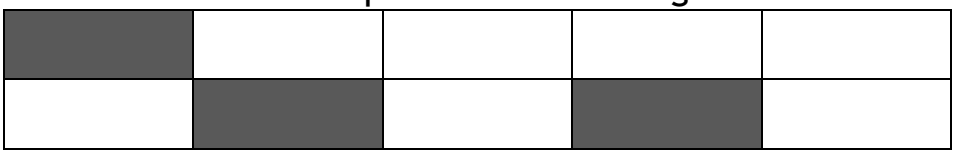
Spot The Mistakes – Fractions Whole - Answers

Read the notes in the table below which contain some deliberate mistakes. Find the mistakes by circling or highlighting them in the notes and use the blank column on the right-hand side to correct the mistake.

When you think you've finished ask the person you are sitting beside to check your corrections.

<u>What are fractions?</u> Fractions are numbers. They have a top and a bottom number with a line between them both of which must be whole numbers.	
The top number is called the nominator. The bottom number is called the denominator.	Error: numerator
Fractions can be represented as a diagram like this:  The fraction of the shape that is shaded is $\frac{3}{7}$.	Error: $\frac{3}{10}$
A fraction is basically a division calculation where the top number is divided by the bottom number. So $\frac{3}{5} = 3 \div 5$ If you put that in a calculator you would get 1.3333333.	Error: 0.6
<u>Equivalent Fractions</u> Equivalent fractions are the same but the top and bottom have both been multiplied or divided by the same amount.	
When you simplify a fraction you keep dividing top and bottom by the same amount until you can only divide by 1. For example: $\frac{28}{42} = \frac{14}{21}$ (it will no longer halve) The fraction is now in its "lowest terms" or "simplest form".	Error: divide by 7 to get $\frac{2}{3}$, you can divide by any number, not just 2
<u>Fractions of Amounts</u> If I was asked to find a fraction of a number or an amount then I would do the following: Divide by the bottom Multiply by the top You must do it in this order to get the correct answer.	Error: you can multiply or divide in any order

For example: Find $\frac{1}{7}$ of 35.

In order to find $\frac{1}{7}$ of a number I just divide that number by 7.

So the answer to $\frac{1}{7}$ of 35 is $35 \div 7 = 5$.

$\frac{1}{7}$ is a "unit fraction" because it has 7 on the bottom.

I use the same principle when finding non-unit fractions of a number.

Error: it's a unit fraction because it has 1 on top.

For example: Find $\frac{4}{7}$ of 35.

I've already found $\frac{1}{7}$ of 35 = 5.

So $\frac{4}{7}$ of 35 is "4 lots of $\frac{1}{7}$ of 35".

Answer is $4 \times 5 = 25$.

Error: the answer is 20

Mixed and Improper Fractions

Mixed numbers are whole numbers and fractions together like $2\frac{3}{4}$.

Improper fractions are fractions where the top number is larger than the bottom number like $\frac{11}{4}$.

In fact $2\frac{3}{4}$ and $\frac{11}{4}$ are equivalent fractions.

How do I know that?

In $2\frac{3}{4}$ the "2" is "2 wholes" which make a total of "8 quarters" because 1 whole = 4 quarters. Add the "3 quarters" and we have a total of "11 quarters" which is our improper fraction.

If I do this as a calculation it looks like this:

$$2\frac{3}{4} = \frac{2 \times 4 + 3}{4} = \frac{11}{4}$$

"Big multiplied by top, add the bottom."

Error: "top" and "bottom" are the wrong way around

Adding and Subtracting Fractions

Fractions cannot be added or subtracted until the bottom numbers or denominators are all the same. This is often called a "common denominator".

Two simple examples:

$$\frac{3}{7} + \frac{2}{7} = \frac{5}{14}$$

and

Error: answer is $\frac{5}{7}$

$$\frac{7}{9}-\frac{1}{9}=\frac{6}{9}$$

If the two denominators aren't the same you must find the common denominator using equivalent fractions.

For example: Calculate $\frac{2}{5}+\frac{1}{4}$
Which numbers appear in both the 4 and 5 times table?
20, 40, 60, 80 etc.
The lowest is 20, so our common denominator is 20.

$\frac{2}{5}+\frac{1}{4}$ becomes $\frac{2}{20}+\frac{1}{20}$

We can add these fractions to get the answer $\frac{3}{20}$.

Error: they've not multiplied the numerators which would make the answer $\frac{8}{20}+\frac{5}{20}=\frac{13}{20}$

Let's try a subtraction: Calculate $2\frac{1}{3}-\frac{4}{7}$.
The first number that appears in the 3 and 7 times tables is 21, so this will be our common denominator.

So $2\frac{1}{3}-\frac{4}{7}$ becomes $2\frac{7}{21}-\frac{12}{21}$.

Ignore the "2" for now and we have $\frac{7}{21}-\frac{12}{21}=-\frac{5}{21}$

Now we include the "2" again:

$$2-\frac{5}{21}=1\frac{16}{21}$$

The $\frac{16}{21}$ is calculated by guessing.

Error: 21-5, not guessing

Multiplying Fractions

Before multiplying fractions you must convert any mixed numbers to improper fractions.

In order to multiply fractions:
Multiply top
Multiply bottom

For example:

$$\frac{3}{5}\times\frac{4}{7}=\frac{12}{45}$$

and

$$2\frac{1}{3}\times1\frac{3}{8}=\frac{7}{3}\times\frac{11}{8}=\frac{77}{24}=3\frac{5}{24}$$

Error: answer is $\frac{12}{35}$

Error: improper

Dividing Fractions

Before dividing fractions you must convert any improper fractions to mixed numbers.

In order to divide fractions:
Turn the divisor (left hand fraction) upside down
Multiply top
Multiply bottom

For example:

$$\frac{3}{5} \div \frac{4}{7} = \frac{3}{5} \times \frac{4}{7} = \frac{12}{35}$$

and

$$2\frac{1}{3} \div 1\frac{3}{8} = \frac{7}{3} \div \frac{11}{8} = \frac{7}{3} \times \frac{8}{11} = \frac{56}{33} = 1\frac{23}{33}$$

fractions and mixed numbers are the wrong way around

Error: should say "right hand fraction"

Error: answer is

$$\frac{3}{5} \div \frac{4}{7} = \frac{3}{5} \times \frac{7}{4} = \frac{21}{20} = 1\frac{1}{20}$$