

01

Arrange the given fractions in order, from the smallest to the greatest.

$$\frac{19998}{19999}, \frac{19989}{19990}, \frac{19991}{19992}, \frac{19988}{19989}, \frac{19992}{19993}$$

$$\frac{19998}{19999} = 1 - \frac{1}{19999}, \frac{19989}{19990} = 1 - \frac{1}{19990}$$

$$\frac{19991}{19992} = 1 - \frac{1}{19992}, \frac{19988}{19989} = 1 - \frac{1}{19989}$$

$$\frac{19992}{19993} = 1 - \frac{1}{19993}$$

$$\text{and } \frac{1}{19989} < \frac{1}{19990} > \frac{1}{19992} > \frac{1}{19993} > \frac{1}{19999}$$

Hence, the fractions arranged in order, from the smallest to the greatest is:

$$\frac{19988}{19989}, \frac{19989}{19990}, \frac{19991}{19992}, \frac{19992}{19993}, \frac{19998}{19999}$$

02 Vinay had to paint a piece of paper. He painted $\frac{1}{5}$ of the paper red and 51 cm^2 of the paper blue. He then painted $\frac{1}{3}$ of the remainder yellow and the rest green. If the area of the green region is $\frac{1}{4}$ of the area of the whole piece of paper, find the area of the paper.

Let the whole area be $x \text{ cm}^2$

$$\text{Area painted with red} = \frac{1}{5}x \text{ cm}^2$$

$$\text{Area painted with blue} = 51 \text{ cm}^2$$

$$\text{Area painted with yellow} = \frac{1}{3} \left[x - 51 - \frac{x}{5} \right] \text{ cm}^2$$

$$\text{Area painted with green} = \frac{1}{4}x$$

$$\therefore \frac{1}{5}x + 51 + \frac{1}{3} \left(x - 51 - \frac{x}{5} \right) + \frac{x}{4} = x$$

$$\Rightarrow \frac{x}{5} + 51 + \frac{x}{3} - 17 - \frac{x}{15} + \frac{x}{4} = x$$

$$\Rightarrow \frac{12x + 20x - 4x + 15x}{60} = x - 34$$

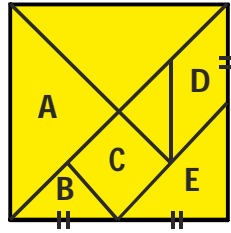
$$\Rightarrow \frac{43x}{60} = x - 34$$

$$\Rightarrow 17x = 34 \times 60$$

$$\Rightarrow x = 120 \text{ cm}^2$$

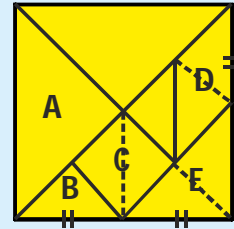
03

The large outer square represents 1 whole unit. It has been divided into parts. Some parts are identified by letters. What fraction of the whole square does each part represent ?



$$A = \frac{1}{4}; B = \frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$$

$$C = D = E = \frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$$



04

What is a possible value of x if $\frac{3}{5} < \frac{1}{x} < \frac{7}{9}$?

($1.28 < x < 1.67$) Since $\frac{3}{5} = .6$ and $\frac{7}{9} = .777\dots$, $\frac{1}{x}$ can be any number between .6 and .777.

$$\text{If } \frac{1}{x} = .6 = \frac{6}{10}, \text{ then } x = \frac{10}{6} \text{ or } 1.67;$$

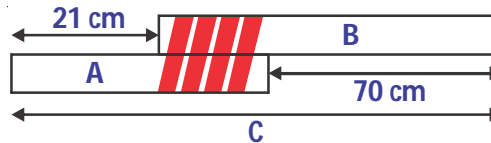
$$\text{If } \frac{1}{x} = .77 = \frac{77}{100}, \text{ then } x = \frac{100}{77} \text{ or } 1.29; \text{ and so on.}$$

$$\Rightarrow 1.29 < x < 1.67$$

Hence, the possible values of x lies between 1.29 and 1.67

05

Two sticks A and B were tied as shown in the diagram to form a longer stick C. Stick A was $\frac{3}{5}$ the length of stick B. Find the length of stick C.



$$2 \text{ units ... } 70 - 21 = 49$$

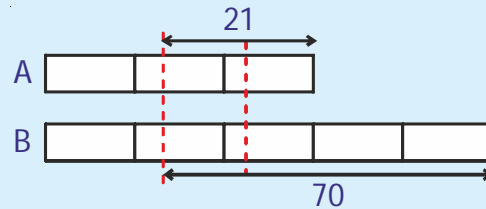
$$1 \text{ unit } 24.5$$

$$3 \text{ units } 73.5$$

$$5 \text{ units } 122.5$$

$$73.5 - 21 = 52.5$$

$$\text{Length of stick C} = 73.5 + 122.5 - 52.5 = 143.5 \text{ cm}$$



06

Which is the greatest of the two given fractions A and B ?

$$A = \frac{777775}{777777}, B = \frac{666661}{666663}$$

By studying the 2 fractions, you will notice that the numerator of each fraction is 2 less than its denominator. Based on this common characteristic, we can use indirect comparison, that is to compare the differences between 1 and the fractions first.

$$1 - A = 1 - \frac{777775}{777777} = \frac{2}{777777}$$

$$1 - B = 1 - \frac{666661}{666663} = \frac{2}{666663}$$

Since 777 777 is greater than 666 663, we know $1 - A$ is smaller than $1 - B$. Hence, A is greater than B.