

Jun 22nd 3:30:08 am

YuJun, it's good to see you.

Jun 22nd 3:30:10 am

I'm connecting you with a tutor immediately. 🤖

Jun 22nd 3:30:12 am

👍 Okay!

Jun 22nd 3:30:15 am

TUTOR FOUND, NOW REVIEWING PROBLEM AT NO CHARGE

Jun 22nd 3:30:16 am

Tutors need to know how much work you've done to help you better... can you 📹 any progress you've made?

Jun 22nd 3:30:17 am

Naw

Jun 22nd 3:30:33 am

SESSION STARTED AT 19:30

Jun 22nd 3:30:35 am

Hello YuJun! I am Usha, your math tutor for the session!

Jun 22nd 3:31:00 am

Hello!

Jun 22nd 3:31:06 am

How are you doing?

Jun 22nd 3:31:07 am ✓ *Introduction: Builds rapport with warm greeting*

I'm doing great!

Jun 22nd 3:31:14 am

I got the picture shared on rational expressions! What is the instruction given?

Jun 22nd 3:31:34 am ✓ *A1: Confirm understanding of the student's problem*

Solve the formula $\frac{1}{p} + \frac{1}{q} = \frac{1}{f}$ for q

Jun 22nd 3:32:08 am

Thanks!

Jun 22nd 3:32:34 am

Have you started working on the problem?

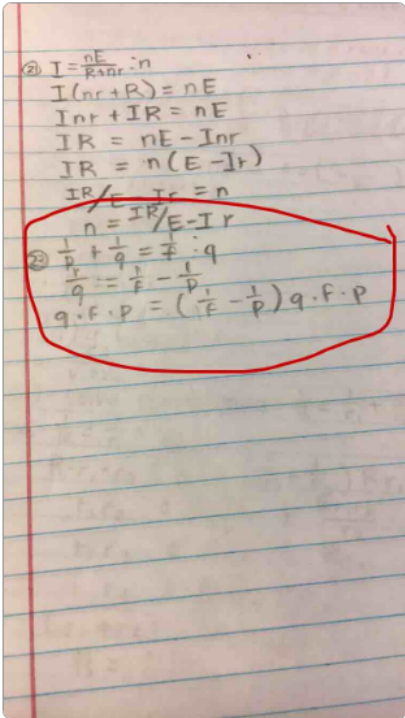
Jun 22nd 3:32:46 am ✓ **A1: Determine progress**

Just a bit

Jun 22nd 3:32:59 am

No worries! Please share the work done! We can improve on it!

Jun 22nd 3:33:22 am



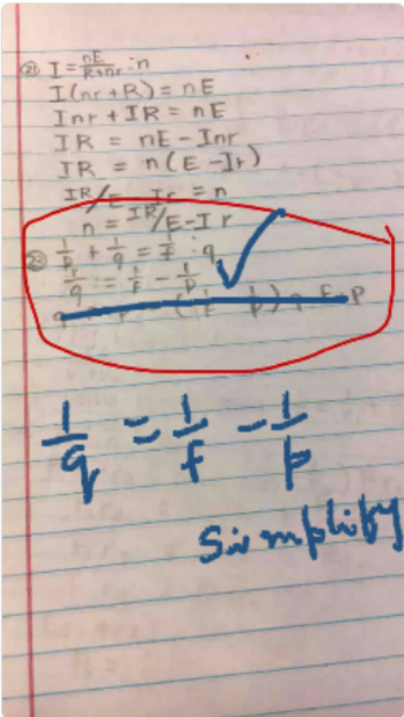
Jun 22nd 3:33:58 am

Your first step is done correct!

Jun 22nd 3:34:45 am ✓ **A1: Check student's uploaded work**

You separated $1/q$.

