

One number is 5 times another. The sum of their reciprocals is $\frac{2}{5}$. Determine the smaller number.

Answer 1

Answer: so $x=5y$
reciprocal of $x=1/x$ then

sum of reciprocals means $1/x+1/y=2/5$

substitute $x=5y$ for x in $1/x+1/y=2/5$ and get

$$1/5y+1/y=2/5$$

multiply $1/y$ by $5/5$ to make it $5/5y$ so you can add since the denominators (bottom number) are the same

$$1/5y+5/5y=2/5$$

$$6/5y=2/5$$

multiply both sides by $5y$

$$6=2y$$

divide both sides by 2

$$3=y$$

put this into $x=5y$ so

$$x=5(3)$$

$$x=15$$

$$y=3$$

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