Unit D Ratio, Rates and Percents
Unit Review Packet

Name Key

Directions: Do ALL (A) Questions. Check Your Answers to (A) Questions. If ALL (A) Questions are correct, skip (B) Questions and move onto next "I can" statement. If you get any (A) Questions wrong, MAKE CORRECTIONS and do ALL (B) Questions.

"I Can Write a Ratio Comparing Two Quantities Given a Real-World Situation."

Write each ratio for the given situation.

At the local market there were 12 apples, 15 oranges, and 20 bananas in the large fruit basket.

A1: oranges to apples	**A**2: apples to total fruit	**A**3: bananas to apples and oranges combined	**A**4: total to bananas
15 : 12 or 5 : 4	12 : 47	20 : 27	47 : 20

Bethany made 14 out of 20 baskets in her basketball game.

A1: makes to misses	**A**2: misses to total shots	**A**3: total shots to makes	**A**4: total shots to misses
14 : 6 or 7 : 3	6 : 20 or 3 : 10	20 : 14 or 10 : 7	20 : 6 or 10 : 3

"I Can Find the Value of a Ratio as a Fraction, Decimal, or Percent."

Ratio	Fraction	Decimal	Percent
3 : 8	**A**1: $\frac{3}{8}$	**A**2: 0.375	**A**3: 37.5%
A4: 9 : 4	**A**5: $2\frac{1}{4}$ or $\frac{9}{4}$	2.25	**A**6: 225%

Ratio	Fraction	Decimal	Percent
B1: 6 : 5	$\frac{6}{5}$	**B**2: 1.2	**B**3: 120 %
B4: 13 : 20	**B**5: $\frac{65}{100}$ or $\frac{13}{20}$	**B**6: 0.65	65%

"I Can Generate Equivalent Ratios and Determine if Ratios are Equivalent."

A1:

Miles	Minutes
3	7
9	21
12	28
18	42
27	63
30	70

÷9 ÷9 ·3 ·3

A2: Do the following fractions form a proportion?

$\frac{20}{24}$ and $\frac{12}{16}$

12 · 24 = 288 20 · 16 = 320

NO!

B1:

Pencils	Price
5	4
10	8
15	12
20	16
25	20
30	24

÷2 ·3 ·3 ÷2

B2: Do the following fractions form a proportion?

$\frac{16}{6}$ and $\frac{10}{3}$

10 · 6 = 60 16 · 3 = 48

NO!

A3: An animal shelter has 36 kittens and 12 puppies. Beth says that the ratio of kittens to puppies is 3 : 1. Is she correct?

×12 (36 : 12 / 3 : 1) ×12

Yes she is correct!

B3: Benny can stack 42 cups in 24 seconds. Does this mean he can stack 70 cups in 40 seconds?

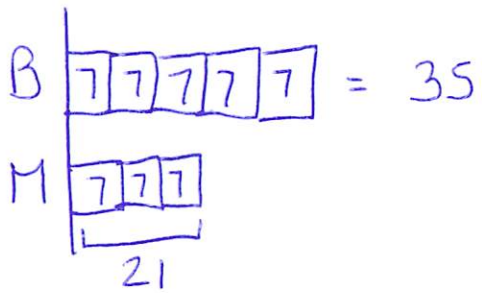
42 : 24 → 7 : 4

70 : 40 → 7 : 4

Yes!

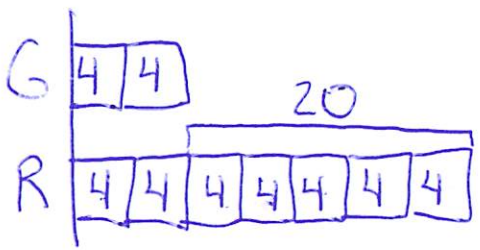
"I Can Apply the Concept of Generating Equivalent Ratios to Solve Real-World Problems."

A1: The ratio of books to magazines at Jess's house is 5 : 3. If there are 21 magazines at Jess's house, how many books are there?



35 Books

A2: The ratio of green pepper plants to red pepper plants in Joe's garden is 2 : 7. If Joe has 20 more red pepper plants than green pepper plants, how many of each does he have?



