

U2B – Rate and Ratio

Name: _____

Instructions:

Using a pencil, complete the following questions as you work through the related lessons. Show ALL work as is explained in the lessons. Do your best and ask questions if you don't understand anything!

2B.1 Ratio

Write 3 more ratios which are equivalent to the ratio on the left

1.	2:8			
2.	1:7			
3.	6:4			
4.	4:3			
5.	3:4			

2B.2 Equivalent Ratio

Fill in the missing part of the equivalent ratio.

1. $4 : 5 = \underline{\quad} : 10 = \underline{\quad} : 30$

2. $6 : 7 = \underline{\quad} : 14$

3. $3 : \underline{\quad} = 15 : 25$

4. $12 : \underline{\quad} = 6 : 3 = \underline{\quad} : 1$

5. $4 : 14 = \underline{\quad} : 7$

6. $12 : 20 = \underline{\quad} : 5 = \underline{\quad} : 35$

Determine the following ratios, express in lowest terms, as a percent, and as a decimal.

	Ratio	Lowest Terms	Percent	Decimal
Example	24 to 40	3 to 5	60%	0.6
7.	50 to 100			
8.	15 to 60			
9.	4 to 20			
10.	6 to 4			

Write the following ratios with a first term 1.

Example	4:12	1:3
11.	6:18	
12.	12:48	
13.	17:34	
14.	8:64	

Write the following ratios with a second term 1.

Example	18:6	3:1
15.	44:4	
16.	121:11	
17.	12:2	
18.	4:2	

Convert both ratios into equivalent ratios with the same second term.

Example	7:8 and 5:6	21:24 and 20:24
19.	3:4 and 2:3	
20.	1:6 and 3:14	
21.	2:7 and 3:5	
22.	5:2 and 3:1	

2B.3 Comparing Ratios

- Nick's hand measures 20cm long. He is 1.7m tall. Express the ratio of the length of Nick's hand to his height in simplest form? Remember to convert both amounts to the same unit and both numerical values must be whole numbers, no decimals!
- Erika made \$160 in 8 hours. Express how much did she made in one hour?
- There are 15 blue marbles out of 50 marbles. Express the ratio in simplest terms?
- To make 20 biscuits, Sam uses 5 cups of flour to 1 cup of milk. If she uses 3 cups of milk, how many cups of flour will she use?

5. When a robin flies, it beats its wings an average of 23 times in ten seconds. How many times will it beat its wings in two minutes?

6. Three math classes all have 24 students. The ratio of girls to total students in each of the classes is 2:3, 7:12 and 5:8. How many girls does each class have?

7. The average human heart beats at 72 beats per minute. How many times does it beat in 15 seconds?

How many in an hour?

How many in a day?

How many in a year?

Take your pulse and record the number of beats in 30 seconds. How many times does it beat in an hour?

How many times does it beat in a day, a month, how about a year?

8. Your school is going on a trip to Niagara Falls. The ratio of men to women to children is 1:2:3.

If there are 10 men how many people all together are there?

If there are 10 women how many people all together are there?

If there are 120 people altogether how many men, women and children are there?

9. In the basketball game Greg made 7 baskets in 8 tries. Bonnie scored 5 baskets in 6 tries. Whose performance was better?

2B.4 Rates

1. Calculate the unit rate.

984 km in 12 hours

2. Calculate the unit cost.

5 jars of juice of 14.45

3. Calculate the unit cost.

\$21.99 for a 454 g bag of frozen cooked scallops

4. Calculate the hourly rate.

Robert worked 37.5 h and earned \$346.88

5. Justine drove 725 km in 8 h. At this rate, about how far will Justine drive in 9.5 h, to the nearest kilometer?

6. Which is the better price?

2 containers of yogurt for \$0.89 or 9 containers of yogurt for \$4.30

2B.5 Proportions

Solve the following proportions: (Give your answers to two decimal places, when necessary)

1. $\frac{3}{4} = \frac{x}{22}$	2. $\frac{2}{7} = \frac{14}{x}$	3. $\frac{x}{6} = \frac{15}{22}$
4. $\frac{3}{4} = \frac{x}{120}$	5. $\frac{12}{13} = \frac{x}{25}$	6. $\frac{5}{x} = \frac{12}{15}$

7. If you can buy one can of pineapple chunks for \$2 then how many can you buy with \$10?

8. One cantaloupe costs \$2. How many cantaloupes can you buy for \$6?

9. Shawna reduced the size of a rectangle to a height of 2 in. What is the new width if it was originally 24 in wide and 12 in tall?