Jun 22nd 3:34:53 am



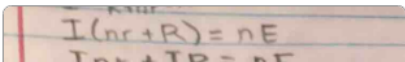
Jun 22nd 3:35:36 am ✓ **C1/B2: Whiteboard image to supplement explanation**

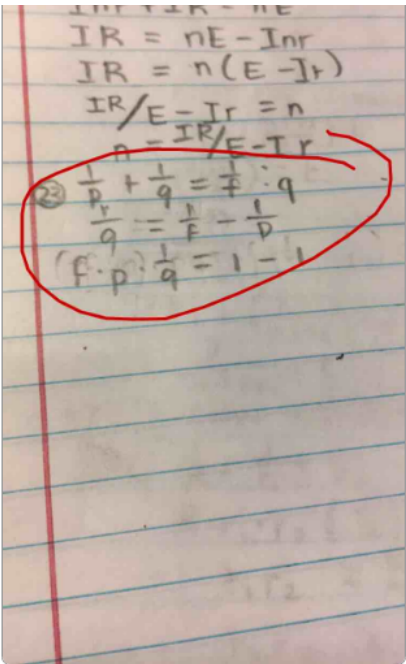
Please simplify the right side alone :)

Jun 22nd 3:35:43 am ✓ **B1/C1: Redirect student error**

Okay!

Jun 22nd 3:35:50 am





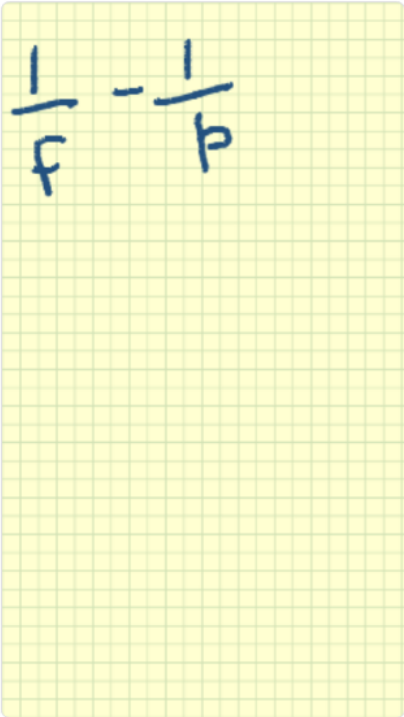
Jun 22nd 3:37:35 am

Not quite! Let us work on it together!

Jun 22nd 3:38:03 am ✓ **C2: Acknowledge student's mistake without causing stress**

Okay

Jun 22nd 3:38:10 am



Jun 22nd 3:38:20 am ✓ **C1/B2: Whiteboard image to supplement explanation**

Let us take only the right side, $1/f - 1/p$.

Jun 22nd 3:38:37 am

What do we do to subtract? Any guesses?

Jun 22nd 3:38:56 am ✓ **C3: Invite student input**

find the LCM of f and p?

Jun 22nd 3:39:19 am

Correct!

Jun 22nd 3:39:25 am

What is the LCM of f and p?

Jun 22nd 3:39:32 am ✓ **C3: Guiding question**

fp

Jun 22nd 3:39:41 am

Fantastic!

Jun 22nd 3:39:46 am ✓ **C2: Positive language**

Let us now use fp as the common denominator and change the fracions!

Jun 22nd 3:40:06 am ✓ **B2: Guide student towards next step**

Okay!

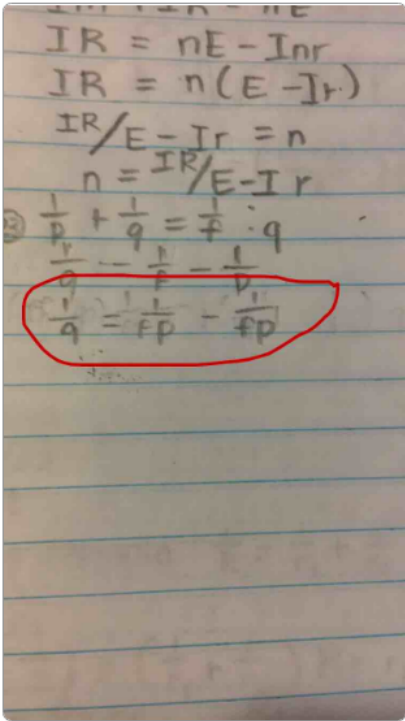
Jun 22nd 3:40:14 am

fractions*

Jun 22nd 3:40:13 am

Can you give a try?

