ICTM®

Illinois Council of Teachers of Mathematics BULLETIN

Serving Teachers of Mathematics and Computer Science

Vol. XXXVI, Issue 2 **April 2015**

In This Issue:

Mission: Illinois Council of Teachers of Mathematics is a community of PreK through Post-graduate (PreK–20) educators promoting equitable, high quality mathematics teaching and learning through leadership, collaboration, advocacy and professional development.

Vision: The Illinois Council of Teachers of Mathematics is the state leader in mathematics education. ICTM is committed to sound pedagogy, teacher collaboration, and professional development, ensuring student achievement through engagement in meaningful and rigorous instruction. As a respected leader in mathematics education at the school, district, state, and national levels, ICTM serves as a collaborative partner to promote the achievement of every student.

President's Message

April 2015 *by Robert Mann, ICTM President*

Hello Math Fans and welcome to Spring!

There is a lot of excitement budding at ICTM and it begins with our conference news. The 65th annual event will be October 23 and 24 at Tinley Park and Dr. Jo Boaler will be our featured speaker. Dr. Boaler is a leader in mathematics education and will talk to us about how to engage students and promote learning while explaining "What's Math Got to Do With It?." More information on the conference can be found at http://www.ictm.org/annualmeeting.html and I look forward to seeing you there.

This year, ICTM will be sharing the Tinley Park venue with the Illinois Science Teachers Association (ISTA). We are enthusiastic about this partnership and believe this should provide more people, more networking, and more energy throughout the conference, especially at the shared luncheon and in the exhibit areas. In addition, ICTM and ISTA hope this marks only the beginning of future cooperation on conference planning and other professional projects for these two teaching based organizations. I would personally like to thank the boards and conference committees of both groups for investing extra time in discussing, planning, and organizing the collaborative effort for this year and I am very excited about future endeavors.

At our conference this year, we will also be offering a poster research session on Saturday. This should provide an opportunity for undergraduate and graduate students (and possibly others) to present their work on projects related to mathematics, science, or education. The deadline for submitting proposals for the poster session is April 30, so please encourage your colleagues and students to submit ideas by that date. Information and the proposal form can be found at http://www.ictm.org/PosterSession.htm. On Saturday of the conference, ICTM will also be hosting an interview fair. The goal of this event is to allow future teachers to interview with and learn from current department chairs and administrators from schools throughout the state. Both of these events are new features at our conference so please feel free to send any questions you may have to me at rr-mann@wiu.edu. Once again, I am excited about the opportunities these events may offer our current and future members.

Our ICTM website (www.ictm.org), facebook (please like!), webinars, and twitter presence (#ICTM2015 and #ILmathchat) also offer new features and opportunities to our membership. I encourage all of you to explore these possibilities and I would like to thank Adam Poetzel, Don Beaty, Annie Forrest, George Reese, Jennie Winters, Kelly Koberstein, and the many other board members and volunteers who have helped make all of these features possible. It is Spring and the ideas, opportunities, and excitement are growing and blooming at ICTM!

You can also find our journal, ***The Illinois Mathematics Teacher*** online at http://www.ictm.org/journal/index.php/imt. Chris Shaw and Dan Jordan have done an excellent job establishing this journal online and we now have the ability to post and download individual articles as well as a complete issue. The current page contains many excellent articles and these will be updated more frequently as new submissions are reviewed and prepared. Please investigate the journal site and its articles, and consider submitting to this peer-reviewed journal. Thanks to Chris, Dan and their team of reviewers for their commitment to the quality and growth of this ICTM product.

Of course, the ICTM Bulletin is also now entirely online (http://www.ictm.org/members/?q=Bulletin) and it will also soon offer new features and capabilities. You can presently access this issue as well as previous issues of the Bulletin, and soon you will be

Continued on p. 2

President-Elect's Report

by George Reese
ICTM President-Elect

The Discussion Continues to Grow

New media efforts of ICTM continue moving forward. We had another Twitter chat (#ILMathChat) on February 24th. This time the topic of discussion was the PARCC. As you might imagine, there were lots of impressions shared, but more important, lots of resources. Also, we have now had two ICTM Webinars. The first by Jennie Winter, "How Do You Know If You Are Really 'Doing' The Common Core," and a second by Kelly Koberstein, "A Teacher's Perspective: The Illinois Model Mathematics Curriculum for Math 1." You can see the video of both these Webinars on the ICTM Youtube Channel: http://youtube.com/ictmmedia. Or you may go directly to the video at http://goo.gl/QMsozD. If you have heard about the Model Mathematics Curriculum and want to learn some of the specifics, I encourage you to check out both these videos. Jennie's gives the overview of what the Illinois mathematics educators are trying to do by developing these materials, and Kelly's gives you the perspective of a practicing teacher using the these integrated lessons with Math I students.

Mathematics teachers all around Illinois have made contributions to the ICTM knowledge base. The 30th Annual Southern Section ICTM Conference took place at John A. Logan College on the bitter cold day of February 19th. The collegiality was warming, and it was there that I met Kelly Koberstein in a seminar and heard about the remarkable activities in her Math 1 classroom. I was also able the record Eric Bright's stem-winder of a keynote, "A Future Worth Fight For?" Again, please go to the ICTM Youtube channel to check out this speech. See, **http://goo.gl/Uwr2rV**.

The listserv continues to be active with posts by Jerry Becker and others informing us of the latest news in mathematics teaching and learning and issues affecting mathematics teachers. Of course the PARCC roll-out continues to be a major discussion topic, and members of the ICTM list can find a wealth of articles and links to resources by perusing the archives of the ICTM list.

