Name _____ Date _____ Class _____

TEKS 2A.10.D

LESSON 8-5

Problem Solving

Solving Rational Equations and Inequalities

Norton and Jessie have a lawn service business. Sometimes they work by themselves, and sometimes they work together. They want to know if it is worthwhile to work together on some jobs.

1. Norton can mow a large lawn in about 4.0 hours. When Norton and Jesse work together, they can mow the same lawn in about 2.5 hours. Jesse wants to know how long it would take her to mow the lawn if she worked by herself.

a. Write an expression for Jessie's rate, using j for the number of hours she would take to mow the lawn by herself. _____

b. Write an equation to show the amount of work completed when they work together. _____

c. How long would it take Jessie to mow the lawn by herself? _____

2. Jessie can weed a garden in about 30 minutes. When Norton helps her, they can weed the same garden in about 20 minutes. Norton wants to know how long it would take him to weed the garden if he worked by himself.

a. Write an expression for Norton's rate, using n for the number of hours he would take to weed the garden by himself. _____

b. Write an equation to show the amount of work completed when they work together. _____

c. How long would it take Norton to weed the garden by himself? _____

Choose the letter for the best answer.

3. Norton can edge a large lawn in about 3.0 hours. Jessie can edge a similar lawn in about 2.5 hours. Which equation could be used to find the time it would take them to edge that lawn if they worked together?

A $\frac{1}{3} - \frac{1}{2.5} = \frac{1}{t}$

B $\frac{1}{3} - \frac{1}{2.5} = t$

C $\frac{1}{3} + \frac{1}{2.5} = \frac{1}{t}$

D $\frac{1}{3} + \frac{1}{2.5} = t$

4. When Jessie helps Norton trim trees, they cut Norton's time to trim trees in half. What can be said about the time it would take Jessie to do the job alone?

A Jessie would take the same amount of time as Norton.

B Jessie would take half the time that Norton takes.

C Jessie would take twice the time that Norton takes.

D There is not enough information.

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1. Norton can mow a large lawn in about 4.0 hours. When Norton and Jesse work together, they can mow the same lawn in about 2.5 hours. Jesse wants to know how long it would take her to mow the lawn if she worked by herself.

a. Write an expression for Jessie's rate, using j for the number of hours she would take to mow the lawn by herself.

$\frac{1}{j}$

b. Write an equation to show the amount of work completed when they work together.

$\left[\frac{1}{4}(2.5)\right] + \left[\frac{1}{j}(2.5)\right] = 1$

c. How long would it take Jessie to mow the lawn by herself?

$6\frac{2}{3}$ h

2. Jessie can weed a garden in about 30 minutes. When Norton helps her, they can weed the same garden in about 20 minutes. Norton wants to know how long it would take him to weed the garden if he worked by himself.

a. Write an expression for Norton's rate, using n for the number of hours he would take to weed the garden by himself.

$\frac{1}{n}$

b. Write an equation to show the amount of work completed when they work together.

$\left[\frac{1}{n}\left(\frac{1}{3}\right)\right] + \left[\frac{1}{\frac{1}{2}}\left(\frac{1}{3}\right)\right] = 1$

c. How long would it take Norton to weed the garden by himself?

1 h

Choose the letter for the best answer.

3. Norton can edge a large lawn in about 3.0 hours. Jessie can edge a similar lawn in about 2.5 hours. Which equation could be used to find the time it would take them to edge that lawn if they worked together?

A $\frac{1}{3} - \frac{1}{2.5} = \frac{1}{t}$

B $\frac{1}{3} - \frac{1}{2.5} = t$

(C) $\frac{1}{3} + \frac{1}{2.5} = \frac{1}{t}$

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4. When Jessie helps Norton trim trees, they cut Norton's time to trim trees in half. What can be said about the time it would take Jessie to do the job alone?

(A) Jessie would take the same amount of time as Norton.

B Jessie would take half the time that Norton takes.

C Jessie would take twice the time that Norton takes.

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