**Sample Problems for Section 4.2**

1.   Determine if each of the following pairs of rates are proportional.

| $\frac{3}{2}$ and $\frac{2}{3}$	$\frac{5}{15}$ and $\frac{10}{30}$	$14:18$ and $4:8$

2.   Last year, Sheryl got a Labrador puppy. The table below shows the age and weight of the puppy over several months. Graph the following relationship. Write a sentence justifying your placement of each variable.

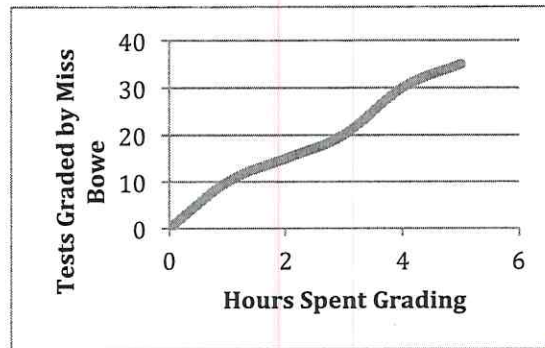| Weight of dog (in pounds)	Age of dog (in months)
23	3
30	4
45	6
55	9
60	12
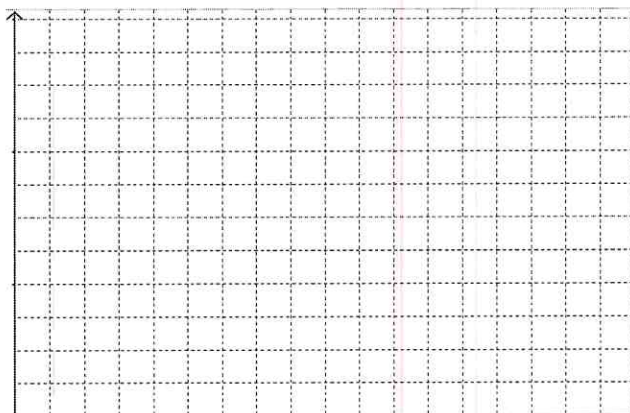
3.   Given the following graphs, state whether each graph is proportional or not. Show or explain how you know. If it is proportional, find the unit rate.
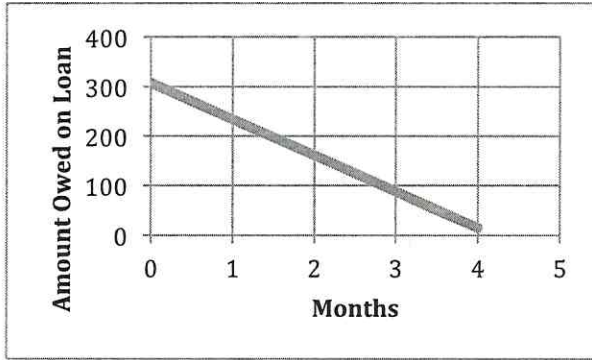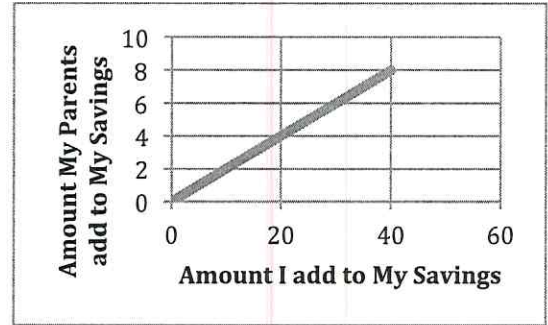
a.
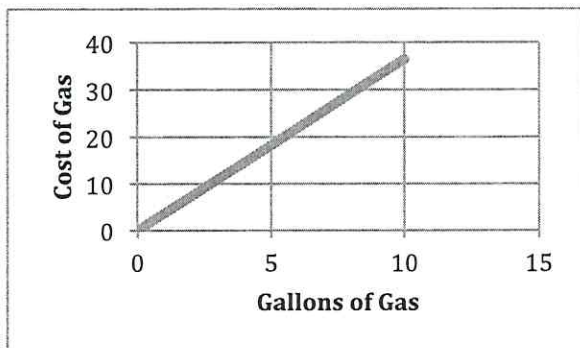
b.

c.

d.

4. For each table below, find the unit rate.
   Then explain the meaning of the point $(1, r)$.

a.

Kelsey's run	
Miles	Hours
$\frac{1}{2}$	$\frac{1}{8}$
2	$\frac{1}{2}$
3.5	$\frac{7}{8}$
12	3

b.

Brand X Peanut Butter	
Cost	Ounces
13.92	48
11.60	40

5. Find the unit rate for each table below. Then compare to the corresponding context in # 4.

a.

Romina's run	
Hours	Miles
$\frac{1}{2}$	2.5
2	10
4	20
5	25

b.

Brand Y Peanut Butter	
Cost	Ounces
20.16	96
6.30	30
3.15	15

Label the ratio in the problem as part-to-part (pp) or part-to-whole (pw). Draw models if desired.
Write proportion equations to solve. (Be careful! To answer the question, you might have to do two steps.)
- Divide # 6-21 below evenly in your groups of four (count off every fourth problem).
- All students will do #22.
- Work in pairs to complete one each of the individually assigned problems.
- Pair check the other three individual problems.
- Present problems in groups of four. As students present their problems, other group members complete the problems and critique if needed.

6. Two numbers are in the ratio 9:5. If the smaller number is 20, what is the <u>sum</u> of the two numbers?

7. Clarence the Clown has 20 purple and pink balloons to give out to children at the circus. 1 out of 4 balloons is pink. How many more balloons are purple?

8. One out of every 4 children attending the art show is a girl. There are 21 boys. What is the total number of children at the art show?

9. Tina and Alma shared a cash prize in the ratio 6:7. If Alma received 35 dollars, how much money did Tina receive?

10. Maria downloaded pop tunes and hip hop tunes to her computer in the ratio 3:2. She has 10 hip-hop tunes. How many <u>more</u> pop tunes than hip-hop tunes does Maria have?

11. Jorge built a gaming website. The website had 40 visitors on Monday. Three out of every 8 visitors played Planet Zak. The other visitors played Cosmic Blobs. How many visitors played Cosmic Blobs?

12. For every 4 candy bars that Ella sells, Ben sells three. Ella sold 24 candy bars last month. How many candy bars did Ben sell?

13. The ratio of the weight of Christian's hamster to the weight of Javier's hamster is 1:3. Christian's hamster weighs 7 ounces. How much do the two hamsters weigh together?

4.3g Class Activity and Homework: Jet Ski Rentals—Proportional vs. Non-proportional Equations

Activity 1: Your dad has researched renting personal water-crafts (jet skis) for your family vacation. He found the following two cost fee plans:
a. Rental plan A: $30.00 initial one time rental fee plus $45.00 per hour.
b. Rental plan B: $50.00 per hour with no initial one time rental fee.

Create data tables to show how much it will cost to rent jet skis from each company.

Rental Plan A				Rental Plan B		
Hours	Expression for Total Cost	Total Cost (in dollars), simplified		Hours	Expression for Total Cost	Total Cost (in dollars), simplified
1	$30(1) + $45(1)	$75		1	$50 (1)	$50
2						
3						
4						
5						
x						

Create graphs for each situation on the same grid. Label the axes. Put a title on the graph. Label graphed lines by plan A or B.