

Algebra 2 Honors
WS: Chapter 5, Part 1.5 Review

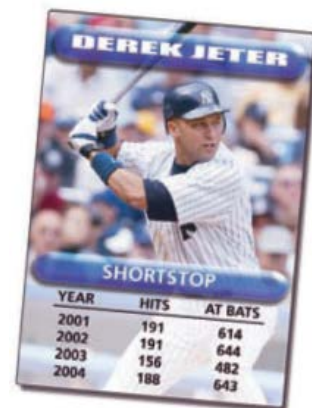
Name _____

Date _____ Block _____

All work and answers should be done on separate paper.

When necessary, answers should be given as fractions or radicals in simplest form.

1. A messenger is required to deliver 10 packages per day. Each day, the messenger works only for as long as it takes to deliver the daily quota of 10 packages. On average, the messenger is able to deliver 2 packages per hour on Saturday and 4 packages per hour on Sunday. What is the messenger's average delivery rate on the weekend? (Hint: This problem requires you to simplify a rational expression, not solve a rational equation.)
2. Ted walks around the track at school at an average rate of 4 miles per hour. He then runs once around the track. If his average for the two laps is 6 miles per hour, what is his average rate when running? (Hint: This problem requires you to simplify a rational expression, not solve a rational equation.)
3. An artist is designing a picture frame whose length, l , and width, w , satisfy the Golden Ratio, which is $\frac{w}{l} = \frac{l}{l+w}$. If the length of the frame is 24 inches, what is the width of the frame?
4. Team A can wash all the windows in the school in x hours. It takes Team B 3 hours longer to do the same job. If the teams work together, they can complete the job in 8.5 hours. How long does it take Team B to do the job alone?
5. Norton can mow a large lawn in about 4.0 hours. When Norton and Jessie work together, they can mow the same lawn in about 2.5 hours. How long would it take Jessie to mow the lawn by herself?
6. Jessie can weed a garden in about 30 minutes. When Norton helps her, they can weed the same garden in about 20 minutes. How long would it take Norton to weed the garden by himself?
7. The excursion boat Holiday travels 35 km upstream and then back again in 4 h 48 min. If the speed of the Holiday in still water is 15 km/h, what is the speed of the current?
8. A river barge travels at an average of 8 mph in still water. The barge travels 60 miles up the Mississippi River and 60 miles down the river in total of 16.5 hours. What is the average speed of the current in this section of the Mississippi? Round to the nearest tenth.
9. A glassblower can produce a set of simple glasses in about 2 hours. When the glassblower works with an apprentice, it takes them about 1.5 hours. How long would it take the apprentice alone to make a set of glasses?
10. Each month Leo must make copies of a budget report. When he uses both the large and the small copier, the job takes 30 minutes. If the small copier is broken, the job takes him 50 minutes. How long will the job take if the large copier is broken?
11. The baseball card shows statistics for a professional player during four seasons. A player's batting average is equal to his number of hits divided by his number of at bats. Write and solve an equation to find how many additional consecutive hits h Jeter would have needed to raise his batting average in 2004 to that of his average in 2001.



DEREK JETER		
SHORTSTOP		
YEAR	HITS	AT BATS
2001	191	614
2002	191	644
2003	156	482
2004	188	643

12. Write a rational function that has a vertical asymptote of $x = -3$ and a horizontal asymptote of $y = 2$.
13. Write a rational function that has a vertical asymptote of $x = \frac{2}{3}$ and a horizontal asymptote of $y = 0$.
14. Write a rational function that has a vertical asymptote at $x = 3$, a horizontal asymptote at $y = 2$, and a hole at $(2, -2)$.

In 15 - 17, identify the asymptotes, domain, and range of each function.

15. $g(x) = \frac{1}{x+5} + 7$

16. $g(x) = \frac{4}{x-9} - \frac{1}{4}$

17. $g(x) = \frac{1}{x + \frac{2}{3}} - 12$

In 18 - 20, identify the zeros, asymptotes, and holes of the function. Then graph.

18. $f(x) = \frac{2x^2 - 18}{x^2 - 25}$

19. $f(x) = \frac{x^2 + 2x - 3}{x + 3}$

20. $f(x) = \frac{x^2 + 5x + 4}{x^2 + x - 12}$

In 21 - 26, solve each inequality. Answers should be given using interval notation.

21. $\frac{x-2}{x+4} \leq 0$

24. $\frac{2}{x+1} \geq \frac{1}{x-2}$

22. $\frac{3-x}{x+5} \geq 0$

25. $\frac{5x-8}{x-5} \geq 2$

23. $\frac{(x+1)^2}{x^2 + 2x - 3} \leq 0$

26. $\frac{5}{x+3} + \frac{3}{x-1} < 0$