

Stay Sharp with Dominos



by Steve McCrea and Mario J. Llorente Leyva
Rules and Glossary by Mario

**Learn more (and find the link to the free ebook)
on Abcdominos.com**

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Something is going on in Cuba...

Sharper Thinking With Dominos

Octavio Cruz has lived in Trinidad for all of her 97 years and she likes playing a double tile to surprise her opponents.



Two of the players in this photo are over 90 years young (Guantanamo).

Ernestina Cruz is 92, lives in Havana, and usually beats Arturo Fuentes, 79, with a clever block.

Esteban Ortiz, 91 and a resident of Guantanamo, has to be dragged home for supper. "Just one more hand!" he begs.

What activity keeps these Cuban seniors sharp, agile and engaged with their neighbors? They all play the game of dominos.

Five ways to stay sharp

Research shows that seniors can maintain a mentally active lifestyle by engaging in stimulating activities. The American Association of Retired Persons (AARP) offers these suggestions to enhance the quality of life:

1. Exercise (keep moving)
2. Eat "brain fit" foods (blueberries, vegetables, nuts)
3. Meet new people
4. Focus your attention



Mario Llorente (far right) plays in Guantanamo.

Meeting new people and focusing your attention are two activities that happen to people who play dominos.

A website that specializes in offering engaging "brain games" (fitbrains.com) points out that there are five ways to maintain mental acuity:

Memory,

Problem Solving,

Concentration,

Spatial visualization

Language

The game of Dominos engages four of these activities... and you can use domino tiles to build a 3-D "house" or a "knock 'em down" series of falling tiles.

This book introduces you to the power of Dominos to keep people active and engaged.

There are often new partners to play with in daily neighborhood gathering places and weekly tournaments.

Each new tile played on the table changes the calculations that help make the game ever-evolving. For example, there are seven tiles with the number 5. If three of the tiles are on the table and you hold one tile with number 5, you know that there are three tiles left. Does your partner have one of those "5" tiles? If your partner plays a "5" tile, now there are two tiles left in the hands.

This book was originally written for distribution to schools. We have expanded it to include seniors in the group of people who can benefit from this mental training. We hope that you will share dominos with friends who are senior citizens – let's get more dominos in senior centers. So when you see sections of this book that are directed toward teachers, you can add “and seniors” to the sentence.

Are you ready to get started?

Join us by continuing to read our adventure about dominos.

References

<http://www.aarp.org/health/brain-health/info-01-2012/boost-brain-health.print.html>

Age and Dominos

By **Mario J. Llorente Leyva**

As a member of a dominos club that opened its doors in 1927, I have always been around players. Some players are good, some are brilliant, others just average, but they all share one thing in common: dominos has improved their mental skills like nothing else.

There is nothing strange about a young player being fast when calculating, fast to react, or even showing a one-of-a-kind, high-capacity short-term memory to remember every move made in one particular hand. However, when a person in his 80's or 90's (when most mental skills start to fade) plays at the highest level possible, one cannot but wonder what is behind such a pastime.

In order to play the game correctly, players have to be able to remember specific information about the hand in question. Let us use an example so that the reader can assess the process. I will conveniently speak from the point of view of the fourth player, counting from the starter of the game (dominos is played by two pairs/teams that compete to beat each other. Whoever starts the hand becomes the starter, the play continues in a counterclockwise direction, and the player to the left of the starter will be the fourth player to play).

Fourth player's mental description

The starter opened with double-four. He/she showed determination and firmness.

Inference: the opener has a good suit at fours, and probably has no more doubles (one very common strategy of dominoes is to hunt and hang the doubles)

My partner has played 4/3 very fast.

Inference: my partner has no more fours (playing fast indicates no more choices of play), I have no information on the 3 that he/she has played



The opener's partner has paused for a few seconds (pausing indicates more than one choice of play), and played 3/1
Inference: the player has more options on the 3, and he has presented his/her best suit: 1