These are only a few of the many other exciting efforts. There are so many good teachers, bringing so much good effort, and it is summing to an extraordinary model of mathematics education leadership. Go ICTM!

Board Chair Report

by Kara Leaman, ICTM Board Chair

Hello, ICTM Friends! Our February Board meeting took place online, as usual for the February meeting. After a lengthy discussion, the Board gave approval for hosting simultaneous conferences with ISTA this fall during the ICTM conference at Tinley Park. Potential rewards from this partnership were unanimously agreed to be worth the extra efforts it will take to make this a reality in 2015, as time will be short. The Board also approved the ICTM Conference registration fees for 2015. The obvious benefits to those whose interests span mathematics and science education, and the sharing of many costs were noted as positive reasons for making these coinciding events happen together. We are optimistic that the crowds for both conferences will also be larger, supporting growth in both organizations.

Another new event for the upcoming 2015 ICTM Conference will be a research poster session, and a submission form is available at www.ictm.org. Students who present a poster session will receive a $10 discount on the registration fee. Also, Breakfast with the Board will return to the agenda on Saturday morning before the Annual ICTM Business Meeting, with coffee and rolls available for purchase. We will not be hosting a Games Night Friday night, but will replace it with a ICTM Member Gathering after the Awards Reception at a location to be determined.

Last, a request was made and it was agreed to place the ICTM logo on Celebrating High School Innovators, which can be seen at http://innovative100.engineering.illinois.edu/. Also, an upgrade to the software used for the IMT Journal was approved.

I look forward to our next Board meeting in Bloomington on May 16, 2015.

President's Message, continued from p. 1

able to find and select particular articles to peruse, use, and amuse. Thank you to Martin 'Uptown' Funk, Anita 'Downtown Grooves' Reid, and Diane 'Lowdown' Highland for their continued work on the access and evolution of this publication.

These same people also help put the current election ballot together and you should soon receive an email with a link and instructions on how to access candidate biographies and vote for next year's board positions. Please take the time to vote. I wish to extend my gratitude to the nominees who have agreed to run and serve. The strength of a service organization is its volunteers, and we do appreciate your time and service.

Finally, for those attending the NCTM conference in Boston in April, we hope to host a Thursday reception for ICTM members and friends much like we did last year. Keep an eye on your inbox for details on this event and feel free to contact me if you have any questions.

It truly is a pleasure to be a member of ICTM and I am looking forward to the dynamic events and offerings that are currently growing, budding, and improving. Keep your eyes and ears open for more ICTM news and benefits and keep promoting growth and understanding in your classrooms. I hope you all have a warm and wonderful Spring!

Dr. Bob Mann
ICTM President
rr-mann@wiu.edu

VOTE VOTE VOTE

THE POLLS ARE OPEN!

From the ICTM Bylaws (excerpted):

Every Regular Member, every Distinguished Life Member, every Retired Member, and every Student Member of the Council shall be entitled to vote in any election held by the Council.

The annual election shall be made by mail or electronic ballot… Official ballots listing the nominees for President-Elect (in appropriate years) and those Directors to be elected shall be mailed or emailed to members... Marked ballots shall be returned to the Secretary of the Council to be held until the time of official count.

The results of the election shall be announced by the President of the Council in the spring, immediately following the election. All those elected in the Annual Election shall assume the duties of their respective offices immediately after the adjournment of the Annual Business Meeting of the Council.

To participate in the ICTM Board Elections, **please watch your e-mail inbox** for an e-mail linking you to a unique online ballot, which will enable you to cast your votes electronically. Please complete the online ballot survey no later than April 15, 2015. Please note, paper ballots have been discontinued; if you do not receive your e-ballot link by April 2, please **notify the ICTM Member Services staff**, so they can forward a link to you.

Please be sure to return your ballot for the 2015 ICTM Board Elections. Your vote is your voice in ICTM, and the annual elections are your best opportunity to shape ICTM into an organization that best serves YOU.

PLAN NOW: ATTEND YOUR LOCAL ICTM REGIONAL CONFERENCE

EIU-Charleston

Tuesday, April 7, 2015

For more information, contact:
dkmeadows@eiu.edu

www.eiu.edu/adulted/mathconf.php

WIU-Macomb

Friday, April 10, 2015

For more information, contact:
d-lafountain@wiu.edu

www.wiu.edu/cas/math/teachers_conference

Math Musings with Martin

What serving sizes should you
request at the Ratio Diner
after you lose your amateur status?

Proportions.

Submitted by Martin Funk, ICTM Director 9–12

Illinois Mathematics Teacher Journal

Current issue online now at www.ictm.org/journal

NCTM Reminder:

Help your professional organizations support each other! When renewing your ***National Council of Teachers of Mathematics*** Membership online, don't forget to checkmark the *Affilate Rebate* box and designate ICTM as your affiliate organization. NCTM's Affiliate Rebate program provides a per-member rebate to ICTM based on this feedback. Your attention to this detail helps provide support for your local professional organization.

ICTM Listserv Update

Do you receive e-mails from the ICTM Listserv?

If you answered no, then consider subscribing today. Subscription to the Listserv is a benefit of your ICTM membership. E-mails sent through the Listserv often give information about upcoming conferences, details about professional development opportunities, information about ICTM awards and scholarships, links to math related websites and news articles, and questions/announcements from other math teachers around the state. All subscribers to the Listserv can send out messages to the recipient list. To sign up, visit **http://www.ictm.org/ListServe.htm** and complete the short online form. You can choose to unsubscribe from the List Serve at any time. Subscribe today and join the conversation!

