Babylonian Fractions

How do you know when a number is a fraction, or has a fraction part?

The Babylonians did not have a symbol for fractions. It would only be the context which indicated if a number was a fraction or not.

If the two numbers below are fractions less than 1 (so the whole number part is 0), can you work out what they might be?

Remember that the Babylonian system is in base 60!

The first fraction is \[ \frac{30}{60} = \frac{1}{2} \]; the second is \[ \frac{25}{60} = \frac{5}{12} \].

To save having to draw Babylonian symbols, we will use modern notation, but in base 60.

The two fractions above would then be 0;30, meaning no whole numbers and 30 sixtieths, and 0;25 meaning no whole numbers and 25 sixtieths.

In this worksheet, the first number is always a whole number and the second number is the fraction part.

Convert these base 60 fractions into base 10 fractions:

1. 0;20 ......................................
2. 0;45 ......................................
3. 0;10 ......................................
4. 0;36 ......................................
5. 0;55 ......................................
6. 1;24 ......................................
7. 2;50 ......................................
8. 8;18 ......................................

Can you find a base 60 fraction which cannot be exactly converted to a base 10 fraction?

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Convert these base 10 fractions into base 60 fractions:

1. \[ \frac{13}{30} \] ..........................
2. \[ \frac{1}{4} \] ..........................
3. \[ \frac{2}{3} \] ..........................
4. \[ \frac{1}{5} \] ..........................
5. \[ 1\frac{3}{10} \] ..........................
6. \[ 2\frac{7}{12} \] ..........................

Can you find a base 10 fraction which cannot be converted to a base 60 fraction?