Jun 22nd 3:40:18 am ✓ **C3: Encourage student to take the first step**



Jun 22nd 3:41:03 am

Remember, when we change the denominator the numerator is also to be operated upon the same way!

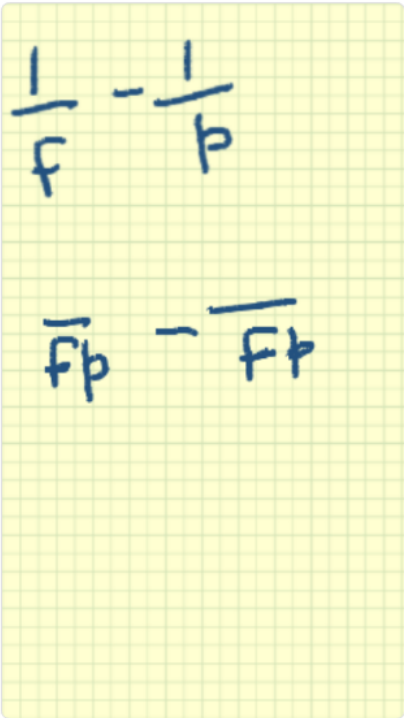
Jun 22nd 3:41:56 am ✓ **C1: Tutor redirects student's mistake without causing stress**

Let us work on that part!

Jun 22nd 3:42:06 am ✓ **C2: Use of “we” language**

Okay

Jun 22nd 3:42:16 am



Jun 22nd 3:42:26 am ✓ **C1/B2: Whiteboard image to supplement explanation**

Our task now is to find what go on the numerators.

Jun 22nd 3:42:40 am ✓ **B2: Guide student towards next step**

For the first fraction $1/f$, the denominator is changed to fp from f , right?

Jun 22nd 3:43:12 am ✓ **B2: Clarifies step further**

How do we get fp from f ?

Jun 22nd 3:43:21 am ✓ **C3: Invite student input**

Would it be f/fp and p/fp ?

Jun 22nd 3:43:25 am

By multiplying f and p which is their lcm

Jun 22nd 3:43:48 am

Yes! The original denominator f is multiplied by p to get fp !

Jun 22nd 3:44:15 am ✓ **C2: Encouraging language**

Same way the top number 1 should also be multiplied by p !

Jun 22nd 3:44:33 am ✓ **B2: Tutor builds on student's thoughts**

Getting that?

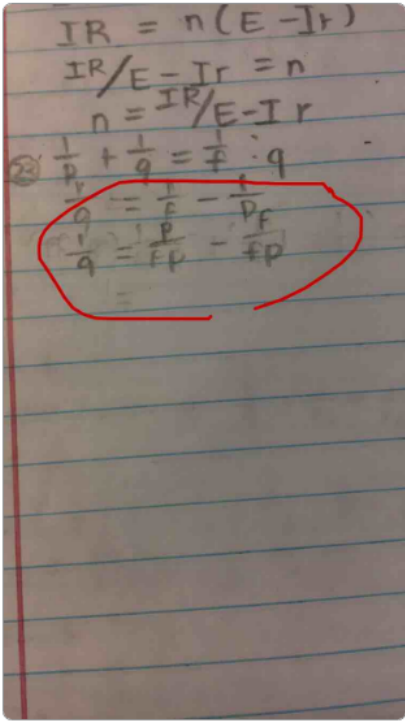
Jun 22nd 3:44:38 am ✓ **C1: Check with the student to ensure understanding**

Yes!

Jun 22nd 3:44:46 am

Cool :) Please show how the fractions look now?

Jun 22nd 3:45:21 am ✓ **C3: Invite student to proceed independently**



Jun 22nd 3:45:35 am

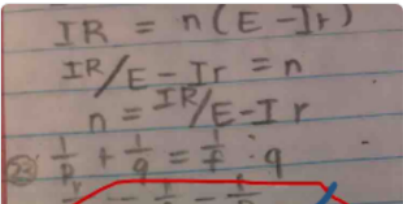
Awesome :) We can combine them and write as $p - f$ over fp !