MATH ENERGY

for Pre-Service Teachers

at Eastern Illinois University

In 1991 the Math Energy Club was established at Eastern Illinois University. In the fall of 1992, Math Energy became an affiliate group of Illinois Council of Teachers of Mathematics (ICTM) and received our affiliate group charter from the National Council of Teachers of Mathematics (NCTM) at the 1994 NCTM meeting at Indianapolis.

Math Energy is a pre-service teacher organization which meets monthly to give members the opportunity to attend presentations by various professionals speaking on math related topics in the field of education. Math Energy focuses on a hands-on approach to teaching math. All grade and ability levels are explored at our meetings.

Monthly meetings will be scheduled for Spring Semester.
More information can be found on the Math Energy website:
http://mathenergy.wordpress.com

Finding Livebinder

Be sure to check out the recent updates to the ISBE MMC Resources found at Livebinder:

http://www.livebinders.com/play/play?id=953710

To begin, go to isbe.net.
Far right, Choose Common Core ELA/Math
Far right, choose Model Math Curriculum Units
Scroll down, choose yellow box, ISBE Model Math Curriculum Units Found Here

ISBE Model Math Curriculum Units can be found here:
http://www.livebinders.com/play/play?id=953710

OR

Go to ilclassroomsinaction.org and choose

Dear Roller Coaster Design Consultant,

We represent the firm Fire-Breathing Coasters, and we have recently lost our safety engineer due to a testing mishap on our last roller coaster. (Note: Never build a roller coaster where the cars jump off the track through a burning ring of fire landing in a pool of flammable liquids.)

Despite our previous error, we have found a client who wanted us to design a coaster for their new Knights and Wizards theme park. Our designers have begun work on The Dragon, a back to basics roller coaster designed with safety in mind. We tried to deliver a high quality coaster with a great look that would not cause problems for passengers, and we feel that we have a good start.

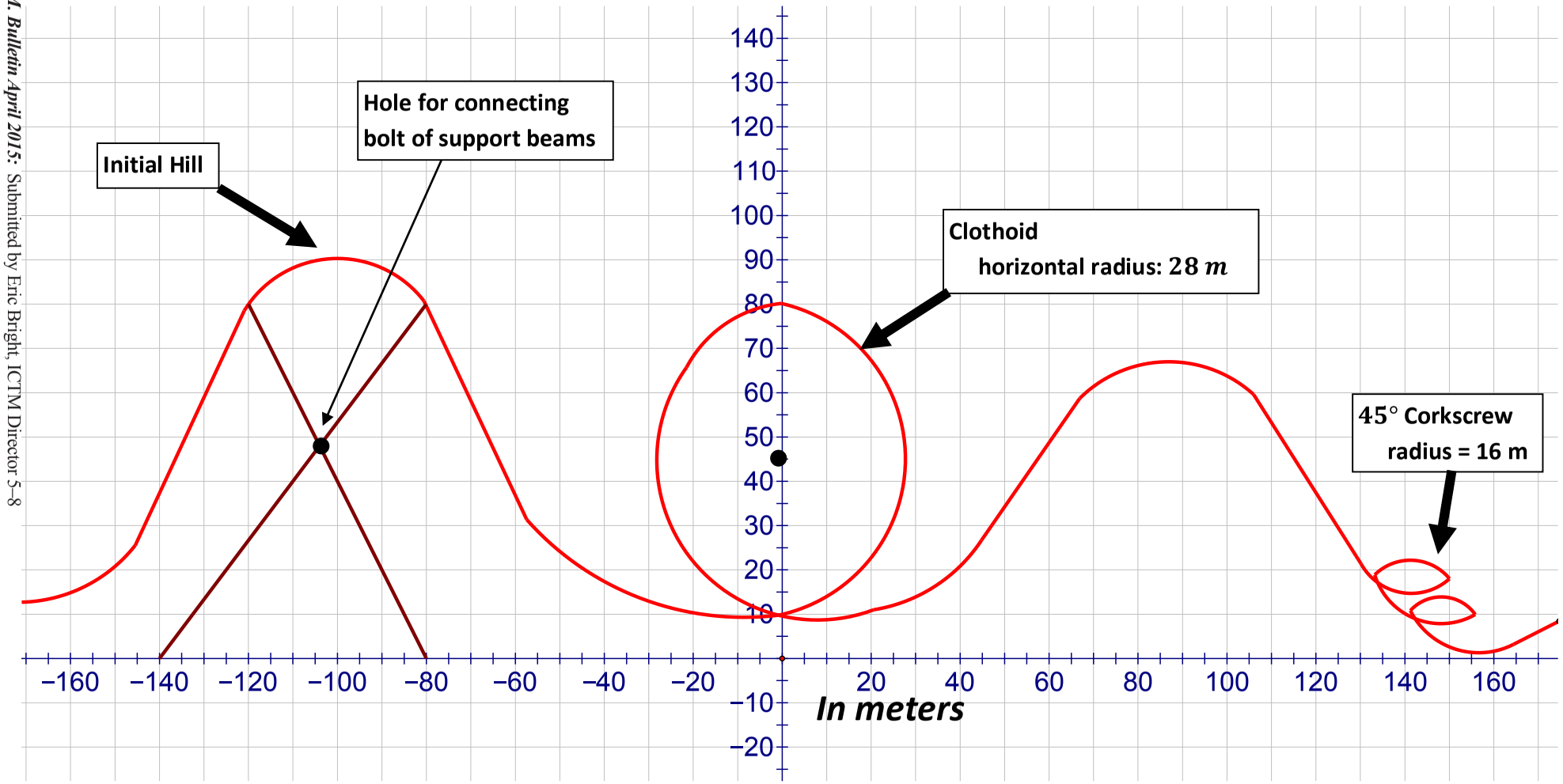
Picture from: http://lego.wikia.com/wiki/Dragon

Would you please look at what we have designed so far? We want to make sure the roller coaster won't cause so much force to make people pass out, and we want to make sure that our support beam construction goes smoothly. If you find something wrong, please advise us as to how we can correct our issue and where we went wrong so that we do not make the same mistake in designing the rest of the roller coaster.

