

1. Carlos is creating a new football game on CD. He has calculated that he will spend \$1200 in start-up fees for this new business. He knows that it will cost him \$2.75 to produce one CD, and he plans to sell each CD for \$20. How many games must he make and sell in order to earn a profit of at least \$5000? Show work or provide an explanation.
2. QQ&N cellphone company has a plan where there is a monthly fee and you pay so much per minute of phone use. Last month, Jeni's bill was \$17.95 and she used 100 minutes. Lou's bill for one month was \$20.45 and he used 150 minutes. Determine an equation that represents the relationship between number of minutes used and cost. Then, use that equation to find the cost for using 300 minutes.
3. The coordinates of the four vertices of a quadrilateral are given in order: M(1, 3), A(8, 5), T(6, 1), and H(-1, -1). On graph paper, plot each point and draw quadrilateral MATH. Find the slope of each side, being sure to label your answers clearly! Based on your calculations, is MATH a parallelogram? Explain.
4. Jerry wants to buy a new vehicle and is trying to decide if he should buy an SUV or a 2-door coupe. He drives about 150 miles per week in the city and 180 miles per week on the highway. The gas mileage information for each vehicle is listed below:

SUV	2-Door Coupe
20 mpg city	25 mpg city
24 mpg highway	35 mpg highway

If the average cost of gas is \$3.79 per gallon for the year, calculate the amount of money that Jerry saves on gas for the year if he purchases the 2-door coupe instead of the SUV.

5. Amy, Bob, Carol, and Don each rolled an identical small wooden cube. Each face of the cube is painted either orange, purple, or pink. The color of the top face is recorded each time the cube is rolled. The table below shows the results for three of the students after each had rolled the cube varying number of times.

Name	Number of Rolls	Number of times orange face up	Number of times purple face up	Number of times pink face up
Amy	10	3	4	3
Bob	40	6	21	13
Carol	50	8	24	18

On your paper, predict the number of the faces of the cube that are orange, purple, and pink. Show your work or provide an explanation.

Don will roll the cube 75 times. Predict the number of times the cube will land on orange, purple, and pink. Show your work or provide an explanation.

6. To solve a math problem, Jill is graphing the equations  $y = x^2$  and  $y = x^2 - 1$ . To graph the equations, she created the tables shown below.

$y = x^2$		$y = x^2 - 1$	
$x$	$y$	$x$	$y$
-3		-3	
-2		-2	
-1		-1	
0		0	
1		1	
2		2	
3		3	

On your paper, copy the tables above and find the  $y$ -values for each of the given  $x$ -values. Then, graph each equation on graph paper using the points above. Be sure to label your graphs.

Based on the graphs you have completed, analyze how the graphs differ and write a hypothesis to describe how subtracting a number to  $x^2$  changes the graph of  $x^2$ .

7. Tony earns \$8.00 an hour at his summer job. His employer must pay him “time and a half” ( $1\frac{1}{2}$  times his regular hourly earnings) for each hour over 40 hours per week. His employer withholds \$18% of his pay for various taxes. The table shows Tony’s work time for the week.

Mon	Tues	Wed	Thurs	Fri
$8\frac{3}{4}$ h	9 h	$10\frac{3}{4}$ h	$11\frac{1}{2}$ h	$9\frac{1}{4}$ h

On your paper, determine the amount of Tony’s paycheck, after taxes are withheld, for the week shown in the table. Show your work or provide an explanation.

8. Maria designs a game for the school’s carnival. Students will throw a dart at the circles shown. If the dart lands in the shaded area, the student wins a prize. The radius of the larger circle is 12 inches and the radius of the smaller circle is 6 inches. What is the probability that a student will win a prize? Show your work or provide an explanation.