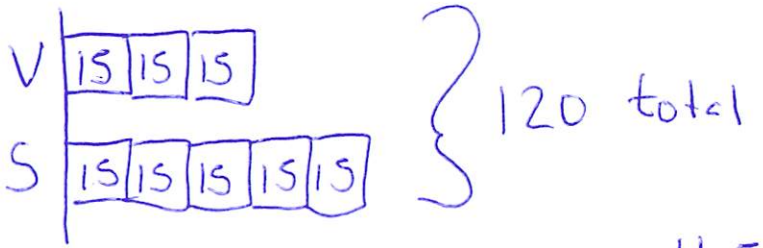
8 green pepper plants

28 red pepper plants

A3: In a recent survey, 3 out of 8 people preferred the vanilla yogurt over the strawberry yogurt. If there were a total of 120 people surveyed, how many liked the vanilla yogurt?

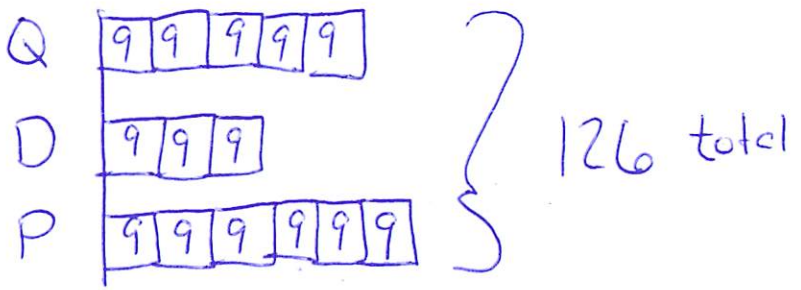
3 → Vanilla

5 → Strawberry



45 People

A4: Jeremy has a piggy bank with 126 coins in it. If the ratio of quarters to dimes to pennies is 5 : 3 : 6, how many of each type of coin does Jeremy have?



45 Quarters

27 Dimes

54 Pennies

"I Can Calculate Unit Rate and Unit Price and Compare their Values to Interpret Real-World Situations."

A1: The Reyes family bought four concert tickets for $252. What was the price per ticket?

$\frac{\$252}{4 \text{ tickets}} \overset{\div 4}{=} \frac{\$63}{1 \text{ ticket}}$ (÷4)

$63 per ticket

A2: Alana biked 12 miles in 48 minutes. What is Alana's speed in miles per minute?

$\frac{12 \text{ miles}}{48 \text{ min}} \overset{\div 48}{=} \frac{0.25 \text{ miles}}{1 \text{ min}}$ (÷48)

0.25 miles per minute

A3: Potatoes are on sale at two local grocery stores. At Grocery Mart, a 5-lb bag of potatoes costs $2.58. At Baldwin Hills Market, a 7-lb bag of potatoes costs $4.20. Which store has the better buy?

GM: $\frac{\$2.58}{5 \text{ lb}} \overset{\div 5}{=} \frac{\$0.52}{1 \text{ lb}}$ (÷5)

BH: $\frac{\$4.20}{7 \text{ lb}} \overset{\div 7}{=} \frac{\$0.60}{1 \text{ lb}}$ (÷7)

Better Buy: **Grocery Mart** (CHEAPER PER POUND) **Baldwin Hills Market**

B1: A Ruby Throated Hummingbird beats its wings 159 times in 3 seconds. How many times does it beat its wings per second?

$\frac{159 \text{ beats}}{3 \text{ seconds}} \overset{\div 3}{=} \frac{53 \text{ beats}}{1 \text{ second}}$ (÷3)

53 beats per second

B2: Theo's mom bought an eight pack of juice at the store for $4. Find the unit price for the juice boxes.

$\frac{\$4}{8 \text{ juice boxes}} \overset{\div 8}{=} \frac{\$0.50}{1 \text{ juice box}}$ (÷8)

$0.50 per juice box

B3: Jill filled up her car with 15 gallons of gas for $43.35. Bill filled up his car with 22 gallons of gas for $61.82. Who got the better deal on gas?