Sincerely,

Falof Datraks

Falof Datraks
CEO and Lead Designer
Fire-Breathing Coasters



Relevant Constants: Gravity constant (g): $g \approx 9.81\ m/s^2$ Safe a_c for humans: $a_c \approx 49\ m/s^2$

Relevant Formulas: Centripetal acceleration on loop: $a_c = \frac{v^2}{r}$ Centripetal force: $F_c = ma_c$

Potential energy: $p_e = mgh$ Kinetic energy: $k_e = \frac{1}{2}mv^2$ Banked turn (45°) velocity: $v = \sqrt{ra_c}$

Is The Dragon safe? Ponder these questions:

1. The Dragon has a head $(800\ kg)$ on front and a tail $(100\ kg)$ on back and to make the coaster look like a full dragon there needs to be seven cars in between the head and tail. The cars must be balanced so that the mass of the head and three empty cars is equal to the mass of the tail and four empty cars. How much mass should a single empty roller coaster car have? *(Hint: Create your own equation.)* ***(10 points; 3 pts for equation, 3 pts for work, 4 pts for answer)***

2. The maximum centripetal force a single empty roller coaster car can stand before breaking is $49{,}000\ N$. What is the max centripetal acceleration possible on a single empty roller coaster car before it breaks? *(Hint: Use the Centripetal Force equation.)* ***(10 points; 3 pts for substitution, 3 pts for work, 4 pts for answer)***

3. If a human being can safely withstand centripetal acceleration of $49\ m/s^2$ and we assume the maximum centripetal force of $49{,}000\ N$, what is the maximum mass that a single roller coaster car can have including its passengers and seat belts? *(Hint: Use the Centripetal Force equation.)* ***(10 points; 3 pts for substitution, 3 pts for work, 4 pts for answer)***

4. Given that people weigh approximately $90\ kg$ each and it takes $10\ kg$ of harnesses and seat belts for each person, how many people could each car hold? *(Hint: Create your own equation and use the maximum mass you found in question #3.)* ***(10 points; 3 pts for equation, 3 pts for work, 4 pts for answer)***

5. Assume that the cars are built to hold only two people with a maximum weight of $140\ kg$ for each person (just to be safe). What is the potential energy of the <u>whole roller coaster</u> from the top of the initial hill? *(Hint: Don't forget the $10\ kg$ harnesses and seat belts for each person on all seven cars, the mass for the each of the seven cars you found in question #1, and the mass of the head and tail. Use that total mass and the height of the initial hill in the Potential Energy formula.)* ***(10 points; 3 pts for substitution, 3 pts for work, 4 pts for answer)***

6. Assuming all potential energy from the initial hill becomes kinetic energy, what is the maximum velocity achieved by the **whole roller coaster** rounded to the nearest whole number? *(Hint: Use the same mass you found in question #5 and the energy you found in question #5. Then use the Kinetic Energy formula.)* ***(10 points; 3 pts for substitution, 3 pts for work, 4 pts for answer)***

7. What is the maximum velocity that the roller coaster can safely reach on the loop rounded to the nearest whole number and not exceed the centripetal acceleration limit of $49\ m/s^2$? *(Hint: Use the radius of $28\ m$ because the smaller radius produces the greatest acceleration. Use the Centripetal Acceleration on a Loop formula.)* ***(10 points; 3 pts for substitution, 3 pts for work, 4 pts for answer)***

8. Assuming no loss of initial velocity, what will be the centripetal acceleration reached on the corkscrew rounded to the nearest whole number? *(Hint: Use the velocity you found in question #6 and radius of 16 m for the corkscrew. Use the Banked Turn Velocity formula.)* ***(10 points; 3 pts for substitution, 3 pts for work, 4 pts for answer)***

9. Are the loop and corkscrew safe? Explain how you know and what you could do to fix any safety issues. *(Hint: Think about what values in the formulas should change to make the loop and/or corkscrew safe.)* ***(10 points; 2 pts for each yes/no, 3 pts for each explanation)***

10. To make sure the support beams are being built in the factory correctly, verify the position of the intersection of the support beams. Assuming the equations for the beams are $y = -2x - 160$ and $3y = 4x + 560$, find the intersection point of the support beams as shown on the roller coaster blue print. ***(10 points; 5 pts for work, 5 pts for answer)***

Answers and Teacher Commentary:

1. $800 + 3c = 100 + 4c \rightarrow c = 700\ kg$; This means an empty car should have a mass of $700\ kg$.
2. $49000 = 700a \rightarrow a = 70\ m/s^2$; This means it would take an acceleration of $70\ m/s^2$ to break a car. As long as we don't have acceleration values over that, we should be fine.
3. $49000 = m * 49 \rightarrow m = 1000\ kg$; This means that we could have up to $300\ kg$ of mass for people in each car before the cars would break.
4. $90p + 10p + 700 = 1000 \rightarrow p = 3$; This tells us we could have up to three people in a car.
5. $P = 7900 * 9.81 * 80 = 6{,}199{,}920\ N$; The whole coaster is the head (800) plus the tail (100) plus seven cars $(7 * 700)$ plus fourteen people and their seat belts $(14 * (140 + 10))$. That gives a total mass of $7900\ kg$. The initial hill is $90\ m$ tall, but the coaster goes down to a height of $10\ m$ off the ground. That means the actual value we plug in for the initial hill is really $80\ m$.
6. $6199920 = 0.5 * 7900 * v^2 \rightarrow v \approx 40\ m/s$; For this one, students really need to understand inverse operations. If v is being squared and then multiplied by 3950 (which is half the mass), then we need to divide by 3950 and then square root to undo those operations and isolate v. This tells us theoretically how fast the coaster will actually be going which is $40\ m/s$.
7. $49 = \frac{v^2}{28} \rightarrow v \approx 37\ m/s$; Again, this is a test of inverse operations. If v is being squared and then divided by 28, to isolate the variable we must multiply by 28 and then square root. This answer tells us the speed limit on the loop that we cannot exceed. Notice that we did exceed this speed limit according to question #6 meaning the loop is not safe.
8. $40 = \sqrt{16a} \rightarrow 100\ m/s^2$; Students may not have solved a problem of this type before, but if they understand inverse operations, it should be a snap. Since the variable a is being multiplied by 16 and then square rooted, we will square both sides of the equation and then divide by 16. This tells us how much acceleration (like g-forces) the human body will be under on the corkscrew. At about $49\ m/s^2$, human beings pass out. Beyond that the human body starts taking actual damage, so the corkscrew is definitely not safe as it is.
9. Neither the loop nor the corkscrew is safe. (See the teacher commentary on question #7 and #8 for why.) Either the speed must be reduced by lowering the initial hill or the radius of loop and corkscrew must be increased.
10. $(-104, 48)$; While this problem is set up for solving a system by substitution, it could easily be solved by elimination as well.

For Differentiation: For higher achieving students, take off the hints on each questions. For struggling students, you can give them the mass of the whole coaster at $7900\ kg$ and have them skip question #8. The rest of the questions are necessary to make sure students understand solving equations with inverse operations.

Linear Encryption

Imagine you are a spy! You must be able to send a secret message to your agency associates which cannot be read if it falls into enemy hands. You will use a linear cipher to do this.

A linear cipher is a function of the form of a line: $y = mx + b$. You and your clandestine colleagues will create an encryption table which you will use to encode and decode messages. Only spies who know the slope and y-intercept will be able to create the table: your adversaries, who are not privy to this information, will not.

For example: we will create an encryption table using slope $m = 5$ and y-intercept $b = 11$. For each letter you encrypt, find its position in the alphabet: that is your x-value. Using your function, you can find the new position of the letter: its y-value.

So, to encrypt 'c', the third letter, we calculate: $5 \cdot 3 + 11 = 26 \rightarrow$ 'z'

Thus original position 3 is replaced with encrypted position 26, 'c' is encrypted to letter 'z'.

Once the table is completed, you will be able to encrypt messages by swapping letters from the top row with the corresponding letter on the bottom row. Your undercover allies will decrypt the message by swapping letters from the bottom row to the top because they are also able to create an encryption table. In the unlikely event that the message is intercepted by unwanted adversaries, they will not be able to decrypt it because they do not know the slope or y-intercept.

Adjusting the range:

What happens to if you try to encrypt 'd'? Since $5 \cdot 4 + 11 = 31$, 'd' has no where to go! To solve this problem, subtract your result by 26 as many times as necessary to get the result in the range 1-26.

In our example, since: $5 \cdot 4 + 11 = 31$ and since $31 - 26 = 5$, we find 'd' $\rightarrow$ 'e'.

Complete the encryption table below with slope $m = 5$ and $b = 11$. Use your table to encrypt the word "`when`" and then decrypt the reply "`elbn`". *The answers are on the back.*

Original Letter	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
Original Position	1	2	3	4	5	6	7	8	9	10	11	12	13
Encrypted position													
Encrypted Letter													

Original Letter	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**
Original Position	14	15	16	17	18	19	20	21	22	23	24	25	26
Encrypted position													
Encrypted Letter													

Choosing m and b:

Not all values work as linear ciphers. First of all, you must choose integer values for the slope m and y-intercept b. It is convenient if these values are between 0 and 25 because if you choose m = 27 for example, it was would result in the exact same cipher as if you chose m = 1.

There is a more critical issue to address however. Consider the linear cipher where m = 2 and b = 3. Calculate what letters 'd' and 'q' correspond to:

Since $2 \cdot 4 + 3 = 11$ we have 'd' → 'k'

Since $2 \cdot 17 + 3 = 37$ → 11(by subtracting 26), we also get 'q' → 'k'

In fact, half of the letters will share an encryption letter, making the cipher very difficult to decrypt. This problem occurs for any slope m that has a common factor with 26.

Thus, while y-intercept b can be any value 0 - 25, the slope should only be chosen from the set {1, 3, 5, 7, 9, 1, 15, 17, 19, 21, 23, 25}.

Your secret spy assignment: Pair up with another spy. Agree on a value for slope m and y-intercept b. Without comparing your work, each of you create an encryption table. Then, write and encrypt a message (a short sentence) for your partner. They will do the same for you. When you receive their encrypted message, use your table to decrypt it.

