Pre 4.7c Using Proportions Assessment

Name_____

Of all the concepts in mathematics, the idea of ratio and proportion is one of the most important and useful. The problems below are examples of contexts in which ratio and proportion might be used. Show all proportions!

Percentages

1) What percent of the 33 students in the class have brown hair if 13 have brown hair? Show the ratio and then change it to %.

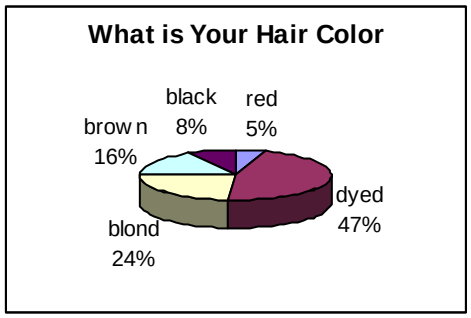
2) If 15% of the 345 M&M's in the bag are blue, how many blues are there?

3) If 65% of the 665 students in the school have pets, how many have pets?

4) 35% of the paper used in the school is yellow. The school used 500 packages of yellow paper. How many packages did they use?

1) There are 398 students in the 7th grade. According to the chart, how many have

dyed hair? _____ Blond hair_____ Red hair _____



Rates

6) Alaska has about 14 people per 20 square miles. How many square miles would 10,000 people use?

7) If there are 200 sheets in a ream of paper and the ream is 3 inches thick, how thick is one sheet of paper?

8) The distance on a globe from Rome to London is 2.5 inches. The circumference of this same globe is 40 inches. If the real circumference of the earth is about 25,000 miles, find the distance from Rome to present day London.

Scale Drawings

9)An architect represented a 15 foot wall with 3/4 inch. What is the scale he is using to make his drawing?

10) Using the scale from #9, find the scale drawing dimensions for a 20 ft by 35 foot swimming pool?

Size Proportions

11) A giraffe is 14 feet tall. If the giraffe shrunk to 1 foot and everyone shrunk proportionately, then how tall would a student who is 5 foot 8 inches be.

12) What would a 20 foot house shrink to?

13) The golden ratio of .618, is a relationship which the Greeks found in many things in nature. Since nature is beautiful, the Greeks built this ratio into their art and architecture. An 18 inch high Greek vase fits the golden ratio for width/height relationship. How wide would the base be?

Probability

14) Express the probability for dice rolling sums below as a ratio, decimal and percentage. P(sum of 7) means, "What is the probability the sum 2 dice will be 7?

Dice rolling possible sums

+	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

Sum Probabilities

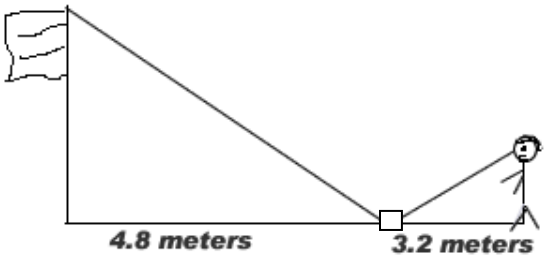
	ratio	decimal	percent
P(sum of 5			
P(sum of 12)			
P(prime number)			
P(sum of 1			
P(sum is odd)			
P(sum is even)			

Statistics

15) Dietary standards indicate that we should not take in more than 30% of our calories from fat. If your daily calorie intake is 2,120 calories and 875 of them are fat calories, then how does your fat intake compared to dietary standards?

Similar Figures

16) When a student stands back from a flagpole and looks into a mirror to see the top of the flagpole, his vision line creates similar triangles. Find the height of the flagpole in the following drawing if the person is 1.7 meters tall.



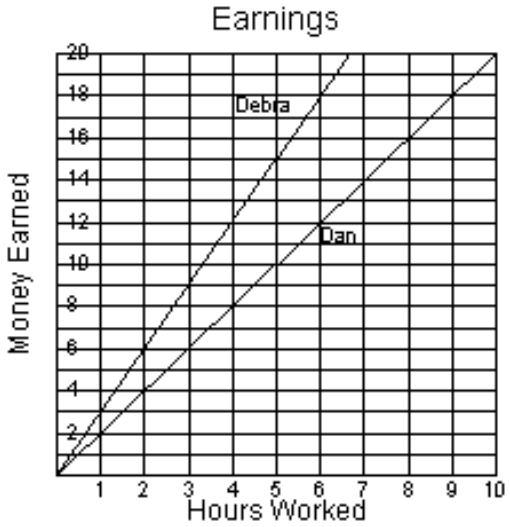
Slopes

17) Observe the graph and answer the questions.

What is Dan's rate of pay? Write as a ratio _____

What is Debra's rate of pay? Write as a ratio_____

Explain how the rates of pay affect the slopes of the lines for Debra and Dan.



Mathematical Relationships

18) The golden ratio is related to the Fibonacci sequence.

- Continue the pattern for Fibonacci numbers. 0, 1, 1, 2, 3, 5, 8, ___, ___, ___.
- Now make Fibonacci fractions. Change them to decimal values. Continue until you observe a pattern.

1/1 = __1__
1/2 = _____
2/3 = _____
3/5 = _____
5/8 = _____
8/13 = _____
13/21 = _____
21/34 = _____
34/55 = _____
55/89 = _____
89/144 =_____

Describe what you see in the pattern.

_____
_____
_____
_____
_____
_____
_____
_____