

Welcome Back MYP Math 9!

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: 10/23 Topic: Create Your Own Problem	0 1 2	I'm almost done!
Tuesday Date: _____ Topic: _____	0 1 2	
Wednesday Date: _____ Topic: _____	0 1 2	
Thursday Date: _____ Topic: _____	0 1 2	
Friday Date: _____ Topic: _____	0 1 2	

Class Plan:

1. Mathematician Monday!
2. How do I defend my self-score?
2. Worktime: **Problem Due Tuesday**
3. Done? Extension problems



Mathematician Monday!

Jama Musse Jama

Jama was born in 1967 in Hargeysa, Somalia where he had his primary and secondary education. He then left for Mogadishu and attended the Somali National University, where he studied Mathematics for four and half years.



Mathematician Monday!

Jama Musse Jama

Fluent in Italian, Jama left Hargeisa to study as a mathematician at Pisa University in Italy. He has particular interest in civil liberties and he is the author (or co-author) of six books, two of them on Somali traditional games.

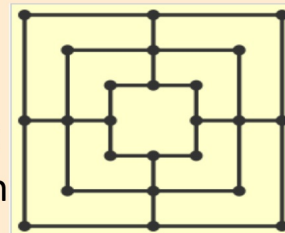
Books [edit]

- *Cittadinanza è partecipazione*, Bianca&Volta Edizioni, Trieste, 2013, ISBN 978-88-96400-50-0 (ePub ISBN 978-88-96400-51-7)
- *Gobannimo Bilaash Maaha / Freedom is not free*, 2007. ISBN 88-88934-06-5.
- *A NOTE ON MY TEACHER'S GROUP - News Report of an Injustice*, 2003. ISBN 88-88934-01-4.
- *Shax: the preferred game of our camel-herders and other traditional African entertainments*, 2002. ISBN 88-87332-05-3.
- *Layli Goobalay: Variante Somala del Gioco Nazionale Africano*, 2002, ISBN 88-88934-00-6.

Mathematician Monday!

One of Jama's favorites: Shax

The game is usually played by marking a board on the ground, and using stones or sticks as pieces. Shax has had a significant influence on Somali literature, which often mentions gameplay and strategies. In the historical nomadic lifestyle of the Somali people, Shax was also utilized as a means of communication between different clans.



The board used for Shax. Pieces are placed on the intersections and players try to get three in a row.

Rules of Shax

The board consists of a grid with twenty-four intersections or points. Each player has nine pieces, or "men", usually coloured black and white. Players try to form 'mills'—three of their own men lined horizontally or vertically—allowing a player to remove an opponent's man from the game. A player wins by reducing the opponent to two pieces (where he could no longer form mills and thus be unable to win), or by leaving him without a legal move.

Mathematician Monday!

Jama Musse Jama

At Pisa University, Jama began researching traditional Somali games as well as the history of mathematics in the Horn of Africa, a topic which he has written about in several journals.[1] His interests include Education in Somalia,[2] and as an activist, Jama is deeply involved in the affairs of the Somali diaspora during festivals[3] and conferences which he chairs or is present as a key contributor. **A specific interest of Jama's is to promote Somali language, literature, and promoting reading, he is the founder and the organiser of Hargeysa International Book Fair.[4]**

Mathematician Monday!

Jama Musse Jama

The Hargeysa International Book Fair was inaugurated in 2008 by Jama Musse Jama, who serves as Director. [1] It grew from 200 to 10,000 participants over the following six years.



Mathematician Monday!

Jama Musse Jama

Jama Musse Jama is an ethno-mathematician and author. He has a PhD in African Studies specializing in Computational Linguistics of African Languages. He has created and currently directing Somali Corpus, an online platform to manage corpus database for Somali language. **Dr. Jama is also notable for his research to improve basic education and development in Africa, in particularly teaching mathematics in "a culturally sensitive way"**. Jama Musse is now leading the establishment of the Hargeysa Cultural Centre in Somaliland.

Mathematician Monday!

Jama Musse Jama

Jama's Mathematical Accomplishments

1) Writing a book on teaching mathematics using cultural elements rooted in the Somali culture.

A note on "My Teachers' Group":
news report of an injustice (2003)

2) Revival of African games for the use of teaching mathematics.

3) Developing morphological and syntactical parsers based on algorithms that consider Somali language peculiarities.

What is Ms. Paulson's grade?

Do: Examine rubric and key

Discuss at table: Score (2 min)

8 7 7 6
4 7 7 7.5
6.5



Whole group: Why did she get that score?

