

MATHEMATICS (updated 6/1/13)

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UIL Test Comments — 2012-13

*** NOTE: See Off on a Tangent for information on workshops and the Student Activity Conferences ***

*** ATTENTION: Calculator Rules for the Mathematics Contest ***

With the approach of the district, regional, and state contests nearing, it is essential that everyone knows and understands the contest rules, especially concerning the rules governing the calculator usage. Be sure to take note, that a calculator cannot be MODIFIED in any way. Modifications include adding accessories or attachments, changing chips, electrical charging systems, etc. A recent discussion developed concerning the use of wireless adaptors (little yellow hats, etc.) attached to some of the calculators (TI Nspires, TI 84, etc.). These attachments are considered to be modifications to the basic handheld calculators. If a calculator has been modified in any way, it is illegal and students caught using any modified calculators will be disqualified. Complete rules for this and all contests can be found in the UIL Constitution and Contest Rules (C&CR). ***

SAC - - - > #23 ... typo - the word "pencils" should be "markers".

A - - - > #52 ... need to add the letter "d" to year 3 & 5.

B - - - > #55 ... Answer choice "A" and "E" are the same thing, hence both are correct.

District 1 - - - > #60 ... invalid problem ... had to be thrown out (see below for discussion).

District 2 - - - > #28 ... no correct answer available ... the problem should have stated:

"... will be in the 18th row of Pascal's triangle?"

#43 ... should be E not C.

Regional - - - > # 31 ... should be D not C. (discussion below)

58 ... no correct answer choice available ... had to be thrown out (discussion below)

State - - - > #33 ... there were no answer choices available to meet all of the criteria given. Answer choice (E) met all of the parameters except the phase shift ... had to be thrown out

TMSCA Test Comments — 2012-13 (tests I write for TMSCA)

6 - - - > No errors reported, however see the discussion below on problems involving Pascal's Triangle.

13 - - - > Two problems were discovered prior to the day of the test. They were reported to TMSCA.

They tried to reach all schools giving the test. In case they didn't here were the issues.

#22 ... The question should have stated: What is the probability that Willie or Betty will win both games?

#25 ... This is divergent, hence a bad problem.

State - - - > #37 ... Answer choices A & D are the same. Answer choice D should have been $Y = K/Z$.

Off on a Tangent

Workshops and/or Presentations I will be doing the summer and fall of 2013:

1. UIL Capitol Conference, Austin on July 12 & 13.
2. *What's Your 4th Problem* - Math Camp at Texas Tech University, Lubbock on July 17-20.
3. Student Activity Conferences:
 - A. University of Texas at Arlington on Sept. 14
 - B. Texas Tech University, Lubbock on Sept. 28
 - C. University of Texas, Austin on Oct. 5
 - D. Sam Houston State University, Huntsville on Nov. 9.

2012 Student Activity Conference (SAC) information

Number Sense Session:

There will be a short summary of the contest followed by a Q&A period for any questions students or coaches might have about the contest. (A handout with information, resources, and helpful hints will be available for those beginning coaches who need this information.) After the Q&A, the students will take the NEW 10 minute 2013 SAC test then grade it. The remainder of the time will be spent going over the test and discussing any problems from the test.

Mathematics Session:

There will be a short summary of the contest followed by a Q&A period for any questions students or coaches might have about the contest. (A handout with information, resources, and helpful hints will be available for those beginning coaches who need this information.) After the Q&A, the students will take the NEW 20 minute 2013 SAC test then grade it. The remainder of the time will be spent going over the test and discussing any problems from the test.

Special Session:

Information to be announced at a later time.

Student Activity Conference Notes

It is strongly recommended that you make every effort to attend one of the Student Activity Conferences each Fall. Much of the information, responses to questions, etc. cannot be displayed in a power point or explained on this site.

Information shared at the Student Activity Conferences will be posted at the UIL SAC website after all of the SACs have been completed for this year.

See <http://www.uiltexas.org/academics/student-activities/austin>.

For those of you who were unable to attend one of the conferences this Fall, you can contact me by email and request a copy of the power points used and/or a copy of the SAC test/key following the last SAC on Nov. 9.

CORRECTION: The email address for the executive secretary of TMSCA on my power points is incorrect. The correct address is execsectmsca@gmail.com and the updated TMSCA website is <http://www.tmscaonline.net/index.html>.