Note: If you really want to ultra-encrypt the message, remove all punctuation (including spaces).

Original Letter	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
Original Position	1	2	3	4	5	6	7	8	9	10	11	12	13
Encrypted position													
Encrypted Letter													

Original Letter	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**
Original Position	14	15	16	17	18	19	20	21	22	23	24	25	26
Encrypted position													
Encrypted Letter													

Example solution: "when" encrypts to "vyjc" and "elbn" decodes to "dusk".

NORTH CENTRAL COLLEGE
NAPERVILLE, ILLINOIS

North Central College in Naperville, Illinois is offering two exciting math camps for your middle school students!

Please visit us online for more information at **http://www.northcentralcollege.edu/sites/default/files/u43818/summer_camp_2015.pdf**

American Mathematics Competition 8 (aMC 8)

Dates:	June 15–19
Times:	9:30 a.m.–1 p.m
Ages:	10–14 (grades 4–8)
Tuition:	$175 (includes lunch)
Instructor:	Richard Wilders
Minimum # of participants:	10

About the Workshop:
The American Mathematics Competition (AMC) 8 is a highly competitive mathematics contest for students who have not yet completed eighth grade. Dr. Richard Wilders and several North Central mathematics majors will prepare students for this contest. Each day will consist of a combination of instruction and problem solving. Students will complete a past AMC 8 exam. Students need to be highly motivated and talented in mathematics and enjoy problem solving.

Girls and Math

Dates:	July 20–24
Times:	9 a.m.–1 p.m.
Ages:	12–14 (rising 6th–9th graders for 2015–2016 school year
Tuition:	$195 (includes T-shirt)
Instructors:	Katherine Heller and Mary McMahon
Minimum # of participants:	10

About the Workshop:
This week of mathematics activities is designed to provide middle school girls with a variety of engaging mathematical experiences focused on extending their understanding and knowledge in mathematics. The program allows talented and enthusiastic students to explore several aspects of mathematics not covered by the traditional school curriculum. Potential topics include modular arithmetic, cryptography, voting theory, fractals, graph theory, identification numbers, bar codes and binary code.

WKU WESTERN KENTUCKY UNIVERSITY

AP Summer Institute: June 22–26 at WKU

Learn how to increase engagement and raise test scores in your Advanced Placement Calculus AB, Calculus BC, or Statistics class during the region's most well established Advanced Placement Summer Institute. For those who have attended an Institute in the past, we offer experienced workshops for Calculus and Statistics in addition to the beginner workshops. In the past 31 years, The Center for Gifted Studies has trained more than 8,000 educators from six continents. Learn more or download an application at **http://www.wku.edu/gifted/ap/index.php**.

LOYOLA UNIVERSITY CHICAGO
1870
AD · MAJOREM · DEI · GLORIAM

Advanced Placement Summer Institute: July 6–10 at Loyola University Chicago

Loyola University's 2015 Advanced Placement Summer Institute will be conducted July 6–10.

All subjects besides AP Environmental Science will take place at our Lakeshore Campus in Chicago, Illinois.

The Environmental Science workshop will be held at the Retreat and Ecology Campus in Woodstock, Illinois.

Each workshop will be led by College Board-certified AP consultants and will provide participants with the experiences necessary to successfully teach an advanced placement course in their discipline.

Loyola's AP Summer Institute is officially endorsed by the Midwest Regional Office of the College Board and is run by Loyola's Center for Science and Math Education

Do You Know Someone Deserving of an ICTM Award?

Now is the time for you to get serious about nominating colleagues for the 2015 ICTM awards. The **nominations are due March 31**, and it takes a few days to gather the required information. ***So get on it!***

ICTM honors outstanding achievement every year in virtually every aspect of mathematics education. Nomination is reasonably straightforward and rather enjoyable and satisfying. The nominee is always pleased to know that colleagues value her or his efforts over the years, and the recipients of the awards have an opportunity to celebrate with friends and family as well as have their accomplishments appreciated by a larger audience than ever before.

There is an award for outstanding teaching at the elementary level, the middle school level, the high school level and post-secondary level. There is an award for professors who prepare teachers to teach, an award for educators who provide extraordinary leadership, and an award for educators who excel in providing extracurricular math opportunities. There is an award for a promising new teacher and an award for distinguished life achievement. Details can be found at **http://www.ictm.org/ictmawards/** as well as photographs and information about past recipients.

Teaching is difficult. One of the things that makes it difficult is that there is often little feedback for a job well done. Being nominated by a colleague for your outstanding work is one of the highest honors available in our profession, yet many deserving educators will not be recognized unless their colleagues take the time and make the effort to recognize them. Just do it, now.

Eric Bright, Awards Chair

ILLINOIS COUNCIL OF TEACHERS OF MATHEMATICS
SCHOLARSHIPS IN MATHEMATICS EDUCATION

The ILLINOIS COUNCIL OF TEACHERS OF MATHEMATICS will be presenting its twenty-fourth annual Scholarships in Mathematics Education in October of 2015 at the ICTM Annual Meeting in Tinley Park on Oct. 23–24.

There will be a minimum of 2 and a maximum of 5 awards granted of **$1500.00** to help defray educational expenses of the recipients.

