

Agenda:

- 1) Complete Warm Up - p. 123
- 2) Go over Lesson 14
- 3) Lesson 15: Equations of Graphs Involving Fractions
- 4) Homework: Lesson 15 (1-4)



Lesson Summary:

- Discount price = original price – rate \times original price OR $(1 - \text{rate}) \times \text{original price}$
- Commission = rate \times total sales amount
- Markup price = original price + rate \times original price OR $(1 + \text{rate}) \times \text{original price}$

Problem Set

1. What is $\frac{1}{32}$ commission of sales totaling \$24,000? $24000 \times \frac{1}{32} =$
2. DeMarkus says that a store overcharged him on the price of the video game he bought. He thought that the price was marked $\frac{1}{4}$ of the original price, but it was really $\frac{1}{4}$ off the original price. He misread the advertisement. If the original price of the game was \$48, then what was the difference between the price that DeMarkus thought he should pay and the price that the store charged him?
3. What is the cost of a \$1200 washing machine that was on sale for a $\frac{1}{5}$ discount?

$$\boxed{\begin{array}{r} 24000 \\ \times \frac{1}{32} \\ \hline 24000 \end{array}}$$

$$= 960$$

4. If a store advertised a sale that gave customers a $\frac{1}{4}$ discount, what is the fraction part of the original price that the customer will pay?

$$1 - \frac{1}{4} = \frac{3}{4}$$

5. Mark bought an electronic tablet on sale for $\frac{1}{4}$ off its original price of \$825.00. He also wanted to use a coupon for a $\frac{1}{5}$ off the sales price. Before taxes, how much did Mark pay for the tablet?

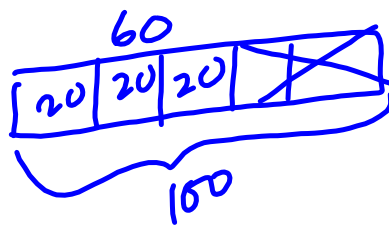
$$825 \times \frac{3}{4} = 618.75$$

$$618.75 \times \frac{4}{5} = 495$$

6. A car dealer paid a certain price for a car and marked it up by $\frac{2}{5}$ of the price he paid. Later he sold it for \$24,000 what is the original price?

$$1 + \frac{2}{5} = \frac{7}{5}$$

7. Joanna ran a mile in physical education class. After resting for one hour, her heart rate was 60 beats per minute. If her heart rate decreased by $\frac{2}{5}$, what was her heart rate immediately after she ran the mile?

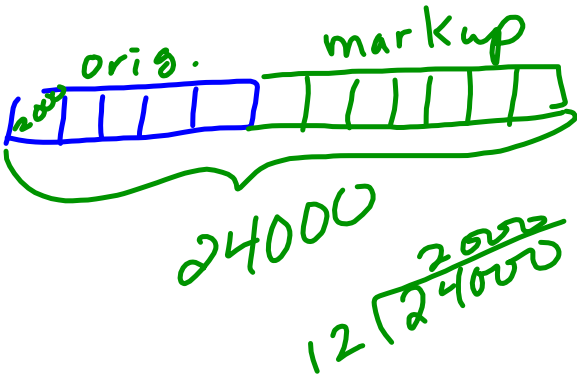


$$1 - \frac{2}{5} = \frac{3}{5}$$

$$\begin{array}{r} \text{old} \quad \text{new} \\ 100 \\ \times \frac{3}{5} \\ \hline 300 \end{array}$$

⑥

orig	sell:
10,000?	24000
	pr:



2000 x 5 = 10000

Lesson 15: Equations of Graphs of Proportional Relationships Involving Fractions

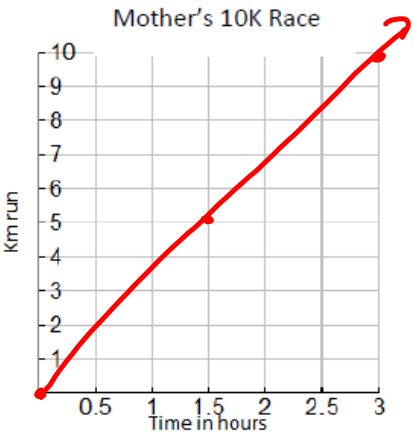
Classwork**Example 1: Mother's 10K Race**

Sam's mother has entered a 10 K race. Sam and his family want to show their support of their mother but they need to figure out where they should go along the race course. They also need to determine how long it will take her to run the race so that they will know when to meet her at the finish line. Previously, his mother ran a 5K race with a time of $1\frac{1}{2}$ hours. Assume Sam's mother ran the same rate as the previous race in order to complete the chart.

proportional

Create a chart that will show how far Sam’s mother has run after each half hour from the start of the race and graph it on the grid at the right.

Hours (H)	Km run (D)
1½	5
3	10
0	0



a. What are some specific things you notice about this graph?

proportional

- b. What is the connection between the table and the graph?

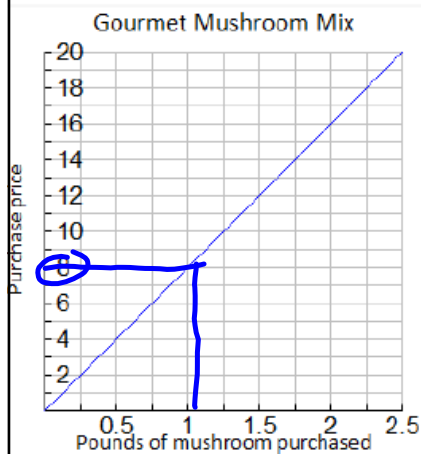
They match
we plotted 3 of coordinates on the graph.

