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Solving Rational Equations

$$\begin{aligned}\frac{80}{180} &= \frac{2x+6}{x^2+6x} \\ 360x + 1080 &= 80x^2 + 480x \\ \div 40 &\quad \quad \quad \div 40 \\ 0 &= 2x^2 + 3x - 27\end{aligned}$$

- 1 **Set up the rational equation.**
- 2 Describe how to solve the rational equation.
- 3 Calculate how much time it takes General Good and Grandpa Lindbergh to weave 1 leave.
- 4 Determine the rate of gathering berries.
- 5 Calculate how much time Jason and Naya can spend maximum to tie 1 bouquet.
- 6 Solve the rational equations.
- + with lots of tips, answer keys, and detailed answer explanations for all of the problems.

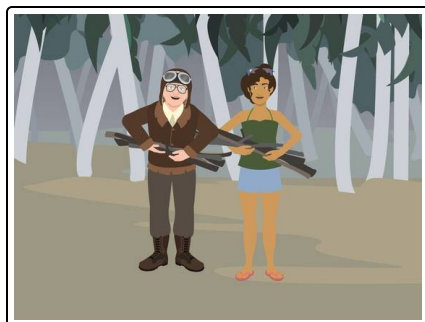


The complete package, including all problems, hints, answers, and detailed answer explanations is available for all [sofatutor.com](https://www.sofatutor.com) subscribers.



Set up the rational equation.

Choose the correct equation.



Grandpa Lindbergh and Jasmine collect wood at the same rate. After a while, Jasmine comes back with 10 pieces of wood, and then Grandpa returns 10 minutes later with 15 pieces.

A

$$\frac{x}{10} = \frac{15}{x+10}$$

B

$$\frac{10}{x} = \frac{15}{x+10}$$

C

$$\frac{10}{x} = \frac{x+10}{15}$$

D

$$\frac{10}{x} = \frac{10}{x+15}$$

E

$$\frac{10}{x} = \frac{15}{x+15}$$

F

$$\frac{10}{x} = \frac{10}{x+10}$$



Hints for solving these problems

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of 6

Set up the rational equation.

Hint #1

The rate is the number of wood pieces divided by the needed time.

Hint #2

Let x be the time Jasmine needs to collect 10 pieces of wood. So Grandpa Lindbergh needs 10 minutes more, or $x + 10$.

Hint #3

The rate for Jasmine is $\frac{10}{x}$.

Hint #4

Both rates must agree.



Answers and detailed answer explanations for these problems

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of 6

Set up the rational equation.

Answer key: B

To establish an equation corresponding to a word problem we first assign variable(s) to the desired quantity.

So, we assign x to the time Jasmine needs to collect 10 pieces of wood. The corresponding rate is then $\frac{10}{x}$.

Grandpa Lindbergh takes 10 minutes more than Jasmine, ior $x + 10$, for 15 pieces of wood. This gives us the rate

$$\frac{15}{x+10}$$

Those rates have to agree, giving us the equation

$$\frac{10}{x} = \frac{15}{x+10}$$