2B.6 Problems with Rate and Ratio

1. Asanji took a trip to Mexico. Upon leaving he decided to convert all of his Pesos back into dollars. How many dollars did he receive if he exchanged 42.7 Pesos at a rate of $\$5.30 = 11.1$ Pesos?

2. The currency in Argentina is the Peso. The exchange rate is approximately $\$3 = 1$ Peso. At this rate, how many Pesos would you get if you exchanged $\$121.10$?

3. When 2 000 pounds of paper are recycled, 17 trees are saved. How many trees are saved if 5 000 pounds of paper is recycled?

1,000 pounds of paper?

4. If 675 donuts were sold by 12 stores, how many donuts will be sold by 16 stores?

5. If it costs \$90 to feed a family of 3 for one week, how much will it cost to feed a family of 5 for one week? How much will it cost to feed a family of seven?

6. In a school there are four boy scouts to every three girl scouts. If there are forty-two girl scouts, how many boy scouts are there? If there are 81 girl scouts, how many boy scouts are there?

7. If there are 8 teachers for 200 students, how many teachers are there for 375 students?

8. Two windows have the same proportion. Window one is 36cm high and 60 cm wide. Window two is 50 cm wide. How high is it?

9. If it takes 14 bags of puppy chow to feed 3 dogs for a year, how many bags would it take to feed 11 dogs for a year.

2B.7 Financial Literacy

1. After completing the coupon activity, answer the following questions:
 - a. How much money did you save with these coupons?

b. What would you like to buy on the saved money?

c. What might influence your choice?

d. Do you think coupons might help you choose? Why or why not?

2. What is the unit price per bar when a box of six ice cream bars sells for \$2.49?

3. Which box of cereal below is the best buy? Find the unit price of each.

- a. 24 ounces for \$2.79
- b. 32 ounces for \$3.29
- c. 40 ounces for \$3.99
- d. 60 ounces for \$4.99

Sam's Market Weekly Sale Flyer

4.

The flyer displays five items with their respective prices:

- Oranges:** One dozen for \$3.60
- Spring water:** 24 bottles for \$3.60
- Pasta sauce:** 3 jars for \$9.69
- Snack pack:** 5 bags for \$5.50
- Milk:** 4 litres for \$5.98

Here are some items on sale at Sam's Market.

Find the unit rate (unit price) of each item, and fill in the chart below.

ITEM	Quantity Listed	Price Listed	Unit	Unit Price
Oranges	12	\$3.60	1 orange	

ANSWERS:**2B.1 Ratios**

1. Answers may vary, example: 1:4
2. Answers may vary, example: 2:14
3. Answers may vary, example: 3:2
4. Answers may vary, example: 8:6
5. Answers may vary, example: 6:8

2B.2 Equivalent Ratios

1. 8, 24 2. 12 3. 5 4. 6, 2 5. 2 6. 3, 21 7. 1 to 2, 50%, 0.5 8. 1 to 4, 25%, 0.25
9. 1 to 5, 20%, 0.2 10. 3 to 2, 150%, 1.5 11. 1:3 12. 1:4 13. 1:2 14. 1:8 15. 11:1 16. 11:1
17. 6:1 18. 2:1 19. 9:12 and 8:12 20. 7:42 and 9:42 21. 10:35 and 21:35 22. 5:2 and 6:2

2B.3 Comparing Ratios

1. 2:17 2. \$20 3. 3:10 4. 15 5. 276 6. 16, 14, 15 7. 18, 4 320, 103 680, 37 843 200, answers vary depending on your own heart rate
8. 60, 30, 20 men:40 women:60 children 9. Greg

2B.4 Rates

1. 82 km/h 2. \$2.88/jar 3. \$.05/g 4. \$9.25/h 5. 861 km 6. 2 containers of yogurt for \$0.89

2B.5 Proportion

1. 16.5 2. 49 3. 4.09 4. 90 5. 23.08 6. 6.25 7. 5 8. 3 9. 4in

2B.6 Problems with rates and ratios

1. \$20.39 2. 40.4 pesos 3. 43 trees, 9 trees 4. 900 5. \$150 6. 56, 108 7. 15 teachers 8. 30cm
9. 52 bags

2B.7 Financial Literacy

1. Answers will vary 2. \$0.42/bar 3. a) \$0.12/oz b) \$0.10/oz c) \$0.10/oz d) \$0.08/oz (Best Buy) 4. Oranges: 12, \$3.60, 1 orange, \$0.30 --- Spring water; 24; \$3.60; 1 bottle; \$0.15 --- Pasta Sauce: 3, \$9.69, 1 jar, \$3.23 --- Snack Pack: 5, \$5.50, 1 bag, \$1.10 --- Milk: 4, \$5.98, 1 litre, \$1.50