

To make it easier to add these fractions and understand their values better, I firstly found a common denominator:

$$\begin{array}{l} \frac{1}{6} = \frac{300}{1800} \\ \frac{1}{25} = \frac{72}{1800} \\ \frac{3}{5} = \frac{1080}{1800} \end{array} \quad \begin{array}{l} \frac{3}{20} = \frac{270}{1800} \\ \frac{4}{15} = \frac{480}{1800} \\ \frac{5}{8} = \frac{1125}{1800} \end{array}$$

I then used trial and error to find a combination close to 1800. Quite quickly I got to the equation:

$$\frac{1080}{1800} + \frac{270}{1800} + \frac{480}{1800} = \frac{1830}{1800} = \frac{61}{60}$$

I decided that this was the closest I could get to 1 by trial and error. Next, I needed to prove/disprove that this was the closest to 1 you can get.

To improve this equation, you need to:

- a) Remove one or more terms
- b) Replace it with one or more unused terms that cause the equation to become closer to 1

To keep it brief, I am going to refrain from using the denominators as they are not very significant.

Three numerators used:

1080
270
480

Three numerators not used:

300
72
1125

The three used numerators can be used to create a list of seven options for removing terms from the equation. Likewise, the three unused numerators can be used to create a similar list of replacement terms.

<u>Removal</u>	<u>Replacement</u>
480	300
270	72
1080	1125
480 + 270 = 750	300 + 72 = 372
270 + 1080 = 1350	72 + 1125 = 1197
480 + 1080 = 1560	300 + 1125 = 1425
480 + 270 + 1080 = 1830	300 + 72 + 1125 = 1497

If you remove any term on the left and replace it with any term on the right, it results in a total which is further from 1800 than 1830 is. This proves that $\frac{1830}{1800}$ or $\frac{61}{60}$ is the closest to 1 you can get.

Daanyal Morrish 1001