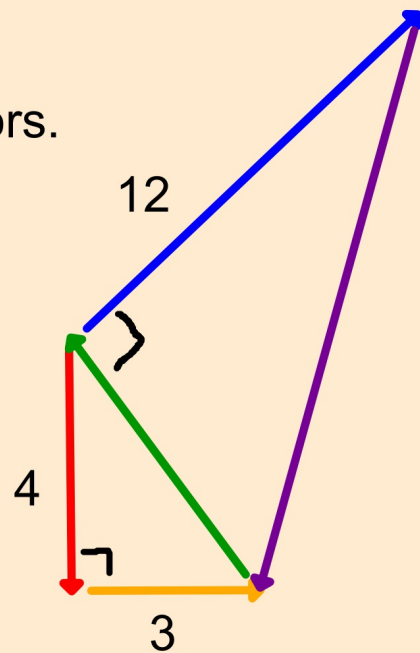


Welcome Back MYP Math 9!

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: 10/23 Topic: Create your own problem!	0 1 2	
Tuesday Date: 10/24 Topic: Finished create your own problem	0 1 2	
Wednesday Date: 10/25 Topic: Parallel/Orthogonal Vectors	0 1 2	
Thursday Date: 10/26 Romeo & Juliet Topic: _____	0 1 2	
Friday Date: 10/27 Review Topic: _____	0 1 2	.Please reflect and turn in!

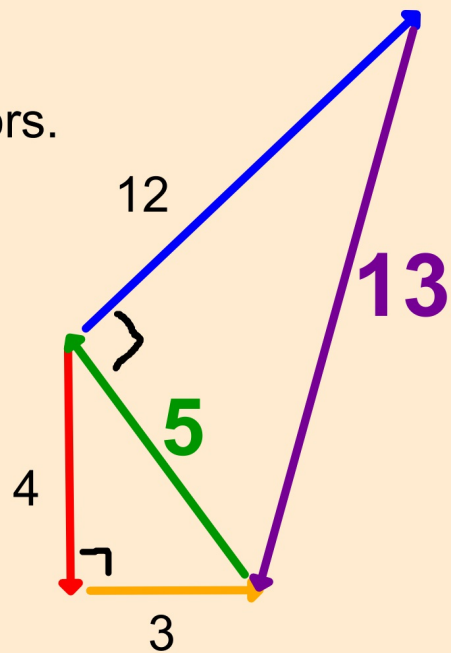
Warm-up

Find the length of the green and purple vectors.



Warm-up

Find the length of the green and purple vectors.



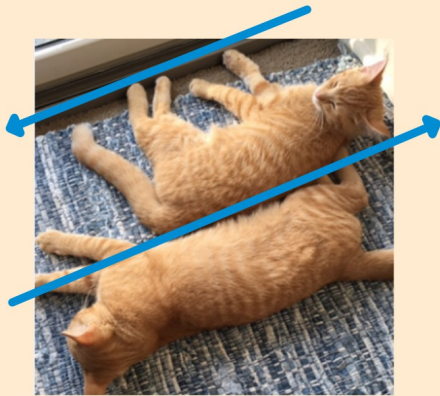
Class Plan:

1. Warm-up
2. Review Unit 2 Topics
3. Joke break!

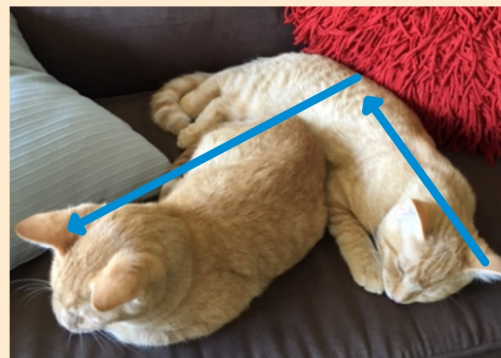
Unit Test: Tuesday 10/31

Unit 2: Coordinate Geometry

Do: Vector Review Worksheet



Parallel



Purrrpendicular :)

Done?

Extension Problems

Master Vector List: $\vec{a} = \begin{pmatrix} 2 \\ 1 \end{pmatrix}$ $\vec{b} = \begin{pmatrix} -3 \\ 2 \end{pmatrix}$ $\vec{c} = \begin{pmatrix} -5 \\ 10 \end{pmatrix}$ $\vec{d} = \begin{pmatrix} -6 \\ 4 \end{pmatrix}$ $\vec{e} = \begin{pmatrix} 12 \\ -8 \end{pmatrix}$ $\vec{f} = \begin{pmatrix} -2 \\ -3 \end{pmatrix}$