Jill: $\frac{\$43.35}{15 \text{ gal}} \overset{\div 15}{=} \frac{\$2.89}{1 \text{ gal}}$ (÷15)

Bill: $\frac{\$61.82}{22 \text{ gal}} \overset{\div 22}{=} \frac{\$2.81}{1 \text{ gal}}$ (÷22)

Better Deal: **Jill** **Bill** (CHEAPER PER GALLON)

"I Can Solve Real-World Problems by Comparing Rates, Prices, and Units of Measurement."

A1: The Millers drove 105 miles on 4 gallons of gas. At this rate, how many miles can they drive on 6 gallons of gas?

$\frac{105 \text{ miles}}{4 \text{ gal}} \overset{\div 4}{=} \frac{26.25 \text{ mi}}{1 \text{ gal}} \overset{\cdot 6}{=} \frac{157.5 \text{ miles}}{6 \text{ gallons}}$

157.5 miles

A2: If 15 baseballs weigh 75 ounces, how many baseballs weigh 15 ounces?

$\frac{15 \text{ baseballs}}{75 \text{ oz}} \overset{\div 5}{=} \frac{3 \text{ baseballs}}{15 \text{ oz}}$

3 baseballs

A3: John played soccer for 60 minutes over 5 days. At this rate, how many minutes would John play soccer for in 1 week?

7 days

$\frac{60 \text{ min}}{5 \text{ days}} \overset{\div 5}{=} \frac{12 \text{ min}}{1 \text{ day}} \overset{\cdot 7}{=} \frac{84 \text{ min}}{7 \text{ days}}$

84 minutes

B1: While resting, a human takes in about 5 liters of air in 30 seconds. At this rate, how many liters of air does he take in during 150 seconds?

$\frac{5 \text{ liters}}{30 \text{ seconds}} \overset{\cdot 5}{=} \frac{25 \text{ liters}}{150 \text{ seconds}}$

25 liters of air

B2: If you drive your car at a constant speed of 45 miles per hour, how long will it take for you to travel 378 miles?

$\frac{45 \text{ miles}}{1 \text{ hr}} = \frac{378 \text{ miles}}{x}$

$378 = 45x$

$\div 45 \quad \div 45$

$8.4 = x$

8.4 hrs

B3: If Jeremy can hop 9 feet in 2 hops. How many hops will it take Jeremy to hop 20 yards?

60 feet

$\frac{9 \text{ feet}}{2 \text{ hops}} = \frac{60 \text{ ft}}{x}$

$120 = 9x$

$\div 9 \quad \div 9$

$13.3 = x$

14 hops

"I Can Solve Real-World Problems by Comparing Rates, Prices, and Units of Measurement."

A1: 3 yd = 108 in

A2: 4 ton = 8000 lbs

A3: 500 cm = 5 m

A4: 4.5 L = 4500 mL

A5: 8 km = 8000 m

A6: 9000 mm = 900 cm

A7: 48 oz = 3 lb

A8: 2 mile = 3520 yds

A9: 5 gal = 20 qt

A10: 1 pt = 16 fl oz

A11: 12 cups = 3 qt

A12: 64 pt = 8 gal

A13: Convert 25 pounds to kilograms.

1 pound = 0.454 kg

$$\frac{1 \text{ pound}}{0.454 \text{ kg}} \xrightarrow{\cdot 25} \frac{25 \text{ pounds}}{11.35 \text{ kg}}$$

11.35 kg

A14:

Part A:
Jill and Erika make 4 gallons of lemonade for their lemonade stand. How many quarts will they be able to sell?

4 gallons = 16 quarts

B13: Convert 10 inches to centimeters.