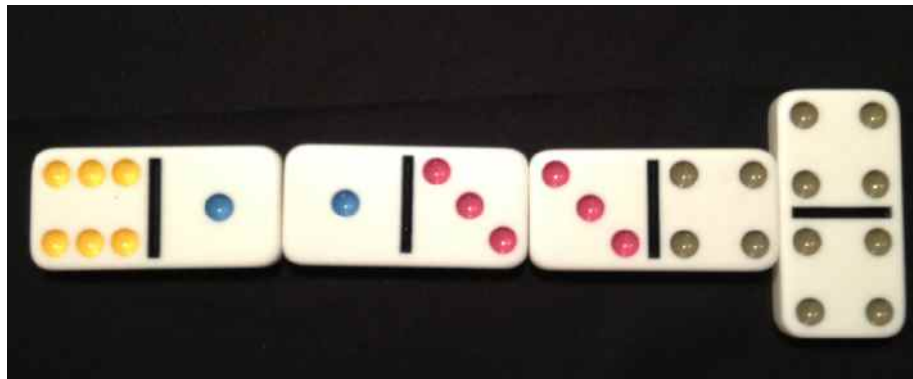


Each individual player is following the same information pattern, which will allow them to create the best strategy to decide what to play on each round. This means that one will follow that exercise five to six times on each hand. There are, on average, 10 hands per match. Players play about 6-10 matches in a day's worth of dominos.

$$\begin{array}{r}
 28 \text{ tiles} \\
 \times 10 \text{ hands per match} \\
 \times 6 \text{ matches per day} \\
 \hline
 1,680 \text{ tiles per day}
 \end{array}$$

The typical player thinks about and focuses on 1,680 tiles, and each tile is connected to other tiles in the hand.

As you can see, there is no rest in dominoes, so our minds have to be fully engaged into the game. When repeated often enough, this process will gradually develop mental skills such as anticipation, induction, deduction, short term memory, concentration, retention, etc. As long as the mind stays in training and activity, it will be optimal for life.



I can't think of any common activity that can influence our mental skills as dominoes does.

A. Introduction

Dear Reader

This is a short book. It's one of the quickest books you will ever read. If you are a visual or audio learner, click on the videos (on the website ABCDominos.com). In fact, you can get the main idea after reading this page. Then tell your friends about it.

1. The game that many people in the USA call **"Dominoes" is just a game.**
2. The game of dominoes that many US kids learned to play has rules that promote individual competition -- **it is "every player for himself."**
3. The rules used by most players of dominos around the world create partners -- it's still competitive, but the game also teaches **collaboration and teamwork.**
4. Collaborative skills that are gained by **playing bridge** (recommended by Bill Gates and Warren



Buffett) are **more quickly taught with dominos.**

5. **The game is spelled "dominoes"** in the USA and is often associated with individual players (similar to the card games Hearts and Rummy).

Dominoes are used to create "knock them down" demonstrations of "the domino theory." I would like you to join me in writing **"dominos" to**

indicate the team game that uses collaboration versus "dominoes," which are used to create "knock 'em down" displays.

6. Even the way that players in the USA **count the points** is mixed up -- you'll learn more in "Myths about Dominos" (chapter B).

There you have it -- the entire book on one page. If you grew up in the USA, you probably learned dominoes the way I did: every person for himself. Your world just got bigger (the way my world changed when my friend and collaborator Mario Llorente described the International Rules of Dominos).

THIS BOOK is FREE on the Internet: You can take your time looking through this book or you can download it free from [scribd.com](https://www.scribd.com) "**free book about dominos** dominoes for teachers McCrea Llorente" is the search phrase. It's also available at ABCDominos.com

Let's get right into this book. You are a teacher, so you don't have time to spend on elaborate descriptions of history and theories about why dominoes is excellent for mental development (you can learn those pieces in [Mario's other books](#)). Let's get through the table of contents and then **explore the myths of this mental activity.** In chapter C I describe **the math behind**

dominos and, by then, you will want to know the "real rules" of the collaborative game. Mario will give those rules and glossary of terms, followed by a general description of the game (which you can skip if you are in a hurry). The important **strategy of "the block"** and how to gracefully **communicate with your partner** are described in Chapter F (from a transcription of a series of videos that we encourage you to watch on Youtube). The book ends with an "end note" that gives you the directions for **spreading this fascinating activity** through your school and school district.

So, from one teacher to another, thank you for taking time with me today.

Steve McCrea, teacher SteveMathTeacher@gmail.com

Call me and let's talk about how to get dominos in your school and senior activities center

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Skype SteveEnglishTeacher



I founded Building International Bridges, Inc., a non-profit that aims to remove obstacles to communication.

Learn more at

BuildingInternationalBridges.org

*I teach teachers and parents about innovative teaching strategies at **GuideontheSide.com** and **VisualandActive.com** -- invite me to your school so I can learn by observing your innovative teachers.*

SPECIAL NOTE FOR SENIORS: your experience is needed in schools through MentorsOnVideo.org.