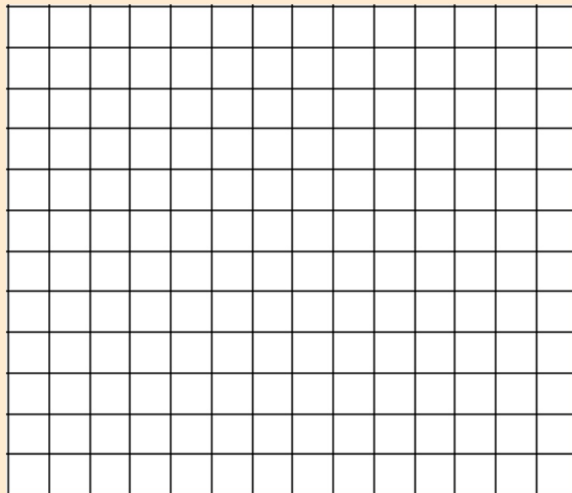
1) Find 3 parallel vectors and **show** they are parallel. 2) Create 2 vectors that are parallel to \vec{c} .

3) Create two vectors that are perpendicular to vector $\vec{v} = \begin{pmatrix} -7 \\ 2 \end{pmatrix}$.

4) Consider points $A(-4, 7)$ $B(3, -4)$.

A) Find \overline{AB} in component form and $|\overline{AB}|$.

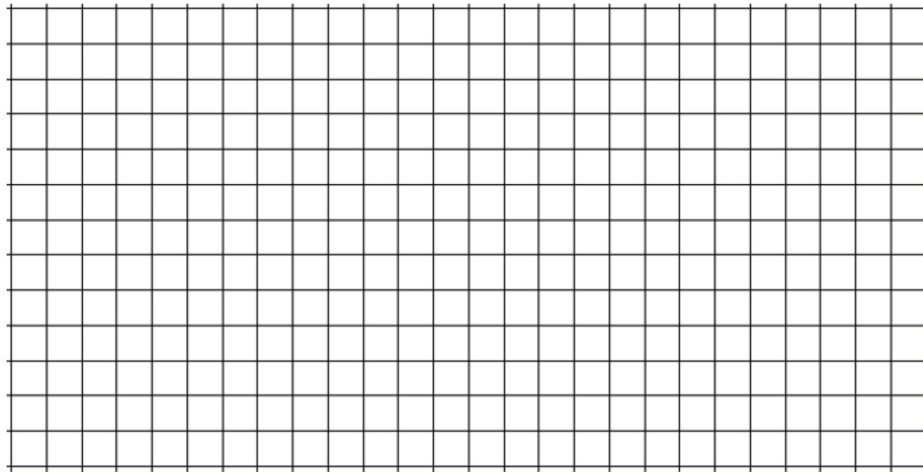
B) Find \overline{BA} in component form and $|\overline{BA}|$.



5) Let $\vec{p} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$, $\vec{q} = \begin{pmatrix} -3 \\ -5 \end{pmatrix}$, and $\vec{r} = \begin{pmatrix} -1 \\ 2 \end{pmatrix}$.

A) Find $2\vec{p} - 3\vec{r} + \vec{q}$ algebraically.

B) Represent the following vector arithmetic graphically on the grid below: $\vec{h} = 2\vec{p} - 3\vec{r} + \vec{q}$



6) Dr. Cannon purchased a drone to document the new Southwest building and its neighborhood. Before the flight, the drone must be programmed using vectors. The drone will take flight from the front doors of Southwest High and land 5 blocks East at Lake Harriet. Next, the drone will fly Northwest along the vector $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$ to Linden Hills Park. Finally, the drone will return to the front doors of Southwest High School.

A) Consider only the 2-dimensional (horizontal, vertical) travel of the drone, answer the following:

i) How far did the drone fly from Lake Harriet to Linden Hills Park?

ii) What is the return vector of the drone traveling from Linden Hills Park to Southwest?

B) Consider the alternative route of the drone travelling from Linden Hills Park to Pershing Park, then returning to Southwest. Pershing Park is 2 blocks South of Southwest's front doors.

i) Using vectors from this scenario, write an equation to represent the total trip of the drone.

ii) Use your equation from part (i) to find the vector from Linden Hills Park to Pershing Park.

Joke break!

Wheee, it's FRIDAY!



**ALWAYS GIVE
100%
AT WORK**

12% MONDAY
23% TUESDAY
40% WEDNESDAY
20% THURSDAY
5% FRIDAY

jokeoverflow.com

**DEAR MATH,
PLEASE GROW UP AND
SOLVE YOUR
OWN
PROBLEMS,
IM TIRED OF
SOLVING THEM
FOR YOU.**

A 3D rendered Minion character from the 'Despicable Me' franchise. The Minion is yellow with large, round, white goggles. It has a grumpy, frustrated facial expression with a downturned mouth. It is wearing its signature blue denim overalls with a single button. The character is standing on a plain white surface against a light yellow background.