Euclid's Elements

Earlier this Fall, Don Skow sent me the following information. I thought some of you might be interested. Don found a very nice edition of Euclid's Elements (both Greek and English version side-by-side) created

by Richard Fitzpatrick: <http://farside.ph.utexas.edu/euclid.html>
Links to PDF and even the LaTeX source are provided at the bottom.

Test Discussions

Pascal's Triangle:

There appears to be some discussion on the problems involving Pascal's triangle. I hope the following will alleviate some of the concern.

The first row, (1), is row **0** because $(x+y)^0 = 1$

The second row, (1 1), is row **1** because $(x+y)^1 = 1x + 1y$

The third row, (1 2 1), is row **2** because $(x+y)^2 = 1x^2 + 2xy + 1y^2$

The fourth row, (1 3 3 1), is row **3** because $(x+y)^3 = 1x^3 + 3x^2y + 3xy^2 + 1$
etc.

So, it depends on what question is asked.

ex. The sum of the numbers in row 3 is $1+3+3+1 = 8$.

ex. The sum of the numbers in the third row is $1+2+1 = 4$

ex. The sum of the numbers in the first 3 rows is $(1) + (1+1) + (1+2+1) = 7$

ex. The sum of the numbers in rows 1, 2, and 3 is $(1+1) + (1+2+1) + (1+3+3+1) = 14$

So, the digits in row 9 are in the tenth row.

As far as I know and can remember, Pascal's Triangle has always been stated as such. As always, I am always open to discussion of such issues and encourage coaches to let me know what they perceive. I am always willing to listen and make adjustments when need be.

NOTE: On this year's SAC test, I said, "... letting the 1 at the top be row 1, determine which of the following numbers will be in the 9th row." Even though it probably should have said, ... the 1 at the top should be row 0, the 9th row still remains the 9th row (which is row 8).

District 1 #60: There were several ways to show why this problem was invalid. The quickest way was to look at the two intersecting chords AB & DF. If $AC = 3$ then $CB = 6$, so $AC \times CB = 18$ and if $DC = 4$ then $CF = 4$, so $DC \times CF = 16$. Since 16 does not equal 18, the problem is invalid. A quick way to make this problem valid is to change $DC = 3\sqrt{2}$. Thus giving an answer of 6.4 rounded to the nearest tenth.

Regional #31: This problem was brought to my attention by one regional site late Saturday afternoon. Unfortunately, I was pressed by an individual there for an immediate decision. I try not to make changes without giving myself enough time to justify the change. So, I stayed with the answer key. After spending a little more time with the problem I was able to justify that there are 3 points of intersection, the third point being the origin. I found two points of intersection to be $r = (1+\sqrt{7})/2$, $\theta = 65.70481\text{deg}$ and $r = (1-\sqrt{7})/2$, $\theta = 204.29510\text{deg}$. The third point was the issue because polar coordinates are not always unique. Both the circle and the limaçon cross the origin at $\theta = 0, \pi, 2\pi$ (circle) and $\theta = 2\pi/2, 4\pi/3$ (limaçon). So, the third point of intersection would be the origin.

Regional #58: This problem was brought to my attention by one regional site Saturday as well. However, I was asked to rework the problem and call them back. So, given the time to re-examine the problem. I was able to justify that the correct answer should have been $\sqrt{26}/2$ or about 2.55. Since this answer choice was not available, the decision was to omit the problem. UIL was contacted and informed of my decision. UIL sent emails out to all regional sites around 3:30 pm informing them of the decision.

STATE MEET PROOFERS AND GRADERS

Coaches of the regional team champions and the coaches of the regional wild card teams will be needed to proof the state test (while the contestants are testing) and grade the tests.

Note:

You must be a full time employee of the school district.

You must be listed as the team's coach.

You must be willing to stay in the proofing/grading room until all grading is complete.

If you are one of the 20 regional team championship coaches or one of the 5 regional wild card team coaches, you need to email me no later than May 12 with the following information:

Number Sense Contest Regional Team Champion _____ Wild Card Team _____

Name _____ School & District _____

Classification _____ Region # _____ District # _____

I will _____ will not _____ be able to help proof and grade the test.

I will send you a reply confirming that I received your email. If you do not receive an email back from me then I did not receive your email. Hence, I will begin a search for a replacement for you beginning May 13. Email me at texasmath@centex.net.

Good Luck! Work Hard! Play Fair!

I am off on another tangent ...