

Look! It's a key!

Name: _____

Date: _____

Homework: Rational Equation Word Problems (Lesson 4)

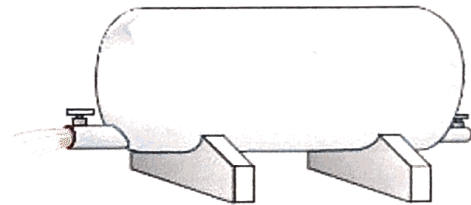
1. After a heavy snowfall, Brian can shovel the driveway in 30 minutes. If his younger brother Allen helps, the job only takes 20 minutes. How long would it take Allen to do the job by himself?

1 hour

2. Joel can paint a certain fence in 3 hours by himself. Danielle can paint the same fence in 4 hours by herself. How long would it take if the two work together to paint the fence? (Round to 2 decimal places if necessary.)

1.71 hours

3. With only the small valve open, all of the liquid can be drained from a large vat in 4 hours. With only the large valve open, all of the liquid can be drained from the same vat in 2 hours. How long would it take to drain the vat with both valves open? (Round to 2 decimal places if necessary.)



1.33 hours

Use the following problem for #4 – 5.

Jane drove 1500 miles to St. Cloud, Minnesota to visit her aunt. On the way back, she averaged 10 miles per hour less, and the drive back took her 5 hours longer. Find Jane's average speed on her way to Minnesota.

4. Fill in the table.

	Distance	Rate	Time
Going	1500	10	150
Coming back	1500	10	155

5. Use your table in #4 to set up the rational equation. You do not have to solve it.

See #4

6. Mrs. Jensen can walk 8 miles in the same time as Mr. Decker walks 6 miles. Mrs. Jensen walks 1 mile per hour faster than Mr. Decker. How fast are Mrs. Jensen and Mr. Decker walking?

Make a table.

	Distance	rate	speed time
Mrs. Jensen	Do the	rest	yourself
Mr. Decker			

Use the table above to set up & solve a rational equation to see how fast Mrs. Jensen is and how slow Mr. Decker is, and remember – Coach Aguirre is running laps around them... for that's for higher level math. ;-)

Decker: 3mph
Jensen: 4mph

7. Jim travels 30 miles on his commute to work, and Joanne travels 40 miles on her commute. Jim travels 5 miles per hour slower than Joanne, and it takes them the same amount of time to get to work. How fast are Jim and Joanne driving?

Jim: 15mph Joanne: 20mph

8. Alicia can row 6 miles downstream in the same time it takes her to row 4 miles upstream. She rows downstream 3 miles/hour faster than she rows upstream. Find Alicia's rowing rate each way. Round your answers to the nearest tenth, if necessary. Give your answer in hours.

(Hint: you will need to make a table and use $d = rt$.)

DS: 9mph US: 6mph

9. The time in days (t days) required to build a house is **inversely proportional** to the number of builder (b) all working at the same rate. If there are 6 builders, it takes 80 days to complete the house. How many builders would it require to complete the house in 16 days? (answer is 30 builders – Better show work to get credit!)

Beautiful Work here
so smart
easy to follow
30 builders

Extra Notes that didn't fit in the notes – so if you read this... you should know that it'll help you with Question #10

- If some value is "fixed", like area, then replace the k in the equation with that value.
- For example, in order for the area of a rectangle to remain the same as the length of the rectangle doubles, the width is halved.
- length = area/width, so if the area is always 80, then we show this as length = 80/width.

10. The area of the field should be 5000 square feet. The length of the field is inversely proportional to the width. We need to maintain the area of the field but we need to decrease the length from 500 to 200 feet. What are the original and new widths? (original width = 10, new width = 25 show work...!)

OW: 10ft NW: 25ft
 $x + 15 = 24$
 $2 \times 25 = 50$
 $3x^2 + 7$