- c. What does the ordered pair $(2, 6\frac{2}{3})$ represent in the context of this problem?

2 hours to run $6\frac{2}{3}$ km

Example 2: Organic Cooking

After taking a cooking class, you decide to try out your new cooking skills by preparing a meal for your family. You have chosen a recipe that uses an organic mushroom mix as the main ingredient. Using the graph below, complete the table of values and answer the following questions.



Weight in pounds	cost
0	0
$\frac{1}{2}$	4
1	8
$1\frac{1}{2}$	12
$2\frac{1}{2}$	18

1, unit rate

$$4 \div \frac{1}{2} = 4 \times \frac{2}{1} = 8$$

$$12 \div 1\frac{1}{2} = 12 \div \frac{3}{2}$$

$$4 \div 2 \times \frac{2}{1} = 8$$

1. Is this relationship proportional? How do you know from examining the graph?

yes \rightarrow hits the origin & straight line

2. What is the unit rate for cost per pound?

8

3. Write an equation to model this data.

$$y = 8x$$

$$y = \text{unit rate} \cdot x$$

4. What ordered pair represents the unit rate and what does it mean?

(1, 8)

1 pound
of mushrooms

Costs \$8

5. What does the ordered pair (2, 16) mean in the context of this problem?

2 pounds of mushrooms cost \$16

6. If you could spend \$10.00 on mushrooms, how many pounds could you buy?

$$1\frac{1}{4} \text{ lb}$$

7. What would be the cost of 30 pounds of mushrooms?

$$\$240$$

$$\begin{array}{r|l} 16 & \$ \\ \hline 1\frac{1}{4} & 16 \\ 1.25 & 10 \\ \hline 30 & 240 \end{array}$$

Lesson Summary:

Proportional relationships can be represented through the use of graphs, tables, equations, diagrams, and verbal descriptions

In a proportional relationship arising from ratios and rates involving fractions, *the graph* gives a visual display of *all values* of the proportional relationship, especially the quantities that fall between integer values.

Problem Set

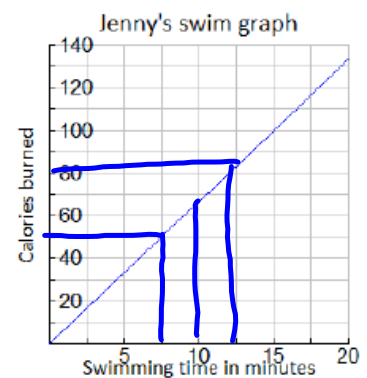
1. Students are responsible for providing snacks and drinks for the Junior Beta Club Induction Reception. Susan and Myra were asked to provide the punch for the 100 students and family members who will attend the event. The chart below will help Susan and Myra determine the proportion of cranberry juice to sparkling water that will be needed to make the punch. Complete the chart, graph the data, and write the equation that models this proportional relationship.

Sparkling water (cups)	Cranberry juice (cups)
1	$\frac{4}{5}$
5	4
8	
12	$9\frac{3}{5}$
	40
100	



2. Jenny is a member of a summer swim team.

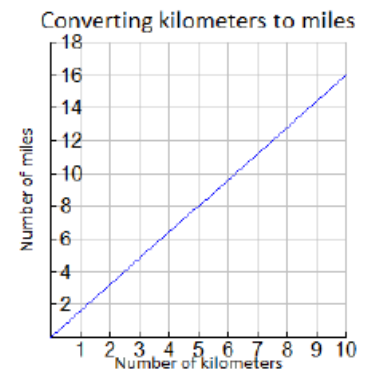
- How many calories does she burn in one minute?
- Use the graph below to determine the equation that models how many calories Jenny burns within a certain number of minutes.
- How long will it take her to burn off a 480 calorie smoothie that she had for breakfast?



$$\text{Unit Rate} = 50 \div 7\frac{1}{2} =$$

min.	Cal
7½	50
12½	80

3. Students in a World Geography Class want to determine the distances between cities in Europe. The map has a European Publisher which gives all distances in kilometers. These students want to determine the number of miles between towns so that they can compare distances with a unit of measure that they are already familiar with. The graph below shows the relationship between a given number of kilometers and the corresponding number of miles.
- Find the constant of proportionality or the rate of miles per kilometer for this problem and write the equation that models this relationship
 - What is the distance in kilometers between towns that are 5 miles apart?
 - Describe the steps you would take to determine the distance in miles between two towns that are 200 kilometers apart?



4. During summer vacation, Lydie spent time with her grandmother picking blackberries. They decided to make blackberry jam for their family. Her grandmother said that to make jam, you must cook the berries until they become juice and then combine the juice with the other ingredients to make the jam.
- a. Use the table below to determine the constant of proportionality of cups of juice to cups of blackberries?
 - b. Write an equation that will model the relationship between the number of cups of blackberries and the number of cups of juice?
 - c. How many cups of juice were made from 12 cups of berries? How many cups of berries are needed to make 8 cups of juice?

Blackberries	Juice
0	0
4	1 $\frac{1}{3}$
8	2 $\frac{2}{3}$
12	
	8