

Welcome Back MYP Math 9

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: 10/16 Topic: Vector Quiz	0 1 2	
Tuesday Date: 10/17 Topic: Vector Subtraction	0 1 2	Realizing that subtraction is just adding a negative was revelatory!
Wednesday Date: _____ Topic: _____	0 1 2	
Thursday Date: _____ Topic: _____	0 1 2	
Friday Date: _____ Topic: _____	0 1 2	

Class Plan:

1. Warm-up

2. Practice a real life assessment

3. Self Assess/Consider Ideas for my own assessment

.

EXERCISE 26F

Warm-

3 Simplify:

a $\vec{AB} - \vec{CB}$

b $\vec{QP} - \vec{RP}$

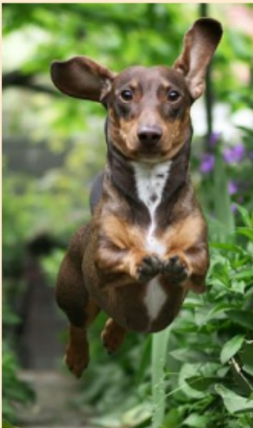
c $\vec{AB} + \vec{BC} - \vec{DC}$

d $\vec{PQ} - \vec{RQ} + \vec{RS} - \vec{TS} + \vec{TV}$

.

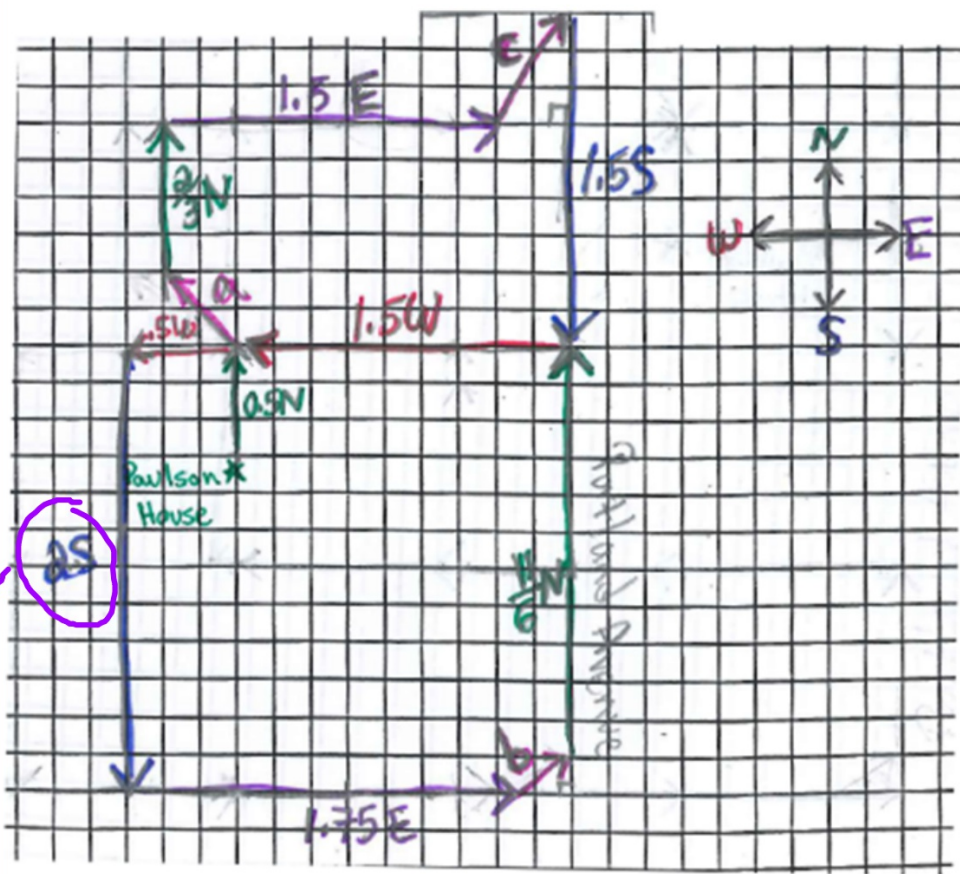
Happy Halloween! Key provided! Exemplar

On October 31st, 2015, Ms. Paulson and her husband took Max trick-or-treating. From their house they went half a block North and then took a left and walked a half a block West. They then took another left and walked 2 blocks South. Continuing to collect delicious treats, they walked 1.75 blocks East. Then the road went Northeast for a short distance (diagram **b**) before they walked $11/6$ blocks North on Portland avenue. From Portland, the Paulson's took a left and walked 1.5 blocks West and a short distance Northwest (diagram **a**). They continued their path for $2/3$ blocks North and took a right going 1.5 blocks East. At the end of the 1.5 blocks east, a dog ran out of a house! Mr. Paulson chased the dog through back yards in the Northeast direction (diagram **c**) until he caught the dog on Portland Avenue! The owner of the dog was not far behind us and brought the dog back home. Paulson's continued on Portland going South for 1.5 blocks. Then they turned right and walked home, 1.5 blocks West and 0.5 blocks South. Happy Halloween!



