

Name: _____

Date: _____

Math 8/9H: Section 3.3 Rates and Ratios Worksheet

1. Find the unit rate for each of the following:

a) 5L of milk for \$8.75	b) 3 Candy Bars for \$2.75	c) 120meters in 13 seconds
f) \$2048 in 4 days	e) One dozen eggs for \$3.40	f) 6 pairs of socks for \$18.50
g) \$3.75 for 6 bagels	h) 84 students in 7 teams	i) 154 slices of pizza for 14 people
j) \$3.90 for 400g of cereal	k) \$4.55 for 350mL of shampoo	l) \$9.25 for 18 cans of Juice

2. Compare the following prices by finding the unit rates. Indicate which one is the better deal?

a) \$15/kg vs \$4.25/lbs	b) \$6.50 / 500g vs \$25 / 10lbs
c) \$8.79 / 4L vs \$0.85 / 500ml	d) \$14/dozen vs \$30/half a bag of 30

3. Indicate which is faster?

a) 50km/hr vs 12m/s	b) 18 mph vs 25km/hr
c) 30000km/hr vs 1.5Au/year	d) 25km / h vs 1500m / min

4. Which vehicle has the better fuel efficiency? Convert it all measurements to MPG:

a) 40L / 100km	b) 7mpg	c) 16L / 100km
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5. With the given ratios, write it in lowest terms:

a) 40:12	b) 5:65	c) 12:54	d) 40:72	e) 144:16
f) 54:32	g) 120:54:28	h) 4.5:12:15	i) 50:250:17	j) 91:143

6. State which ratio is bigger:

a) 6:7 or 7:8 b) 6:5 or 12:11 c) 8:3 or 13:5

7. A brand of liquid detergent is sold in 2 sizes - \$2.09 for 500mL, and \$3.55 for 1 L. Find the unit price for each size of detergent. Which is the better buy?

8. A 350g box of cornflakes costs \$1.75. A 525g box of the same cereal costs \$2.29. Find the unit price, in cents per 100g, for each box of cereal and indicate which is the better buy?

9. Milk is sold in 4L bags, 2L, and 1L cartons. The milk is priced at \$3.49, \$2.31, and \$1.20, respectively. By how much would the cost of each carton have to be reduced so that its unit price was equal to that of the 4L bags?

10. Costco cookies have raisins and chocolate chips in the ratio 3:7. Superstore cookies have raisins and chocolate chips in the ratio 5:11. Which brand has the greater ratio of raisins to chocolate chips?

11. If refreshements costs \$45 for 18people, at the same rate how much would the refreshment cost for 26people?

12. In a group of 72 students, if the ratio of boys to girls is 5:3, how many boys are in the group?

13. A pork roast should be cooked 50 minutes per 5 pounds. How many hours should a 6-pound roast be cooked?

14. If a recipe for a two-pound cake uses 1.5 cups of flour, at the same rate how many cups of flour are needed for a five-pound cake? Express your answer as a mixed number.

15. Mike types 1250 words in 20 minutes. How many words can he type in one minute? How many minutes will it take him to type a 7500 word paper?

16. A recipe for cookies calls for $\frac{1}{2}$ cup of peanut butter for every $1\frac{1}{4}$ cups of flour. How many cups of peanut of peanut butter is needed in a batch which uses 5 cups of flour?

17. Jim earned \$7.65 for 4.5 hours he baby-sat. At the same rate, how many dollars should he charge for 3 hours of baby-sitting?

18. There are 3 more English teachers than Math teachers in Moscrop Secondary. If the ratio of English to Math teachers is 6 : 5, how many Math teachers are there?

19. When a water tank is $\frac{1}{3}$ full, it contains 4000 gallons. How many gallons does it contain when it is $\frac{3}{4}$ full?

20. The ratio of red marbles to blue is 2:5. If there are 119 marbles, then how many more blue are there than red?

21. How many pounds of salt must be added to 75 pounds of 30% salt mixture to obtain a mixture that is 40% salt?

22. James is carrying a 2L bottle that is 10% water and 90% juice. How many mL of water does he need to add to make the mixture 50% water?

23. Sound travels at the rate of 1130 feet per second. How far away is a lightning strike is the sound of thunder reaches you 7 seconds after you see the lightning flash? Assume the speed of light is infinite. Round your answer to the nearest tenth of a mile.

24. The ratio of girls to boys in a school dance is 5 to 4. If twenty boys and ten girls leave, the new ratio of girls to boys will be 3 to 2. How many students were in the dance originally?

25. An elevator can hold the weight of 8 adults or 12 children. How many children could ride on the elevator with 6 adults?

26. The angles of a triangle are in the ratio 2: 3: 4. What are the measures of the angles?

27. The length and the width of a rectangle are in the ratio 9: 7. If the perimeter is 256 cm, what are the dimensions of the rectangle?

28. In the country of Cascadia, 10% of the people are rich, and 90% are poor. Between them, the rich own 90% of the wealth and the poor own the remaining 10%. If "P" is the mean wealth of a poor person, and "R" is the mean wealth of a rich person, what is the value of P/R? Express your answer as a common fraction.

29. There are two candles, one short and thick, the other tall and thin. They burn at different rates. The short, thick candle burns for 120 minutes. Both candles were lit at the same time, and after 30 minutes they were both the same height. After 30 additional minutes, the (originally) tall candle was half the height of the (originally) short candle. What is the total expected burn time, in minutes, of the (originally) tall candle?

30. Alex's heart beats 50 times per minute when she is asleep, and 70 times per minute when she is awake, except that it beats 90 times per minute when she is doing mathematics – which she never does while she sleeps. In the last 24 hours, Alex slept for 8 hours, and did mathematics for 8 hours. What was Alex's average number of heart beats per minute over the last 24 hours?

Juliet has attempted 213 problems on Brilliant and solved 210 of them correctly. Her friend Romeo has just joined Brilliant, and has attempted 4 problems and solved 2 correctly. From now on, Juliet and Romeo will attempt all the same new problems. Find the minimum number of problems they must attempt such that it is possible that Romeo's ratio of correct solutions to attempted problems will be **strictly greater than** Juliet's <brilliant.org>