RATE OF WORK PROBLEMS NAME_____

1. Mr. Adams can plant a wheat crop in 10 days and his daughter can do it in 15 days. How many days will it take if they work together?

	Rate	×	time	=
	1/10		x	
	1/15		x	

$\frac{x}{10} + \frac{x}{15} = 1$ (30) $3x + 2x = 30$ $x = 6$ days

2. Paul can put carpet on a floor in 10 hours. If Irene helps him, the job is done in 6 hours. How long would it take Irene if she worked alone?

$\frac{6}{10} + \frac{6}{x} = 1$ (10x) $6x + 60 = 10x$ $x = 15$ hrs

3. Machine A can do a job in 15 hours. Machines B and C can do the same job in 12 hours and 20 hours, respectively. How many hours will the job take if the three machines operate at the same time?

$\frac{x}{15} + \frac{x}{12} + \frac{x}{20} = 1$ (60) $4x + 5x + 3x = 60$ $x = 5$ hrs

4. Kim can complete a job in 6 weeks and the same job would take Kevin 10 weeks. How long would it take Derek working alone if, working together, all three can complete the job in 2 weeks?

$\frac{2}{6} + \frac{2}{10} + \frac{2}{x} = 1$ (30x) $10x + 6x + 60 = 30x$ $x = 4$ weeks 2 days

5. It takes Lois 3 times as long as Richie to mow a lawn. How long would it take each of them alone, if together they can do it in 5 hours?

$\frac{5}{3x} + \frac{5}{x} = 1$ (3x) $5 + 15 = 3x$ $x = 6\frac{2}{3}$

6. Working together, Andy and Sal can build a fence in 7 hours. Alone, it takes Andy twice the time it takes Sal. How long does it take each working alone?

$\frac{7}{2x} + \frac{7}{x} = 1$ (2x) $7 + 14 = 2x$ $x = 10.5$

7. Holly can harvest a strawberry patch in 5 hours, and Evelyn can do the job in 8 hours. Given that Evelyn starts 2 hours after Holly has begun working, find the total time needed to do the job.

$\frac{x}{5} + \frac{x-2}{8} = 1$ (40) $8x + 5(x-2) = 40$ $x = 3\frac{11}{13}$

8. Steve can mow a lawn in 75 minutes and Chuck can do it in 50 minutes. If Chuck watches Steve mow for 20 minutes and then helps to finish the job, find the total time for the job.

$\frac{x}{75} + \frac{x-20}{50} = 1$ (150) $2x + 3(x-20) = 150$ $x = 42$

9. A large pipe can fill a tank in 5 hours, and a smaller one can fill the tank in 8 hours. A drain pipe can empty the tank in 10 hours. Find the total time to fill the tank when all three pipes are left open.

$\frac{x}{5} + \frac{x}{8} - \frac{x}{10} = 1$ (40) $8x + 5x - 4x = 40$ $x = 4\frac{4}{9}$