball, weighing 24kg and five small clay balls, weighting 1kg each are kept in the bag. The 24kg clay ball from the bag is placed in one of the scale pan and the number of small balls representing the numerator of the fraction is placed in the second pan and the scale will read off. This will be done for all fractions that are to be arranged.

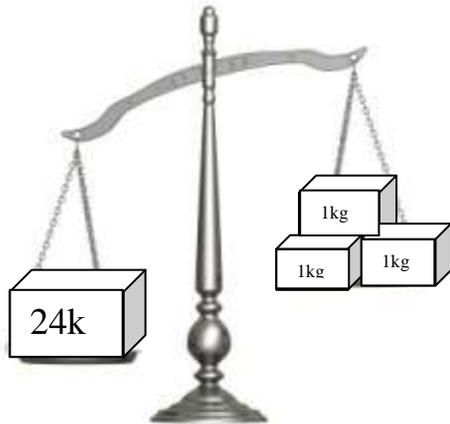
See sample below on the following fractions;  $\frac{3}{4}, \frac{2}{3}, \frac{5}{6}, \frac{1}{3}$  and  $\frac{1}{2}$  that are to be arranged in ascending order.

### The Practical Approach



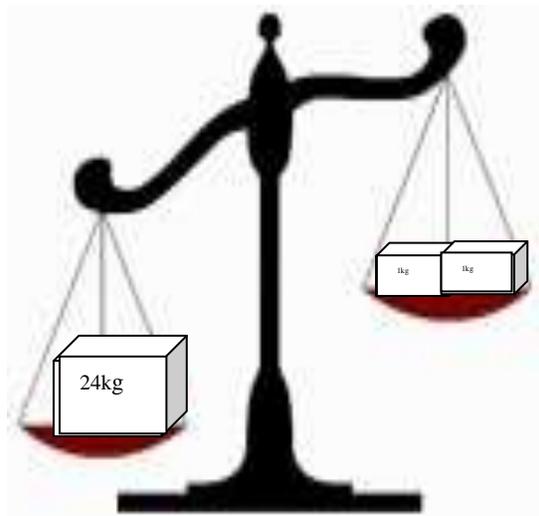
**Figure I: The weighing Balance**

*Interpretation:* The scale above is the Instructional material used in measuring the different fractions to be placed in their order of ascending or descending.



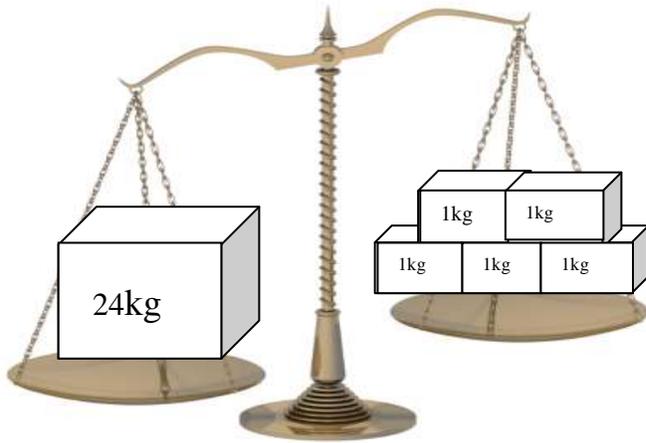
**Figure II: Weighing  $\frac{3}{4}$  of the Whole**

*Interpretation:* The scale above demonstrates the placement of the fraction  $\frac{3}{4}$  in the order of the scaling among other fractions.



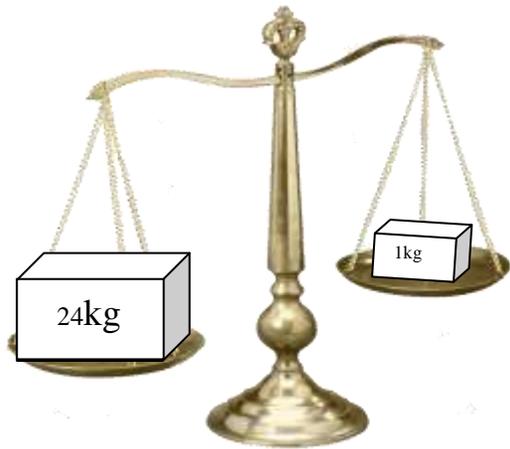
**Figure III: Weighing  $\frac{2}{3}$  of the Whole**

*Interpretation:* The scale above demonstrates the placement of the fraction  $\frac{2}{3}$  in the order of the scaling among other fractions.



