SM3 4.4: Rational Equations

Solve each rational equation for x.

1) $\dfrac{x+3}{3} + \dfrac{5}{x-4} = 5$

2) $\dfrac{3}{2x} + 2 = \dfrac{2x}{x+1}$

3) $x - \dfrac{2}{x-3} = \dfrac{x-1}{3-x}$

4) Gideon can rake his lawn in 3 hours. His friend, Katsuro, can rake a lawn the same size in just 2 hours. Suppose they worked together to rake Gideon's lawn. What rational equation represents the information presented in this problem?

5) Can $x = -2$ be a solution for $\dfrac{3}{x+2} - \dfrac{6x}{x^2-4} = \dfrac{1}{x+2}$?

6) It takes Lana 8 hours to paint a particular size room, but her co-worker Nila can do the same job in 7 hours. If they paint the room together, how long will it take to finish painting the room?

7) The reciprocals of two consecutive, positive odd integers have a difference of $\dfrac{2}{63}$. What are the integers?

8) Kris has access to two different water sources for filling up his swimming pool for the summer. One source, using a rigid pipe, supplies water 50% faster than the other source, which uses a flexible hose. Using both pipe and the hose, Kris can fill the pool in 6 hours. How long would it take to fill the pool if Kris only used the pipe?

9) $\dfrac{x+1}{3} - 3 = \dfrac{x}{5}$

10) $\dfrac{6}{x} - \dfrac{1}{4} = \dfrac{9}{x-1}$

11) $\dfrac{2x}{x-1} + \dfrac{x-5}{x^2-1} = 1$

12) Tyler can shovel the driveway in 2 hours. Dakota can complete the job in 90 minutes. If they work together, how long will it take?

13) The sum of the reciprocals of two consecutive, positive even integers is $\dfrac{5}{12}$. What are the two integers?

Name_____ ID: 1

SM3 3.2 Rational Equation Story Problems

Date_____ Period_____

Solve each question. Round your answer to the nearest hundredth.

1) Brenda can sweep a porch in 8 minutes. One day her friend Imani helped her and it only took 5.22 minutes. Find how long it would take Imani to do it alone.

2) It takes Jenny eight hours to mop a warehouse. Jack can mop the same warehouse in 12 hours. If they worked together how long would it take them?

3) Working alone, Kristin can sweep a porch in 12 minutes. Kali can sweep the same porch in 9 minutes. Find how long it would take them if they worked together.

4) Julio can pick forty bushels of apples in 15 hours. Anjali can pick the same amount in 9 hours. Find how long it would take them if they worked together.

5) Working together, Emily and Mike can tar a roof in 5.45 hours. Had he done it alone it would have taken Mike 12 hours. How long would it take Emily to do it alone?

6) It takes Abhasra nine hours to dig a 10 ft by 10 ft hole. Perry can dig the same hole in eight hours. Find how long it would take them if they worked together.

7) Shawna can dig a 10 ft by 10 ft hole in nine hours. One day her friend Trevon helped her and it only took 4.74 hours. Find how long it would take Trevon to do it alone.

8) Mofor can harvest a field in 14 hours. Mary can harvest the same field in 9 hours. If they worked together how long would it take them?

9) Working alone, Joe can mop a warehouse in 8 hours. One day his friend Paul helped him and it only took 4.63 hours. How long would it take Paul to do it alone?

10) Working alone, Chelsea can clean an attic in 14 hours. Totsakan can clean the same attic in 10 hours. How long would it take them if they worked together?