1 inch = 2.54 cm

$$\frac{1 \text{ inch}}{2.54 \text{ cm}} \xrightarrow{\cdot 10} \frac{10 \text{ in}}{25.4 \text{ cm}}$$

25.4 cm

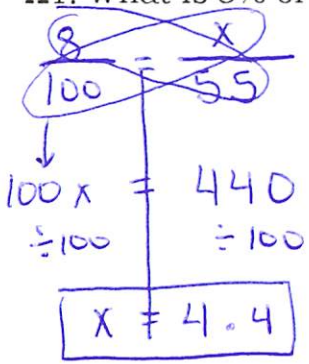
Part B:
If they charge $2.00 per quart, how much money will they make if they sell it all?

$$\frac{\$2.00}{1 \text{ quart}} \xrightarrow{\cdot 16} \frac{\$32.00}{16 \text{ quarts}}$$

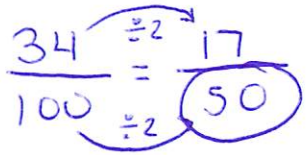
$32.00

"I Understand How Percents and Ratios are Related and Can Use Percents to Solve Real-World Problems."

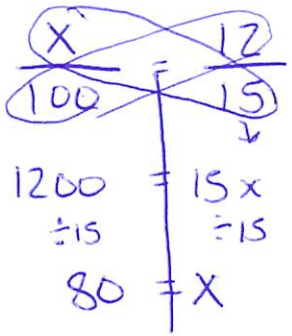
A1: What is 8% of 55?



A2: 17 is 34% of what number?

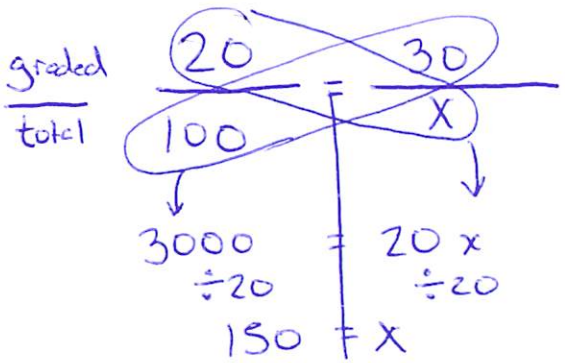


A3: 12 is what percent of 15?



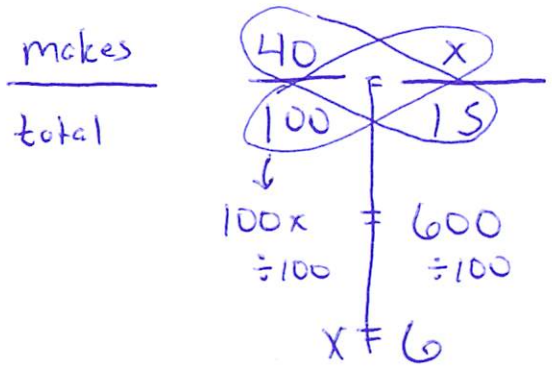
80%

A4: Mrs. Bennett has graded 20% of her students' papers. If she graded 30 papers, how many total papers did she have to grade?



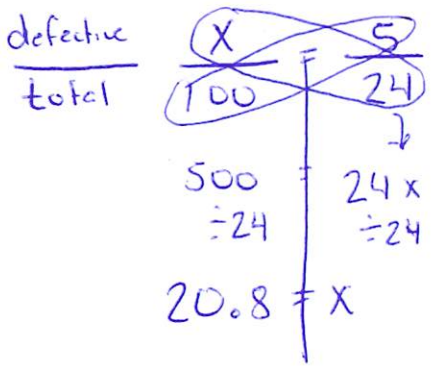
150 total papers

B4: Angel is shooting baskets and makes 40% of the 15 shots he takes. How many did he make?



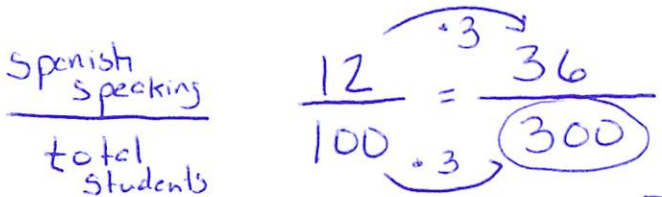
6 makes

A5: After a group of 24 parts were tested, 5 were found defective. About what percent of the parts were defective?