Paulson key:

Ms. Paulson Halloween Problem Key

a)

$$\begin{pmatrix} 0 \\ 0.5 \end{pmatrix} + \begin{pmatrix} -0.5 \\ 0 \end{pmatrix} + \begin{pmatrix} 0 \\ -2 \end{pmatrix} + \begin{pmatrix} 1.75 \\ 0 \end{pmatrix} + \begin{pmatrix} 1/3 \\ 1/6 \end{pmatrix} + \begin{pmatrix} 0 \\ 1/6 \end{pmatrix}$$

half a block North half a block West 2 blocks South 1.75 blocks East "b" 1/6 blocks North

$$\begin{pmatrix} -1.5 \\ 0 \end{pmatrix} + \begin{pmatrix} -1/3 \\ 1/3 \end{pmatrix} + \begin{pmatrix} 0 \\ 2/3 \end{pmatrix} + \begin{pmatrix} 1.5 \\ 0 \end{pmatrix} + \begin{pmatrix} 1/3 \\ 1/2 \end{pmatrix} + \begin{pmatrix} 0 \\ -1.5 \end{pmatrix}$$

1.5 blocks West "a" 2/3 block North 1.5 blocks East "c" 1.5 blocks South

$$\begin{pmatrix} -1.5 \\ 0 \end{pmatrix} + \begin{pmatrix} 0 \\ -0.5 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$$

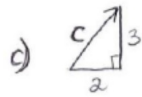
1.5 blocks West half a block South

Paulson key:

$$b) \quad 0.5 + 0.5 + 2 + 1.75 + \sqrt{\left(\frac{1}{3}\right)^2 + \left(\frac{1}{6}\right)^2} + \frac{1}{6} + 1.5 + \sqrt{\left(\frac{2}{3}\right)^2 + \left(\frac{1}{3}\right)^2} + \frac{2}{3} + 1.5$$

$$+ \underbrace{\sqrt{\left(\frac{1}{3}\right)^2 + \left(\frac{1}{2}\right)^2}}_{\frac{\sqrt{13}}{6}} + 1.5 + 1.5 + 0.5 \approx 15.2 \text{ blocks}$$

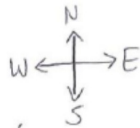
(ii) $\begin{pmatrix} 0 \\ 0 \end{pmatrix}$



$$2^2 + 3^2 = c^2$$

$$13 = c^2$$

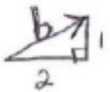
$$c = \sqrt{13} \approx 3.6$$





(6 spaces = 1 block)

Mr. Paulson chased the dog $\frac{\sqrt{13}}{6}$ blocks, about 0.6 blocks SE

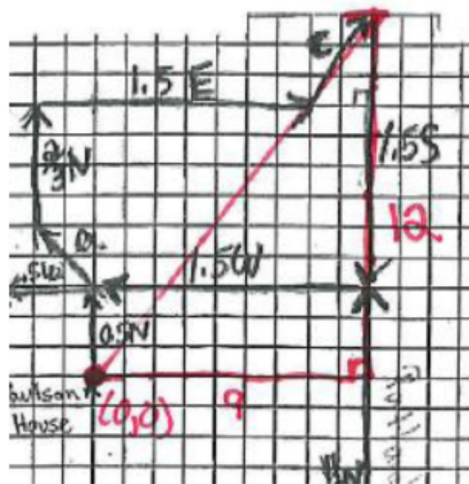
Paulson key:

d)  $1^2 + 2^2 = b^2$ $\boxed{\sqrt{5} = b}$ $\left[\frac{\sqrt{5}}{6} \text{ blocks SE, about } .37 \text{ blocks SE} \right]$

 $2^2 + 2^2 = a^2$
 $8 = a^2$
 $a = \sqrt{8}$
 $\boxed{a = 2\sqrt{2}}$ $\left[\frac{2\sqrt{2}}{6} = \frac{\sqrt{2}}{3} \text{ blocks NW, about } .24 \text{ blocks NW} \right]$

e)  $\sqrt{9^2 + 12^2} = \text{BAT's flight was } 15 \text{ blocks SE.}$
:
:
:

Paulson key:



Justification for Pythagorean Theorem:

- The directions of North/South paired with East/West are perpendicular. By the definition of perpendicular, the directions form right angles. Using the lengths of the N, S, E, W vectors, we have right triangles. Hence we can use the Pythagorean Theorem.

How do I defend my self-score?

Criterion	IB Level	IB Descriptors (from subject guide)	S	T	Task Descriptors
Work in real-life contexts	0	<ul style="list-style-type: none"> has not reached a standard described by any of the descriptors given below 			<p>Work is missing (list missing elements)</p> <ul style="list-style-type: none"> Or, Work has not reached a standard described by any of the descriptors given below
	1	<ul style="list-style-type: none"> i. identify some of the elements of the authentic real-life situation ii. apply mathematical strategies to find a solution to the authentic real-life situation, with limited success. 			<p>No direct explanation Many Errors of realism.</p> <ul style="list-style-type: none"> Math strategies and the key (solution) is provided with many errors.
	2				<ul style="list-style-type: none"> There is an attempt to explain their work.

No explanation of realism/Vector operations

Missing items? List them up here.

How do I defend my self-score?

