TEAM EVENT

Scarborough Math Olympics 2012

Team:		
Team Members' Names:	**1.**	**ID#**
	2.	**ID#**
	3.	**ID#**
	4.	**ID#**
Score:	**Number Words**	
	Product of Factors	
	Cyclic Quadrilaterals	
	Total	

Instructions

- **Write your team name and your names in the box above.**
- **You have a maximum of 40 minutes to complete this event. Please wait for the Olympic Official's instruction to begin.**
- **Calculators, rulers and graph paper are allowed.**
- **Hand in this sheet only.**

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NUMBER WORDS

For this problem, credits are earned for the numerical value of a word or words in English or French. For example, "three" earns 3 credits and "forty" earns 40 credits. Both of these are 5-letter words. "Vingt-deux" is a 9-letter word for 22 credits.

Choose one NUMBER WORD for each letter category.
Spelling of words and credit calculations must be correct for credits to be counted.
Score one (1) point for every digit in your CREDIT GRAND TOTAL, up to 15 points.
Score one additional point for each of the last five digits of your CREDIT GRAND TOTAL that has a value greater than 4.
Example: A CREDIT GRAND TOTAL of **3 7<u>90 452</u>** would earn 9 points (7 points for the seven digits and 2 extra points for the digits 9 and 5).

LETTER CATEGORY	NUMBER WORD	CREDITS EARNED
3-letter number word		
4-letter number word		
5-letter number word		
6-letter number word		
7-letter number word		
8-letter number word		
9-letter number word		
10-letter number word		
	CREDIT GRAND TOTAL	

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PRODUCT OF FACTORS

Example: The number **12** can be written as a product of two or more whole number factors, none of which are 1. Earn credits by multiplying the number of factors by the sum of the factors. Notice 1×12 cannot be used. There are only three products for 12 because 3×4 and 4×3 have the same factors and counts only once. The maximum number of credits is $16 + 14 + 21 = 51$.

Product of Factors	Credits Earned
2×6	$2 \times (2 + 6) = 16$
3×4	$2 \times (3 + 4) = 14$
$2 \times 2 \times 3$	$3 \times (2 + 2 + 3) = 21$

Question: Write **180** as a product of two or more whole number factors, none of which are 1. Calculate the credits earned for each product. Product and credit calculations must be correct for credits to be counted. Score one (1) point for every 100 credits.

Product of Factors	Credits Earned

Product of Factors	Credits Earned

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CYCLIC QUADRILATERALS

The equation $x^2 + y^2 = 25$ represents a circle with a radius of 5 units. All the points on this circle have coordinates that fir the equation. For example, the point A(-5, 0) is on the circle because $(-5)^2 + 0^2 = 25 + 0 = 25$. The point B(0, 5) is also on the circle because $0^2 + 5^2 = 0 + 25 = 25$.
Use the SketchExplorer app on the iPad to see a graph of this circle.

On the sketch, ABCD is called a cyclic quadrilateral because all of its vertices lie on the same circle. The points A(-5, 0) and B(0, 5) are fixed. The coordinates of the point C are both positive integers. The coordinates of the point D are also integers; however the y-coordinate is negative while the x-coordinate is not negative. The points C and D on the iPad sketch can be moved to help you visualize the problem.

There is more than one cyclic quadrilateral that satisfies the description above. Can you find them all and calculate their areas?
Score one (1) point for each correct set of coordinates for the points C and D.
Score two (2) additional points for the correct area of each quadrilateral ABCD.

COORDINATES	AREA of ABCD
C(,) D(,)	
C(,) D(,)	
C(,) D(,)	
C(,) D(,)	
C(,) D(,)	

COORDINATES	AREA of ABCD
C(,) D(,)	
C(,) D(,)	
C(,) D(,)	
C(,) D(,)	
C(,) D(,)	