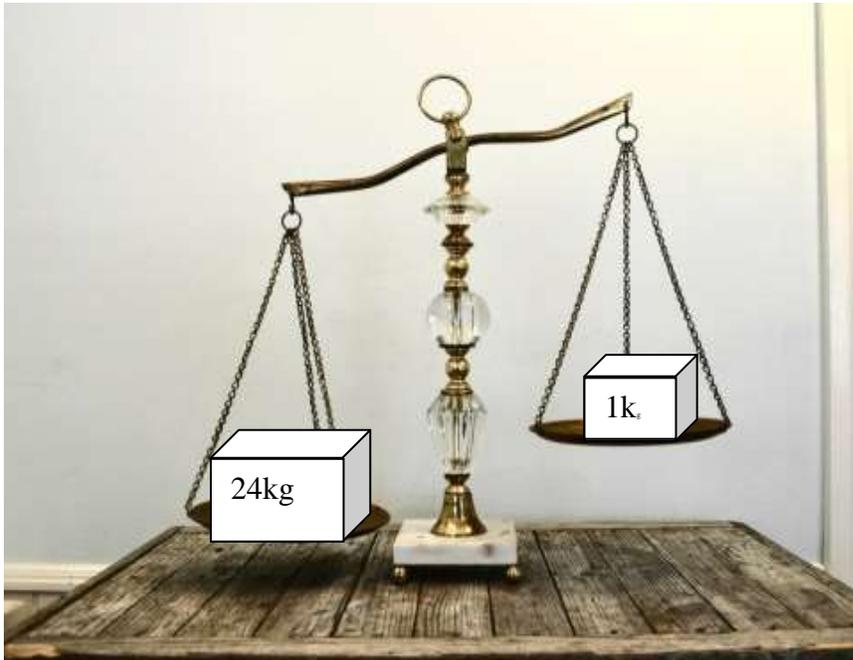
**Figure IV: Weighing  $\frac{5}{6}$  of the Whole**

*Interpretation:* The scale above demonstrates the placement of the fraction  $\frac{5}{6}$  in the order of the scaling among other fractions.



**Figure V: Weighing  $\frac{1}{3}$  of the Whole**

*Interpretation:* The scale above demonstrates the placement of the fraction  $\frac{1}{3}$  in the order of the scaling among other fractions.



**Figure VI: Weighing  $\frac{1}{2}$  of the Whole**

**Interpretation:** The scale above demonstrates the placement of the fraction  $\frac{1}{2}$  in the order of the scaling among other fractions.

Note: The idea of using five different weighing scales is not part of the real process; they are being used here for interpretation purposes. In the real process a single weighing balance will suffice.

To arrange in Descending Order, the practical will be done in same way but the arrangement of the scales will start from the least fraction to the highest fraction.

## **DISCUSSION AND CONCLUSION**

The idea behind this paper on the arrangement of fractions in a given order, is to get the attention of the learner first, Like Vohra (2015), posited that, the world is full of distractions and that is very important to grab the attention of the Learner. SERC-Carleton (2019) also corroborated that it is important not to turn students off by subtle actions or communications that go straight to the affective domain and prevent students from becoming engaged. McCarthy (2014) on the other hand, asserted that when a topic connects to what the student likes to do, engagement deepens as he willingly spends time thinking, dialoguing, and creating ideas in meaningful ways. Learner's participation (2019), Education Scotland, Foghlam Alba, equally stated that there is consideration evidence from research supporting the view of learner participation.

It is on these Authorities factors it is very necessary that the attention, interest and participation of the learner should be captured in any Mathematic topics. Engaging the learner in the practical approach in any topic of Mathematics will entail these necessary factors and the learner will not only learn but will have the first positive impression and will not dare leaving the class in the first few seconds or minutes or divert his attention by clicking "next" continuously to complete the program. When this approach is followed, the great Instructional Design Strategies may not fall on deaf ears (Learners Participation, 2019). Leslie (2019), also corroborated on the approach in his article that deals on the Psychomotor domain referring it as the discreet physical functions,

reflex actions and interpretive movements, where the gross and fine muscles are used in expressing concepts.

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