True or False: Fractions and Decimals

Overview

This activity, ideally done in pairs or small groups, is designed to reinforce students' understanding of decimal place value, the meaning of fraction notation and the relationships between decimals and common fractions.

It is ideal as a focus activity to start or end a session and will provide opportunity to observe students' existing knowledge as well as highlighting areas that may need more attention. Two sets of questions are provided. These can be used in different sessions rather than one after the other immediately, since revisiting of the concepts in between may be required.

Skills and Knowledge

- The meaning of fractions
- Comparative language (greater, bigger ..)
- Relationships between fractions and decimals
- Decimal place value

Preparation and Materials

- Photocopy Activity Sheets 1 or 2 (1 copy per pair or small group).

Four is recommended as an ideal size for maximum participation and inclusion in a small group. Over 4 will make the group too big.

Suggested Procedure

Arrange students into small groups or pairs.

Introducing the activity

Explain that you will give out one set of statements to the group.

- *One person should read the first statement aloud to the group.*
- *Together you decide whether is True or False. This should be decided by talking to each other and sharing your thinking.*

Tell them that you might ask anyone in the group to explain their answers to you so they need to make sure everyone understands.

Encourage students to share the reading role:

- *After each statement pass the sheet on to another person to read the next.*

Doing the activity

Distribute Activity Sheet 1. Give only one to each group or pair in order to keep them focussed on group discussion, rather than breaking into an individual activity.

Circulate as the groups work together and ask occasional questions, such as:

- *Why have you decided this?*
- *Did you all agree easily on this statement?*
- *Which of these did you have to think most about?*

When they have decided about all of the statements, ask them to go back and rewrite all of the False statements so that they become true.

As a precaution, advise them that writing 'not' into the sentence will not be enough.

Debrief

The items chosen in this activity highlight some common errors made by learners when they are not focussed on the meaning of decimals. Some examples:

- Confusing numbers such as 0.4 as equal to $\frac{1}{4}$.
- Thinking that .10 is greater than .9 (often a result of thinking of it as 'point ten')
- Forgetting that bigger denominators (numbers on the bottom) in fractions lead to smaller pieces, so that $\frac{1}{7}$ is less than $\frac{1}{4}$.

If students make some of these errors, address them at this stage with a reminder of the meaning of the decimal places, and provide further follow up in later sessions. Try to find out if they really do not understand the ideas or have momentarily forgotten aspects.

Follow up

If your students do have some of these fundamental misunderstandings they will need to undertake some of the conceptual exploration provided in earlier decimal and fraction sessions.

If, however, students have momentarily forgotten any of these ideas they can be revisited using a short selection of similar True/False questions at the beginning of the next few sessions.

Alternately, instead of the True/False model, ask them to use expressions 'less than', 'greater than' or 'equal to' to complete statements such as:

- $\frac{1}{7}$ $\frac{1}{5}$
- $\frac{2}{100}$ 0.2
- .12   .8

Use the selection of questions like this for several sessions until they are no longer making errors.

True or false fractions and decimals

In pairs or small groups.

Decide together if you think each statement is *true* or *false*.

1. **0.1** is the same as $\dfrac{1}{10}$

2. **0.10** is greater than **0.9**

3. **0.6** is the same as **.60**

4. $\dfrac{2}{5}$ is less than $\dfrac{3}{5}$

5. $\dfrac{1}{5}$ is bigger than $\dfrac{1}{4}$

6. ___ is the same as ___

7. $\dfrac{5}{100}$ is the same as **0.05**

8. ___ is greater than **0.09**

Now go back and rewrite the **false** statements to make them true.

True or false fractions and decimals

In pairs or small groups.

Decide together if you think each statement is *true* or *false*.

1. $\dfrac{3}{4}$ is equal to   **0.75**

2. $\dfrac{1}{4}$ is greater than   **0.3**

3.   **0.6**   is the same as $\dfrac{1}{6}$

4.   **.54**   is less than $\dfrac{}{2}$

5.   **.8**   is bigger than $\dfrac{8}{10}$

6. $\dfrac{4}{100}$ is the same as   **0.04**

7. $\dfrac{3}{100}$ is bigger than   **0.39**

8.   **.07**   is less than   **0.1**

Now go back and rewrite the **false** statements to make them true.