BIB Penpals connect your students with my students of English (who want to learn the U.S. accent). Learn more by visiting the Youtube.com channel ***BIBPenpals***.

If you have ideas about how to teach the global skills needed by students in the next century, let's talk. Senior citizens are experts in life skills -- and you can help teachers by transmitting your "life wisdom" via video. .



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B. Seven Myths about Dominos

Myth 1. “I could never introduce dominos in my classroom -- the kids will lose the tiles or start throwing them at each other.”

Reply: If this is a concern, print out the dominos on paper. There are several websites that give photocopyable sheets with the tiles distributed on them.

Photocopyable sheet: <http://www.first-school.ws/theme/printables/dominos-math.htm>

Myth 2. “Chess is a better game for teaching thinking.”

Reply: Chess is an individual sport. It is excellent for encouraging persistence and critical thinking, but what does it do for collaboration? The game of dominos (when played in teams) entrains the skill of cooperation.

Myth 3. “Dominoes is *every man for himself*. You can't teach collaboration with dominoes.”

Reply: Ah! The rules of “team dominos” are set up so that you play with a partner. It's you and your partner against a second team of two.

Why is collaboration so highly valued? Look at the list of Seven Global Skills (compiled by Tony Wagner, a Harvard professor):

Collaboration

Critical thinking

Creativity and imagination

Communication skills

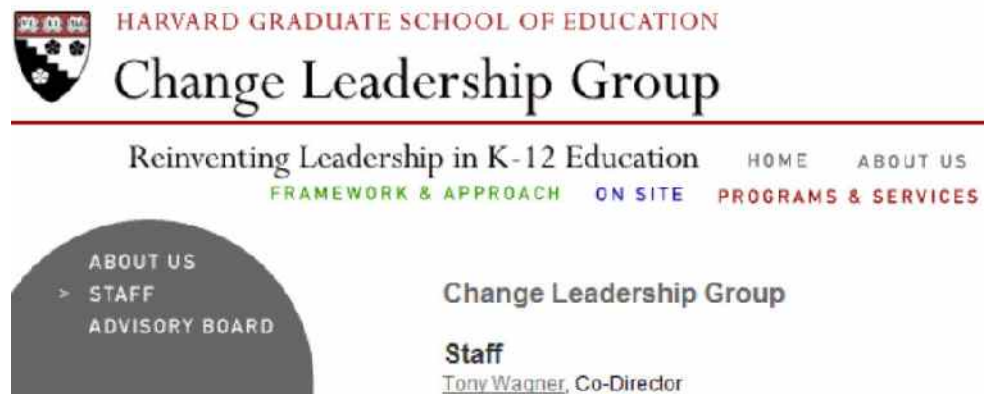
Initiative and entrepreneuring

Adaptability and agility

Accessing and analyzing information

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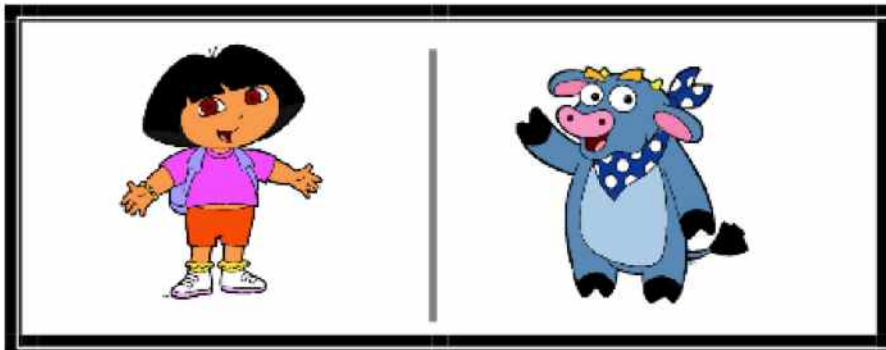
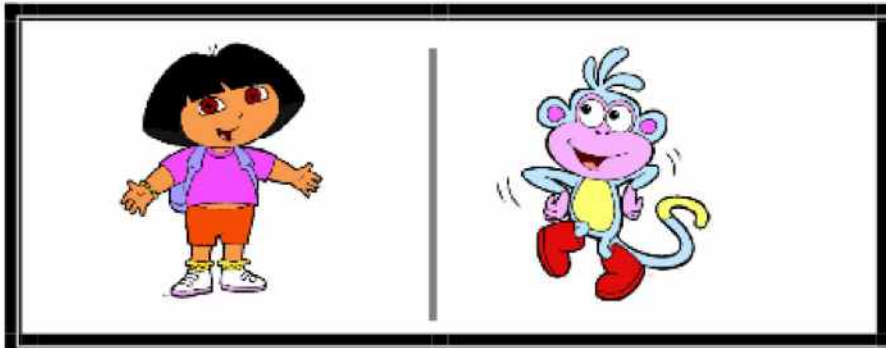
are the seven skills of dominos. Dennis Yuzenas (a high school teacher who maintains a history website at WhatDoYaKnow.com) adds Courtesy and Will Sutherland (a teacher in England, QBEAcademy.net) adds Integrity.