Jun 22nd 3:46:20 am

Note: We should never complete steps for the student. This was a minor step, however guiding the student to complete it independently would have been best here.

Okay

Jun 22nd 3:46:40 am



$$\frac{1}{q} = \frac{p-f}{fp}$$

Jun 22nd 3:46:41 am

$$\begin{aligned} IR &= nE - I_r r \\ IR &= n(E - I_r) \\ \frac{IR}{E - I_r} &= n \\ n &= \frac{IR}{E - I_r} \\ \textcircled{23} \quad \frac{1}{p} + \frac{1}{q} &= \frac{1}{f} \cdot q \\ \frac{1}{q} &= \frac{1}{f} - \frac{1}{p} \\ \frac{1}{q} &= \frac{p-f}{fp} \end{aligned}$$

Jun 22nd 3:47:05 am

The right side simplifies to p-f over fp and we have 1/q on the left side!

Jun 22nd 3:47:06 am ✓ **B2: Clarifies step further**

Correct!

Jun 22nd 3:47:22 am

So, q = ?

Jun 22nd 3:47:29 am ✓ **C3: Invite student input**

$$\begin{aligned} IR &= nE - I_r r \\ IR &= n(E - I_r) \\ \frac{IR}{E - I_r} &= n \\ n &= \frac{IR}{E - I_r} \\ \textcircled{23} \quad \frac{1}{p} + \frac{1}{q} &= \frac{1}{f} \cdot q \\ \frac{1}{q} &= \frac{1}{f} - \frac{1}{p} \\ \frac{1}{q} &= \frac{p-f}{fp} \end{aligned}$$

Jun 22nd 3:47:35 am

$q = (p-f)/(fp)$?

Jun 22nd 3:48:31 am

It is close!

Jun 22nd 3:48:45 am ✓ **C1: Tutor redirects student's mistake without causing stress**

If we flip the left side, what do we do on the right side?

Jun 22nd 3:49:00 am ✓ **C1: Adapts guidance to student's error**

Ah okay!

Jun 22nd 3:49:07 am

$q = fp/p-f$

Jun 22nd 3:49:23 am

Nice work, you got it!

Jun 22nd 3:49:37 am ✓ **C2: Positive language**

Okay thank you!

Jun 22nd 3:49:49 am

You are welcome :)

Jun 22nd 3:49:57 am

May I try another problem to make sure I grasp the concept?

Jun 22nd 3:51:06 am

That would be wonderful!

Jun 22nd 3:51:30 am ✓ **Tutor is friendly and eager to provide more help**

Go ahead!

Jun 22nd 3:51:33 am

Thank you!

Jun 22nd 3:51:43 am

$1/p + 1/q = 1/f$ solve for p

Jun 22nd 3:52:14 am

Cool :) Go ahead and share the work!

Jun 22nd 3:52:30 am

$$\begin{aligned}\frac{1}{p} &= \frac{1}{f} - \frac{1}{q} \\ \frac{1}{p} &= \frac{q}{fq} - \frac{f}{fq} \\ \frac{1}{p} &= \frac{q-f}{fq} \\ p &= \frac{fq}{q-f}\end{aligned}$$

Jun 22nd 3:52:44 am

Jun 22nd 3:53:39 am

You're doing great!

Jun 22nd 3:53:44 am ✓ **C2: Positive language**

Thank you!

Jun 22nd 3:53:50 am

You are welcome :)

Jun 22nd 3:54:06 am

Thank you so much for the help c:

Jun 22nd 3:54:10 am

You are ever welcome :)

Jun 22nd 3:54:19 am

Thank you for visiting Yup!

Jun 22nd 3:54:26 am

Bye for now and take care!

Jun 22nd 3:54:31 am ✓ **Conclusion: Warm send off**

Bye, thank you!

Jun 22nd 3:54:38 am

Student ended session

Jun 22nd 3:54:42 am