An Investigative Approach to ADDING FRACTIONS

Prior Knowledge: Equivalent fractions

Resources: Pupils need one resource sheet between two as they should work in pairs.

Ask the pupils to imagine the minute hand to be pointing at the 12. Ask where it will be pointing after ½ hour.

On their first diagram, ask them to shade in the area to represent ½ hour, and write this fraction underneath the clock face in the space provided. On the second diagram ask them to shade in the area to represent ¼ of an hour and write this fraction underneath the clock face in the space provided.

Ask pupils to continue to do likewise with as many other fractions of an hour as they can.

 *Accept all contributions but make sure they have produced diagrams for of an hour respectively.*

Using any means at their disposal, ask pupils to see how many different **pairs** **of fractions of an hour** they can find that when combined (when added on to / when followed by) make up any of the following fractions of an hour:- **

 *For example, 1/3hr followed by 1/6hr would be equivalent to 1/2hr. Record as *

Having found and recorded all possible solutions, challenge pupils to find a way of adding the two fractions without the clock face.

 *Some may note that however, this cannot be a general rule.*

At the appropriate time, select the clock fraction piece 11/12ths and explore how many different ways this piece can be covered with two congruent or non-congruent clock fraction pieces.

*Establish there are 5 different ways; *

On the board record, record these ways as so:

*    *

Take any one of these equations, say **, and write it down this way: **

Remind the children that the answer to this sum is obviously  but ask them to imagine they didn’t know the answer and that they had to work it out from scratch. Tell them too, that the denominator of the fraction in the answer might indicate the method they need to use.

*Be open to all suggestions and methods but hopefully someone will notice that because the answer is in twelfths, this will indicate that both fractions need to be expressed in twelfths. If this doesn’t happen, then* ***without any comment*** *change the*  *to twelfths and ask them* ***to tell you*** *what you have done and then to think again. On the board write:-*

**

**

 *You might have to explain the process with the* *.*

 *If necessary repeat the process with one of the other equations.*

Discuss why they think it was necessary to change both fractions into the same denominations.

 *You might need to discuss why the answer is not*  *for example. (**is less than a half, and as*  *is obviously more than*  *the answer can’t be less than this)*

Ask them to carry out a similar process with the remaining equations where the answer is .

When they have completed the above task to your satisfaction, ask the children to carry out the whole process with the clock fraction piece , starting by finding out how many different ways this piece can be covered with two congruent or non-congruent clock fraction pieces and continuing as above.

At the appropriate time, present them with the following list of fractions and ask them to select pairs to add:- **

Again, at the appropriate time, present them with the following list of fractions and ask them to select pairs to add that they haven‘t already done in the previous task:-

**

 *Some of these are fractions they don’t have on their clock face.*

ADDING FRACTIONS….resource sheet

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| --- | --- | --- | --- |
| Picture1 | Picture1 | Picture1 | Picture1 |
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| Picture1 | Picture1 | Picture1 | Picture1 |
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