Myth 4. “We can’t play dominos without numbers.”

Oh? There are free printouts that you can get on the Internet that have seven images to replace the numbers. The downside of this game is that the relative differences between tiles are removed.

The strategies of blocking and ending the game in a variety of ways (either reducing your exposure or claiming as many points as possible) are reduced or eliminated when numbers are removed from the game.



Here is a website that offers a free printout without numbers (a fun game, but it lacks the level of sophistication that dominos provides). <http://www.gameideasforkids.com/dominos/%20pdf/dominos%20dora%20p1.pdf>

NOTE: Dominos without numbers is a clever way to introduce one part of dominos to children. Children can recognize patterns before they develop a deep understanding about numbers, so it makes sense first to allow students to learn the matching aspects of dominos without numbers, then to ask them to use tiles that have numbers. (For more about the stages of development related to numbers, see the work of child development psychologist Jean Piaget.) The danger of using dominos without numbers is that the activity can easily degenerate into an “every person for herself” sport. We want to make sure students have a complete exposure to the brain activities associated with the international rules of dominos. We have given you this electronic book because we want students to have the experience of playing team dominos.



Myth 5. “The only thing we can use the files for is building rows to demonstrate the principles of physics, to develop patience when setting up the tiles and to develop creativity with new arrangements. The traditional game is not useful for academics.”

Reply: Yes, "knock 'em down" is a delightful activity and many intricate and imaginative ways of setting up the tiles for collapse.

See Videos of "knock 'em down": Search key words like
"Over FOUR Million Dominoes - It's A New World Record"

Mario has identified the world's record for the number of tiles involved in a "knock 'em down" display.



[Over FOUR Million Dominoes - It's A New World Record](#)
The **record** is 4079381 **Dominoes**. But yes, this IS the **record**, but what I'm saying is that there is MUCH more **dominos** than a million involved here ...
by [royaltyclub](#) | **2,533,174 views**

[Domino Day 2008 - The New World Record](#)

Can you believe it?
4,345,027 **dominos**

by [gabopictures](#) | **1,903,922 views**

[Guinness World Record - Longest / Biggest Domino Line Ever](#)

This is the longest **domino** line ever.
by [ShanesDominoez](#) | **378,074 views**



These accomplishments are amazing, but they fall short of



the mental gymnastics that dominos can deliver when it is played as "team dominos."

schools.”

Myth 6. “Bridge is an excellent way to prepare students for team building. After all, Bill Gates and Warren Buffett advocate bridge in

Reply: True, there are aspects of the bidding when the game of bridge begins that depend on collaboration. However, while the hand is being played, what happens to the partner of the winning bid? That bridge partner sits back.

Teachers need to build a culture of cooperation in many of their classes. The buddy system is important for students to learn to develop trust in another person. Communication with the partner is ongoing during dominos and the rules are learned more quickly than the rules of bridge.

Go ahead and [introduce bridge in middle school](#), as suggested by numerous bridge advocates. But **start with dominos** in elementary school.



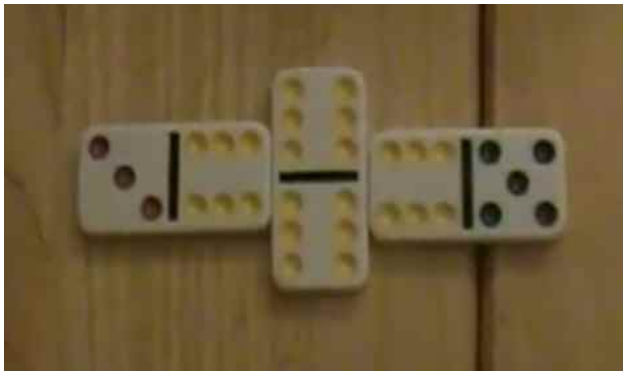
In an article in the New York Times, “*To see seventh and eighth graders sitting and **concentrating for three hours**, it never happens **except in bridge**,*” said Bud Brewer, whose nonprofit group, [Reno Youth Bridge](#), held a tournament in April after teaching the game to 160 students in 14 public middle schools and three private schools in Reno and Sparks, Nev.