	<p>7</p> <ul style="list-style-type: none"> i. identify the relevant elements of the authentic real-life situation ii. select appropriate mathematical strategies to model the authentic real-life situation <p>8</p> <ul style="list-style-type: none"> iii. Apply the selected mathematical strategies to reach a correct solution to the authentic real-life situation iv. justify the degree of accuracy of the solution v. justify whether the solution makes sense in the context of the authentic real-life situation. <p>Scenario did occur except for the BAT.</p>	<p>Without Errors</p> <ul style="list-style-type: none"> Math strategies include: <ul style="list-style-type: none"> -Create a scenario ✓ -Plot at least 4 locations ✓ - Write questions to be answered using the scenario <ul style="list-style-type: none"> a. Direction ✓ b. Magnitude ✓ c. Vector Operations A key (solution) on a separate piece of paper is provided without error ✓ There is a defense of why we can use the Pythagorean Theorem ✓ Justify whether your scenario is realistic and/or accurate. <u>Missing</u>
Your Level	***Draw check marks in the appropriate boxes to determine your score.	

Check mark the things you have completed!

How do I defend my self-score?

Level	<p>***Draw check marks in the appropriate boxes to determine your score.</p> <p>Student Reflection: (Why did you earn this score?)</p> <p>My scenario was complete, I considered at least 4 locations ("turns") in my diagram and included directions. I also wrote 5 questions showing understanding of magnitude and right triangles. I justified my use of right triangles and Pythagorean Thm.</p> <p>I did not have any vector operations or defense of realism.</p>
-------	--

Final score?: 5

Self Assess using the **Criterion D Real Life Applications** rubric (Give yourself a score!)

Many errors

Missing pieces/began to create a problem

0	<ul style="list-style-type: none"> has not reached a standard described by any of the descriptors given below 		<p>Work is missing (list missing elements)</p> <ul style="list-style-type: none"> Or, Work has not reached a standard described by any of the descriptors given below
1	<ul style="list-style-type: none"> i. identify some of the elements of the authentic real-life situation ii. apply mathematical strategies to find a solution to the authentic real-life situation, with limited success. 		<p>Many Errors</p> <ul style="list-style-type: none"> Math strategies and the key (<i>solution</i>) is provided with many errors. There is an attempt to explain their work.
2			

Self Assess using the **Criterion D Real Life Applications** rubric (Give yourself a score!)

Some errors, or not quite completed

3	<ul style="list-style-type: none">• identify the relevant elements of the authentic real-life situation	
4	<ul style="list-style-type: none">• ii. select, with some success, adequate mathematical strategies to model the authentic real-life situation• iii. apply mathematical strategies to reach a solution to the authentic real-life situation• iv. discuss whether the solution makes sense in the context of the authentic real-life situation.	<p>Some Errors</p> <ul style="list-style-type: none">• Math strategies include:<ul style="list-style-type: none">-Create a scenario-Plot locations- Write questions to be answered using the scenario<ul style="list-style-type: none">a. Directionb. Magnitudec. Vector Operations• A key (<i>solution</i>) on a separate piece of paper is provided with some error.• There is <i>an attempt</i> to explain whether your scenario is realistic and/or accurate.

Self Assess using the **Criterion D Real Life Applications** rubric (Give yourself a score!)

Minor errors, or not as complex as it could be

5	<ul style="list-style-type: none">• j. identify the relevant elements of the authentic real-life situation• ii. select adequate mathematical strategies to model the authentic real-life situation	<p>Minor Errors</p> <ul style="list-style-type: none">• Math strategies include:<ul style="list-style-type: none">-Create a scenario-Plot locations- Write questions to be answered using the scenario<ul style="list-style-type: none">a. Directionb. Magnitudec. Vector Operations• A key (solution) on a separate piece of paper is provided with little error.• There is a defense why we can use the Pythagorean Theorem.• Explain whether your scenario is realistic and/or accurate.
6	<ul style="list-style-type: none">• iii. apply the selected mathematical strategies to reach a valid solution to the authentic real-life situation• iv. explain the degree of accuracy of the solution• v. <u>explain</u> whether the solution makes sense in the context of the authentic real-life situation.	

Self Assess using the **Criterion D Real Life Applications** rubric (Give yourself a score!)

No errors, all parts completed

7	<ul style="list-style-type: none">• i. identify the relevant elements of the authentic real-life situation• ii. select appropriate mathematical strategies to model the authentic real-life situation	
8	<ul style="list-style-type: none">• iii. Apply the selected mathematical strategies to reach a correct solution to the authentic real-life situation• iv. justify the degree of accuracy of the solution• v. <u>justify</u> whether the solution makes sense in the context of the authentic real-life situation.	<p>Without Errors</p> <ul style="list-style-type: none">• Math strategies include:<ul style="list-style-type: none">-Create a scenario-Plot at least 4 locations- Write questions to be answered using the scenarioa. Directionb. Magnitudec. Vector Operations <p>• A key (solution) on a separate piece of paper is provided without error.</p> <ul style="list-style-type: none">• There is a defense of why we can use the Pythagorean Theorem.• Justify whether your scenario is realistic and/or accurate.

Reflect: Why did you earn that score?

Your
Level

***Draw check marks in the appropriate boxes to determine your score.

Student Reflection:

(Why did you earn this score?)

Exercises...

Finish and Asses Your Own
Problem!

Done?: Try the extension problems!