Exemplar

2 South



The Questions

Questions involving Paulson's Halloween:

- a) Write the vectors of the Halloween journey in component form.
- b)
 - i. How many blocks did the Paulson's walk in total?
 - ii. What was their displacement vector?
- c) Calculate how far Mr. Paulson had to chase the dog. (Diagram **c**)
- d) Find the short distances Northeast (diagram **b**) and Northwest (diagram **a**).
- e) Suppose a bat flew from the tree in the Paulson's front yard to the spot where Mr. Paulson caught the loose dog. How far did the bat fly?

Practice "Create Your Own Application" Do: Trick-or-Treating in S. Mpls



*** ~~Answer Questions in
Notebook/Lined Paper...~~
numerous vectors!



Done? Look at
KEY. What more
could be done?
Work on other
vector problems.



Key

a) Write the vectors of the Halloween journey in component form.

a)

$\begin{pmatrix} 0 \\ 0.5 \end{pmatrix}$ half a block North	$\begin{pmatrix} -0.5 \\ 0 \end{pmatrix}$ half a block West	$\begin{pmatrix} 0 \\ -2 \end{pmatrix}$ 2 blocks South	$\begin{pmatrix} 1.75 \\ 0 \end{pmatrix}$ 1.75 blocks East	$\begin{pmatrix} 1/4 \\ 1/6 \end{pmatrix}$ 1/4 "b"	$\begin{pmatrix} 0 \\ 1/6 \end{pmatrix}$ 1/6 blocks North
$\begin{pmatrix} -1.5 \\ 0 \end{pmatrix}$ 1.5 blocks West	$\begin{pmatrix} -1/3 \\ 1/3 \end{pmatrix}$ "a"	$\begin{pmatrix} 0 \\ 2/3 \end{pmatrix}$ 2/3 block North	$\begin{pmatrix} 1.5 \\ 0 \end{pmatrix}$ 1.5 blocks East	$\begin{pmatrix} 1/3 \\ 1/2 \end{pmatrix}$ "c"	$\begin{pmatrix} 0 \\ -1.5 \end{pmatrix}$ 1.5 blocks South
$\begin{pmatrix} -1.5 \\ 0 \end{pmatrix}$ 1.5 blocks West	$\begin{pmatrix} 0 \\ -0.5 \end{pmatrix}$ half a block South				

Key

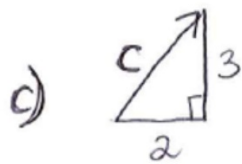
- b) i. How many blocks did the Paulson's walk in total?
ii. What was their displacement vector?

$$\begin{aligned} \text{b) (i)} \quad & 0.5 + 0.5 + 2 + 1.75 + \sqrt{\left(\frac{1}{3}\right)^2 + \left(\frac{1}{6}\right)^2} + \frac{11}{6} + 1.5 + \sqrt{\left(\frac{1}{3}\right)^2 + \left(\frac{1}{3}\right)^2} + \frac{2}{3} + 1.5 \\ & + \underbrace{\sqrt{\left(\frac{1}{3}\right)^2 + \left(\frac{1}{2}\right)^2}}_{\frac{\sqrt{13}}{6}} + 1.5 + 1.5 + 0.5 \approx 15.2 \text{ blocks} \end{aligned}$$

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

Key

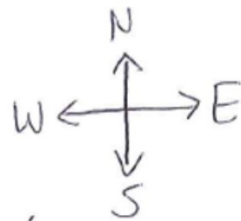
c) Calculate how far Mr. Paulson had to chase the dog. (Diagram c)



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

$$13 = c^2$$

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

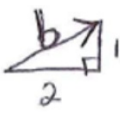



(6 spaces = 1 block)

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

Key


d) Find the short distances Northeast (diagram **b**) and Northwest (diagram **a**).

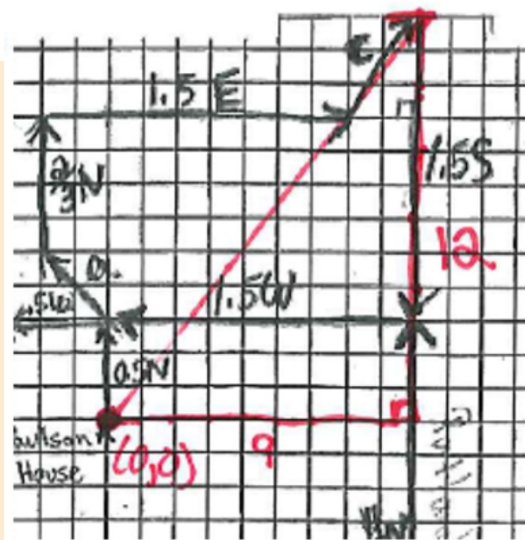
d)  $1^2 + 2^2 = b^2$ $\boxed{\sqrt{5} = b}$ $\left[\frac{\sqrt{5}}{6} \text{ blocks SE, about } .37 \text{ blocks SE} \right]$

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

Key

e) Suppose a bat flew from the tree in the Paulson's front yard to the spot where Mr. Paulson caught the loose dog. How far did the bat fly?

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



Key

Justification for Pythagorean Theorem

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.

Exercises...

*Check work with key. (Physical/ONLINE)

*Grab a piece of graph paper and start writing a scenario that includes the concepts we've been learning.