Reply: Oh? If educators took time to go to South America and watch **kids playing dominos**, they might be surprised how long children sit together.

This photo (above) comes from a youtube video showing Gates and Buffett playing bridge. Why not also play dominos, the team sport?

Myth 7. “**Dominos is child's play.**”

Reply: The way the tiles are played by children in the USA -- yes, that game has elements of many children's games. Individual, every man for himself, and scoring is done differently from the "team dominos" way. When you teach students the team dominos, you give them a lifetime of working with a partner.



In short, there are many reasons to introduce dominos into schools and into the lives of senior citizens. Here's a point that Mario often tells me:

“If your mind is trained for more things, you will be better equipped for life. If I have to remember information only for

quizzes and tests, I will not be ready to memorize other important things. Dominos trains retention.”

C. A Math Teacher Looks at Dominos

I have taught math since 1972 when a teacher asked me to coach a classmate through the complexities of algebra. I hold a teaching certificate in the State of Florida for Math levels 6-12 and I teach an SAT course at Broward College in Fort Lauderdale. My website **SATVideos.com** is used by hundreds of students. I'd like to tell you about **the mathematics behind dominos?** (*You should skip this chapter and go directly to Mario's description of the rules...*)

We will go into game theory in [a larger book](#). In fact, search on the Internet for "Mario Llorente dominos" and see what a prolific author my collaborator is. After this short book, you will have plenty of things to look at to deepen your awareness of this remarkable mental activity.

There are three ideas that we can convey to students:

1 ABC Dominos part 1 by Mario Joel Llorente Leyra

ABCDominos 11 videos  



a) probability, b) combinations and c) collaboration.

a) probability

Ask your students: If you hold the 5/5 and you see 5/4 and 5/6 on the table, how many other tiles are in the hands of the other players?

There, you've got your students thinking about probability.

b) combinations

How many combinations are

in the dominos set? Why are there **34 dominos** in the typical set of tiles? You can get the students to discover the answer by asking them to arrange the tiles in a pattern -- and let them create their own patterns.

ANSWER at the end of RESOURCES (Chapter G)

c) collaboration.

Is math about collaboration? Yes. You and I grew up doing math with friends, with parents, with neighbors... and then we went to school. We sat in chairs and we were told to "**keep your eyes on your paper** and **don't look** at the work of other students."

There are fabulous books about collaborative or creative games and activities with math. A textbook that I learned with, Heutinck and Kramer, claimed that U.S. schools typically cover **a lot of material** at **a shallow level**. A typical 45-minute class might do **15-20 problems**. In **Japan**, according to the textbook, a typical class tackles at most **three exercises** in a session. (Notice the difference in language: USA has problems and Japan has exercises.) Many teachers in Japan give time for elaboration and teamwork to let students find several ways of solving problems.

Have you read "A Mathematician's Lament"? It's [a 30-page essay](#) by Paul Lockhart.

Here are some extracts:

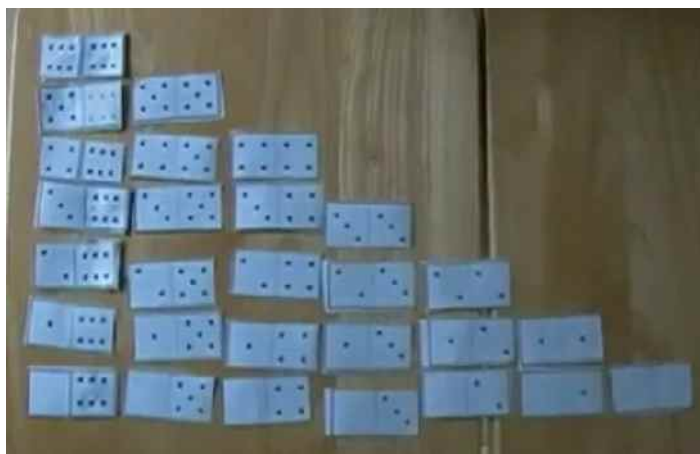
Discussions between "Simplicio" (the simple one) and "Salviati" (the saved one):

SIMPLICIO: But isn't one of the purposes of mathematics education to help students think in a more precise and logical way, and to develop their "quantitative reasoning skills?" Don't all of these definitions and formulas sharpen the minds of our students?