About 21% were defective

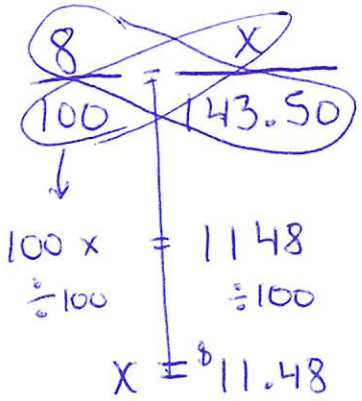
B5: According to the school survey, 12% of the students at Rockwell Junior High School speak Spanish. There are 36 students at the school who speak Spanish. How many students were surveyed?



300 total students

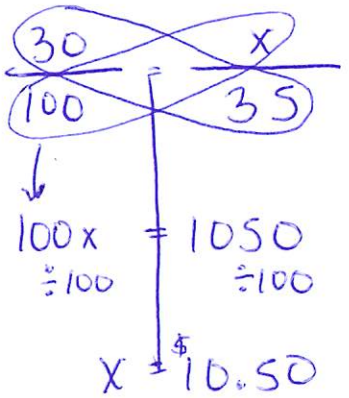
"I Can Solve Real-World Problems by Applying Percents to Calculate Tax and Discount."

A1: Tommy and his wife went to the store and bought groceries. Their subtotal was $143.50. If the sales tax was 8%, what was the total amount they paid for groceries?



143.50
+ 11.48
$ 154.98 total

A2: Troy wants to buy a jersey of his favorite team. The jersey is 30% off the original price of $35. What is the sale price?



4 10
38.~~10~~0
- 10.50
$ 24.50 total

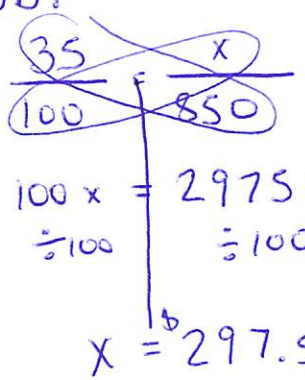
A3: Two different stores have the same TV on sale. The original price of the TV in both stores is $850.

Best Buyer: The TV is 35% off the original price

JP Electronics: The TV is 20% off the original price but you can take an additional 15% off at the register.

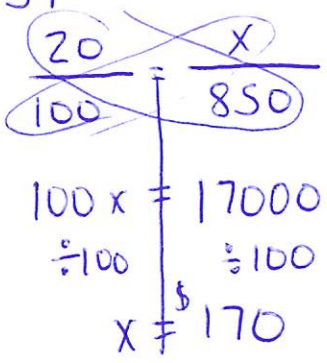
Which store offers the better deal?

BB:



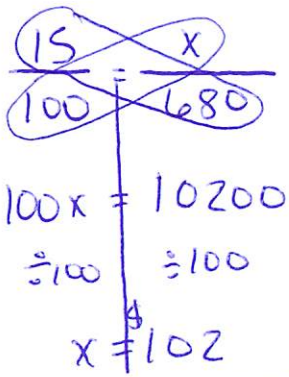
850.00
- 297.50
$ 552.50

JP



850
- 170
$ 680

then



680
- 102
$ 578

BEST BUYER has the best deal!

"I Can Connect a Ratio and a Rate to its Table, Graph, or Equation."

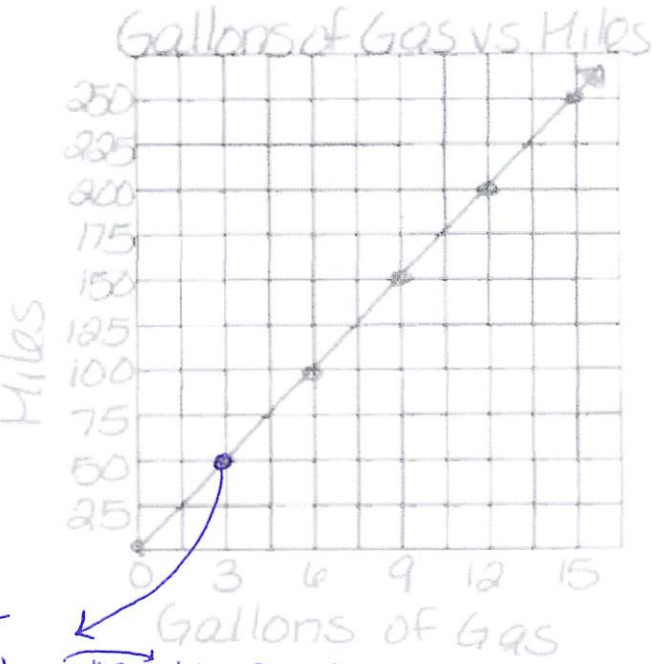
"I Can Use the Information Presented in a Table, Graph, or Equation to Interpret Rates in Real-World Contexts."