To be eligible, a student must:

1. Be enrolled in an accredited university or college in Illinois during Spring 2015.
2. Have junior or senior status as of Spring 2015 with graduation during May 2015 or later and must be working on his/her first bachelor's degree.
3. Be a mathematics education major, a mathematics major with an education minor, or an education major with an official mathematics emphasis.
4. Have a total over all GPA of at least 3.00 from all colleges attended (based on 4.00).
5. Submit the following:
   A. A completed ICTM scholarship application form.
   B. Transcripts from ALL COLLEGES ATTENDED (these may be student copies).
   C. Letters of recommendation from two mathematics teachers, high school or college. These letters must state the capacity in which the writer knew the applicant and address his/her potential as a mathematics teacher.
   D. Two 200-300 word essays as requested below.
   E. A complete lesson planning form which is attached.

Students can request application forms from their mathematics education department, download the application at **http://ictm.org/scholarship.html**, or write to:

Sue and Randy Pippen
ICTM Scholarship
24807 Winterberry Lane
Plainfield, IL 60585

Please enclose a self-addressed stamped business envelope with your request for application forms.

The completed application must be received by mail or email. They must be postmarked on or before **March 6, 2015**. The recipients of the scholarship awards will be announced in June 2015 and awarded at the ICTM Conference Awards Reception on October 23 in Tinley Park.

USACAS 9

(2)CAS OR NOT(2)CAS

Computer algebra systems (CAS) have the potential to revolutionize mathematics education at the middle and secondary level. Experience how CAS can be integrated into Pre-algebra, Algebra 1 & 2, Precalculus, Calculus, and Geometry.

Attend the 9th INTERNATIONAL Conference on CAS in Secondary Mathematics

Come explore the future of mathematics education!

- Discover how secondary and middle school teachers are using CAS in their own classrooms.
- Get classroom tested ideas developed for CAS-enhanced classrooms.
- Interact with prominent CAS pioneers from the USA and internationally.

The 2015 Conference is dedicated to the memory of Bert Waits.

WHEN: Saturday, July 18, 2015 8:00 AM - 4:00 PM
Sunday, July 19, 2015 8:00 AM - 1:00 PM

WHERE: Hawken School
5000 Clubside Road
Lyndhurst, OH 44124 *(approximately 27 miles from CLE Airport)*

COST: Registration: **$175 (before May 28, 2015)**
$150/person for school/district teams of 2 or more (before May 28, 2015)
$200 (on or after May 28, 2015)
$60 for pre-service university students
(Fee includes continental breakfast, box lunch, and snacks)

Optional Saturday evening tour to Rock and Roll Hall of Fame and dinner at House of Blues–transportation is included: $48

HOTEL: Embassy Suites Cleveland-Beachwood: www.embassybeachwood.com
$129/night conference rate available until June 29, 2015 or until sold out
(rate available for reservations July 16 to July 19 2015)
Book directly online through hotel link at http://usacas.org
1-800-317-1960 Mention group code "HSM" for conference rate

HOW: On-line registration, hotel information, and updates are available at http://usacas.org
Register directly at www.hawken.edu/usacas-9

For more information or questions, contact:

Ilene Hamilton at ihamilton2341@gmail.com

Chris Harrow at CDHarr@hawken.edu

Ray Klein at rklein9019@aol.com

Tom Reardon at tom@tomreardon.com

Sponsored in part by:

Texas Instruments

Hawken School

MEECAS

Organized by MEECAS (Mathematics Educators Exploring Computer Algebra Systems)

CONFERENCE CORNER

What's MATH Got to Do With It?

Embracing Relevance and Meaning in the Math Classroom

October 23–24, 2015
Tinley Park Convention Center
Tinley Park, IL

Now is the time to plan for the 2015 ICTM Annual Conference! We have been overwhelmed with the volume of exceptional presentation proposals from math educators willing to provide content presentations at this fall's conference. Our committee is evaluating all the submissions, and working hard to structure a dynamic conference for you, no matter your grade level.

Start working now with your administration to ensure that you will be able to attend this year's conference. Start making your travel plans, and stay tuned to **www.ictm.org** and your *ICTM Bulletin* newsletters for updates as they become available!

- Featured Speaker: **Jo Boaler!**
- **Earlybird registration**: register early to save money!
- **Convenient access** from Interstates 55, 57 & 80, and for bus, train and air travelers!
- **All-inclusive location** - no trekking between buildings for events!
- **Free Parking**!!!
- **Free wifi access** throughout the conference facility!
- **Convenient access** to nearby restaurants & shopping!

Help us fill your vendor hall! If you know a fantastic math/technology vendor who should be represented at the 2015 ICTM Annual Meeting, refer them to **http://www.eiu.edu/adulted/ICTMConference.php** for more information, or send us a referral with their contact info at **ictm_services@eiu.edu**

Plan now to see

Jo Boaler at the

2015 Pre-Conference and Annual Meeting!

Dr. Jo Boaler is a Professor of Mathematics Education at Stanford University, the Co-founder of youcubed, and a recognized editor, author and analyst in the Mathematics Education community, with awards in the United States and abroad. She is the author of nine books and numerous research articles geared toward increasing public understanding of the importance of good mathematics teaching.

Visit Dr. Boaler on the web at **http://joboaler.com/** and **http://www.youcubed.org./**, or follow her on Facebook at **https://www.facebook.com/profjoboaler**

Plan now to attend!

Our featured keynote presenter, Jo Boaler, is not to be missed. **It's not too early** to start the processes you have to complete in order to attend this amazing professional development opportunity. Get your bid in early for financial assistance and time off from your school. Commit now to participate in the 2015 ICTM Pre-Conference and Annual Meeting!