*SALVIATI: No they don't. If anything, **the current system** has the opposite effect of **dulling the mind**. Mental acuity of any kind comes from solving problems*

yourself, not from being told how to solve them.

=====



SIMPLICIO: But surely there is some body of mathematical facts of which an educated person should be cognizant.

SALVIATI: Yes, the most important of

*which is that **mathematics is an art form** done by human beings for pleasure! Alright, yes, it would be nice if people knew a few basic things about numbers and shapes, for instance. But this will never come from rote memorization, drills, lectures, and exercises. **You learn things by doing them** and you remember what matters to you. We have millions of adults wandering around with "negative b plus or minus the square root of b squared minus 4ac all over 2a" in their heads, and absolutely no idea whatsoever what it means. And the reason is that they were never given the chance to discover or invent such things for themselves. They never had an engaging problem to think about, to be frustrated by, and to create in them the desire for technique or method. They were never told the history of mankind's relationship with numbers. More importantly, no chance for them to even get curious about a question; it was answered before they could ask it.*

=====

*A good teacher can guide the discussion and the flow of problems so as to allow the students to discover and invent mathematics for themselves. The real problem is that the bureaucracy does not allow an individual teacher to do that. With a set curriculum to follow, a teacher cannot lead. There should be no standards, and no curriculum. Just **individuals doing what they think best for their students**.*

I made this extended quotation from Lockhart's essay in the hope of driving you to look up his materials. Please search "Mathematician's Lament."

[See this interpretation](#)



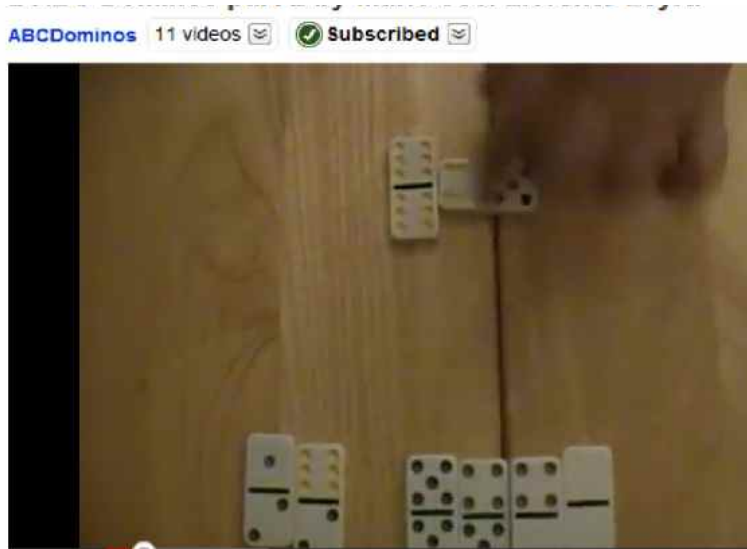
<https://sites.google.com/site/theguideontheside/home/math-teachers-lament>

I told you all of these things to get you in the mindset to receive the following information:

Dominos when played as a team ("**team dominos**") **is an engaging activity**. Team Dominos promotes mental math at the end of the game (when adding up the points). The students see how their blocking strategy might or might not pay off with the scoring system used in international (team) dominos. There are strategies that Mario taught me that are not rewarded by the rules of individual dominos.

Dominos or Dominoes?

As a math teacher, I must stand up. Too often U.S. students are given the idea that it's okay to learn metric system, but it's only when you go traveling or if you work in certain industries. Excuse me? Look at the list of items that U.S. students are told "oh, you don't need to know how to convert that...":



Try to **convert these measurements** (answers in Chapter G):

gallons or quarts to liters

100 miles = ?

F to C

100 km = ?

miles to km

10 liters = ?

yards to meters

25 degrees F = ?

inches to cm

10 gallons = ?

pounds to kg

10 pounds = ?

10 kg = ?

... and now "dominoes" and dominos.

Billions of people call the activity "**dominos**" and several hundred million English speakers insist on using the plural like tomatoes, potatoes and mosquitoes. Stand firm, teachers. Use the word "dominoes" to describe the "knock them down" displays of physics and to refer to the individual domino games. When you refer to the **team** version of **dominos**, please drop the "e" in the plural.

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