

Starry Night



The above picture is starry night by Vincent Van Gogh. The picture actual painting is 73.7 cm tall, but the width is not given. The above picture is to scale, meaning that the ratio of height to width of the above picture is the same as the ratio of height to width of the actual painting.

- 1) Use a ruler to calculate the height to length (in cm) ratio of the above picture. Use this to calculate the actual width of the painting in cm.
- 2) What is the ratio of cm of the actual painting to cm of the picture above?
- 3) What other objects are made “to scale” that you could try this same calculation to find the actual size of objects?

Extra Practice

- 1) A map is to be made of Tucson representing 50 miles east to west and 30 miles north to south. If a map is made of earth at a 1 ft of actual distance to 1 inch of map distance. How big will the map be?

- 2) If you are to build a model house out of the 1 cm blocks at a ratio of 1 m:1 cm. If the base of the house is 20 meters by 30 meters, how many blocks do you need for the base? Is this a suitable ratio?

- 3) If a 168 lb person weighs 28 lb on the moon. Then how much does a 220 lb person weigh on the moon?

- 4) **Homework:** Choose an object (animal, plane, ship, landmark) that you can find sizes of (length height). Choose a scaling that you could draw a picture that would fit on a piece of paper. Explain why you chose this scaling (you do not have to draw it, but feel free to do so).

Compare Prices per Pound

Suppose you go to a silly sale where everything is rated by price per pound. Which is cheapest per pound: a bicycle, a pair of sneakers, a video camera, or a refrigerator?



43 POUNDS
\$139.99



2 POUNDS
\$84.99



11 POUNDS
\$799.00



230 POUNDS
\$679.99

- 1 Use your calculator to find the price per pound of each item.
- 2 Rank the items from the least to most expensive per pound.
- 3 What items have high prices per pound?
- 4 What items have low prices per pound?

How can you determine the prices per pound of different items?

Prices Per Pound

- 1) If Best Buy had a store wide sale, everything cost \$50 per pound, what types of products would you buy? What products would you not buy?
- 2) What types of products would you sell per pound that are not currently sold per pound? Why?

Cheaper By the Pound

Applying Skills

Find the price per pound to decide the better buy.

Potatoes	
2 lbs	\$1.09
5 lbs	\$2.69
10 lbs	\$3.59
20 lbs	\$6.29

1. What is the price per pound of each package of potatoes?
2. Which size package of potatoes is the best buy in terms of price per pound?

Calculate the price per pound of the items below.

	Item	Price per Item	Weight in Pounds	Price per Pound
3.	Bike	\$179.99	45	
4.	Rollerblades	\$135.99	11	
5.	Basketball	\$ 24.99	2	
6.	1996 complete set of baseball cards	\$ 26.99	3.6	
7.	Earrings	\$ 16.00	0.25	
8.	Watch	\$ 34.95	0.25	
9.	Pearl ring	\$ 79.99	0.13	

10. For which of the items above would you pay the least per pound?

Extending Concepts

11. Alejandro bought an 18-lb watermelon for \$4.00. To the nearest cent, what is the price per pound?
12. A 5-lb bag of dog food sells for \$3.85. Maurice's dog eats 2 bags of dog food every month. What is the monthly price per pound of the dog food?

Making Connections

13. Select several magazines or newspapers. Find out how much a subscription costs to each of the magazines or newspapers. Compare the unit price to the newsstand price.

Complex Fractions

In this exercise, we will learn how to simplify fractions of the type

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

or more generally

$$\frac{\frac{a}{b}}{\frac{c}{d}}$$

- 1) First take a simple fraction that you know how to simplify and write an equation and a sentence for the meaning:

Example: $6/2 = 3$ “Six halves is three wholes”

- 2) Write a division problem that is equivalent to your answer for part 1 and write a word problem.

Example: $6 \div 2 = 3$. “If you split up six apples among two people evenly, then each person gets three apples.”

- 3) You can rephrase your answer to part 2 as follows “How many groups of 2 apples are there in six total apples (3 groups).”

- 4) Try all three prior steps with the complex fraction $\frac{\frac{3}{3}}{\frac{3}{4}}$

- 5) Use 3 Hershey bars to help simplify the complex fraction. Draw a picture explaining your answer.

Extra Practice

Directions: Solve each of the complex fraction problems and division problems. It might help to draw a picture like you did in part 5. Write each answer in simplest form.

1) $\frac{3}{4} \div \frac{1}{2}$

2) $\frac{\frac{5}{3}}{\frac{1}{3}}$

3) $\frac{\frac{1}{2}}{\frac{4}{5}}$

4) $\frac{4}{11} \div \frac{2}{3}$

5) I have one half of a square and I divide the entire square into sixths. How many pieces do I have? Draw a picture. Write a division problem. Write a complex fraction.

Dr. Doofenshmirtz's Potions

Dr. Doofenshmirtz has come up with a recipe for a potion to take over the entire tri-state area. The recipe is as follows:

3 parts red water, 2 parts uncolored oil, 1 part blue alcohol.

Dr. Doofenshmirtz has calculated that 300 mL of the potion is needed to take control of the tri-state area. Any more or less will render the potion unusable.



1. First talk about what the recipe means and how you would concoct the potion.
2. Next calculate the amount of each liquid (in mL) you need for the potion.
3. **BEFORE** you make the potion, write a two different calculations to check that both the proportions and amount of the total potion is correct. Show this to one of Dr. Doofenshmirtz's assistants (Ms. Gould or Mr. Hottovy) to receive permission to create the potion.
4. Make the potion, and bring it to one of Dr. Doofenshmirtz's assistants and explain why the potion is correct.

Extra Practice

Directions: Solve the following recipe problems. Show your work.

1. An Arnold Palmer is a ratio of 1:1 of ice tea to lemonade. How many cups of ice tea and lemonade do you need to make 9 total cups of Arnold Palmer?
2. A recipe for cookies lists 2 cups flour and $\frac{1}{2}$ cup sugar. What is the ratio of flour to sugar? Write an equivalent ratio without a fraction or decimal.
3. To assemble a table, a total of 40 screws and nuts were in the package. If there were 16 screws in the package, what is the ratio of nuts to screws. Write your answer in simplest form.
4. In your sock drawer, $\frac{1}{4}$ of your socks are black, $\frac{1}{3}$ of your socks are brown, $\frac{1}{3}$ of your socks are white, and the rest are of different colors. What is the ratio of black to brown socks in simplest form? What is the ratio of black to white socks in simplest form? What is the ratio of brown to white in simplest form?