A1: Victor was having a hard time deciding on which new vehicle he should buy. He decided to buy the car that got the most miles per gallon. When he asked the manager he received information on two vehicles.

Vehicle 1: Legend

Gallons of Gas	4	8	12
Miles	72	144	216

Vehicle 2: Supreme



Part A:
If Victor wanted to buy the car that had the highest miles per gallon, which car should he buy? Support your answer with WORK!

Legend:

$$\frac{72 \text{ miles}}{4 \text{ gal}} \overset{\div 4}{=} \frac{18 \text{ miles}}{1 \text{ gal}}$$

Supreme

$$\frac{50 \text{ miles}}{3 \text{ gallons}} \overset{\div 3}{=} \frac{16.7 \text{ miles}}{1 \text{ gal}}$$

Legend has higher miles per gallon

Part B:
After comparing the Legend and Supreme, Victor saw an advertisement for a third vehicle, the Lunar. The manager said the Lunar could travel about 289 miles on its 17 gallon tank of gas. Should Victor buy the Lunar instead? Why or why not?

$$\frac{289 \text{ miles}}{17 \text{ gallons}} \overset{\div 17}{=} \frac{17 \text{ miles}}{1 \text{ gallon}}$$

No, the Legend still gets the most miles per gallon

A2: Emanuel read 150 pages in 5 hours.

a. Find his average reading rate.

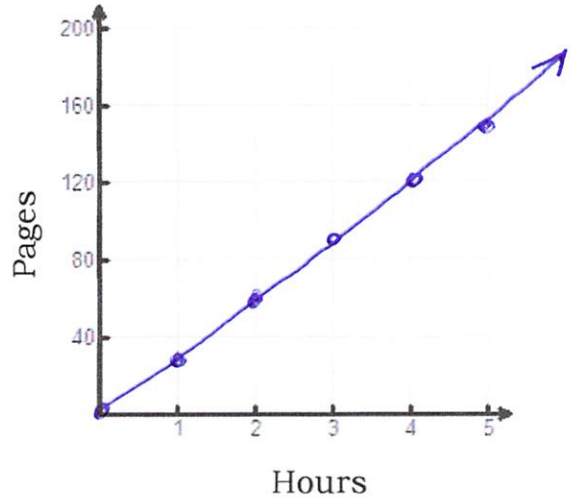
$$\frac{150 \text{ pages}}{5 \text{ hrs}} \overset{\div 5}{=} \frac{30 \text{ pages}}{1 \text{ hr}}$$

30 pages per hour

b. Complete the table of equivalent ratios assuming the rate remains constant.

Hours	Pages
1	30
2	60
3	90
4	120
5	150

c. Graph the data



d. Write the algebraic equation that represents the relationship between the hours h and the number of pages p.

$p = 30 \cdot h$

Answer the following questions assuming the rate remains constant.

a. How many pages can he read in 4 ½ hours?

$$\frac{30 \text{ pages}}{1 \text{ hr}} \overset{\cdot 4.5}{=} \frac{135 \text{ pages}}{4.5 \text{ hrs}}$$

135 pages

b. How long in hours and minutes will it take him to read 230 pages?

$$\frac{30 \text{ pages}}{1 \text{ hr}} = \frac{230 \text{ pgs}}{x}$$

$\frac{230}{30} = \frac{30x}{30}$

$7.\overline{6} = x$

$7.\overline{6}$ hrs =

7 hours and 40 minutes