We're looking for the best math/technology vendors who want to be represented at a benchmark event for math educators featuring one of the nation's biggest Math Ed celebrities. Be sure to tell your favorite vendors to check us out!

BALL STATE + MATH EDUCATION

When it comes to math education, you can count on options—and value.

Our master of arts in mathematics education provides options for:

- **Elementary and middle school teachers** who hold an elementary, middle school, or special education teaching license with at least one year of teaching experience.
- **Secondary school teachers** who hold a secondary mathematics teaching license with at least one year of secondary mathematics teaching experience.
- **Elementary and middle school specialists** who hold an elementary or a middle school mathematics teaching license with at least three years of teaching experience.

Graduate-Level Certificates

- Elementary Mathematics Teacher Leadership
- Middle School Mathematics Education

Graduate-level certificates are a stand-alone credential of five courses that can be applied to the M.A. in math education.

Take classes online, on our main campus in Muncie, Indiana, or in the greater Indianapolis area.

Affordability is one thing. Value is another. Learn more about our master's program and our competitive costs: **bsu.edu/online/mathed.**

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EDUCATION REDEFINED®

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Please contact any of the following ICTM board members if you have any questions or concerns:

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Directors: Anita Reid/Martin Funk
Submissions from:
Reports: Eric Bright, Martin Funk, Kara Leaman, Robert Mann, Randy & Sue Pippen
Activities: Eric Bright, Martin Funk
Conference Info: Bob Williams, Dave Wartowski
Produced by: Eastern Illinois University School of Continuing Education

Why You Should Join

- **Connect with other educators working to improve mathematics education.**
- **Contribute to mathematics education.**
- **Stay current about regional, state and national meetings.**
- **Attend conferences at reduced rates.**
- **Receive the *ILLINOIS MATHEMATICS TEACHER*, a journal with articles about teaching and learning mathematics at levels from kindergarten to college.**
- **Receive the *ICTM BULLETIN*, with classroom activities, news and information about professional development opportunities.**

For ICTM Membership Services, please contact:

ICTM Membership
c/o School of Continuing Education
Eastern Illinois University
600 Lincoln Avenue
Charleston, IL 61920-3099

phone 800-446-8918 or 217-581-5116
e-mail **ictm_membership@eiu.edu**

Join or Renew Online at: **https://ictmservices.org**

CALL FOR ARTICLES
Can you help?

The Illinois Mathematics Teacher is always looking for new reviewers and articles. If you would like to volunteer as a reviewer or have an article to submit, please contact the editors at **imt@ictm.org**.

We look forward to hearing from you.

ICTM MEMBERSHIP APPLICATION FORM

Clip out this page and mail it with your payment to the address below.

☐ New Member ☐ Reinstatement ☐ Renewal ☐ Change of Address

Name _____ Member Number _____

Check preferred mailing address. Please complete BOTH columns.

☐ Home

Sreet Address: _____

City: _____

State: _____

Zip Code: _____

Phone: _____

Email: _____

☐ Work

School Address: _____

City: _____

State: _____

Zip Code: _____

Phone: _____

Email: _____

Regional Office of Education

NCTM Member? ☐ Yes ☐ No

Profession: (check only one)

- ☐ EC-3 Teacher
- ☐ 4-6 Teacher
- ☐ Jr. High/Middle Teacher
- ☐ Sr. High Teacher
- ☐ Special Education Teacher
- ☐ Community College
- ☐ College/University
- ☐ Administration
- ☐ Retired
- ☐ Student
- ☐ Institutional Member
- ☐ Other
- ☐ Other

Interests: (check up to three)

- ☐ Remedial
- ☐ Gifted
- ☐ Teacher Education
- ☐ Assessment
- ☐ Certification
- ☐ Multicultural Education
- ☐ Teacher Evaluation
- ☐ Professional Development
- ☐ Scholarship
- ☐ Technology
- ☐ Research
- ☐ Math Contest

Please note, the ICTM membership year ends on November 5, and memberships are not prorated. However, memberships purchased between April 1 and November 4 will be active for the full membership cycle purchased, PLUS a grace period between the date of purchase and November 5, the beginning of the next full membership cycle.

Dues for ICTM Membership:

Regular member

- ☐ one year $35
- ☐ three year $100
- ☐ five years $160

Retired Member

- ☐ one year $30

Student Member (This rate is reserved for full-time, baccalaureate pre-service students only)

- ☐ one year $20

Institutional Member

- ☐ one year $100

(The name of classroom teacher in the blank at the top of this page will be used as the contact teacher for the institutional membership. Please make sure to indicate a contact person.)

If recruited as a new member by a current member, please list the recruiter's name _____

Mail this application and a check or money order payable to: ***EASTERN ILLINOIS UNIVERSITY***

ICTM Membership
School of Continuing Education
Eastern Illinois University
600 Lincoln Avenue
Charleston, IL 61920-3099

Total Enclosed: $ _____

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Upcoming Events

ICTM Spring Regional Conferences:

Eastern Illinois University, Charleston Tuesday, April 7, 2015
Western Illinois University, Macomb Friday, April 10, 2015

NCSM Annual Conference

Boston, MA
April 13–15, 2015

NCTM 2015 Annual Meeting and Conference

Boston, MA
April 15–18, 2015

ICTM 2015 Math Contest

University of Illinois at Urbana-Champaign
May 2, 2015

ICTM Annual Conference

Tinley Park, IL
October 23–24, 2015

c/o Eastern Illinois University
School of Continuing Education
600 Lincoln Ave.
Charleston, IL 61920-3099

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