Unit 2 Review Solutions

Master Vector List: $\vec{a} = \begin{pmatrix} 2 \\ 1 \end{pmatrix}$ $\vec{b} = \begin{pmatrix} -3 \\ 2 \end{pmatrix}$ $\vec{c} = \begin{pmatrix} -5 \\ 10 \end{pmatrix}$ $\vec{d} = \begin{pmatrix} -6 \\ 4 \end{pmatrix}$ $\vec{e} = \begin{pmatrix} 12 \\ -8 \end{pmatrix}$ $\vec{f} = \begin{pmatrix} -2 \\ -3 \end{pmatrix}$

1) Find 3 parallel vectors and show they are parallel.

$$\vec{b} \parallel \vec{d} \parallel \vec{e}$$

$$\vec{d} = 2\vec{b}$$

$$\vec{e} = -2\vec{d}$$

$$\vec{e} = -4\vec{b}$$

2) Create 2 vectors that are parallel to \vec{c} .

$$\begin{pmatrix} -10 \\ 20 \end{pmatrix} = 2\vec{c}$$

$$\begin{pmatrix} 15 \\ -30 \end{pmatrix} = -3\vec{c}$$

3) Create two vectors that are perpendicular to vector $\vec{v} = \begin{pmatrix} -7 \\ 2 \end{pmatrix}$.

$$\vec{w} = \begin{pmatrix} 2 \\ 7 \end{pmatrix}$$

$$\vec{x} = \begin{pmatrix} -4 \\ -14 \end{pmatrix}$$

$$\vec{v} \cdot \vec{w} = -7(2) + 2(7) = -14 + 14 = 0$$

$$\vec{v} \cdot \vec{x} = -7(-4) + 2(-14) = 28 - 28 = 0$$

4) Consider points $A(-4, 7)$ $B(3, -4)$.

A) Find \vec{AB} in component form and $|\vec{AB}|$.

$$\vec{AB} = \begin{pmatrix} 3 - (-4) \\ -4 - 7 \end{pmatrix} = \begin{pmatrix} 7 \\ -11 \end{pmatrix}$$

$$|\vec{AB}| = \sqrt{7^2 + (-11)^2}$$

$$= \sqrt{49 + 121}$$

$$= \sqrt{170}$$

B) Find \vec{BA} in component form and $|\vec{BA}|$.

$$\vec{BA} = \begin{pmatrix} -4 - 3 \\ 7 - (-4) \end{pmatrix} = \begin{pmatrix} -7 \\ 11 \end{pmatrix}$$

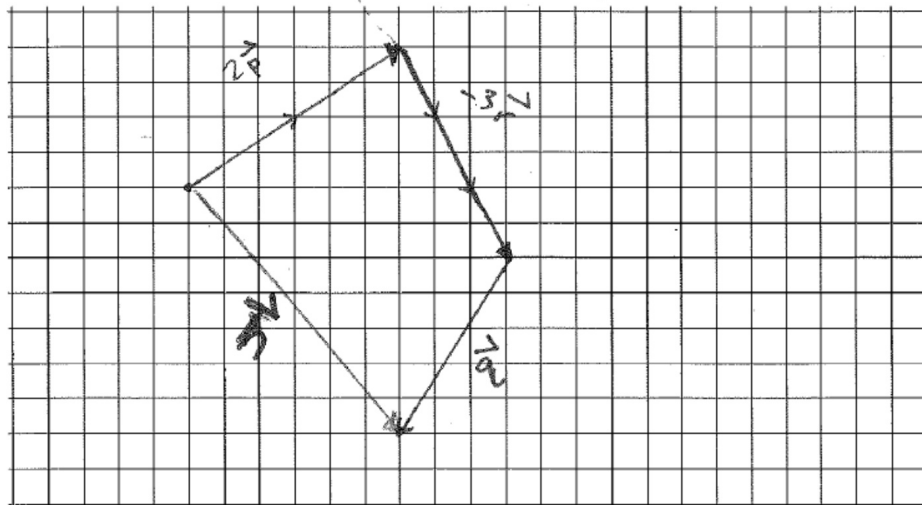
$$|\vec{BA}| = \sqrt{(-7)^2 + 11^2}$$

$$= \sqrt{49 + 121}$$

$$= \sqrt{170}$$

Unit 2 Review Solutions

- 5) Let $\vec{p} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$, $\vec{q} = \begin{pmatrix} -3 \\ -5 \end{pmatrix}$, and $\vec{r} = \begin{pmatrix} -1 \\ 2 \end{pmatrix}$.
- A) Find $2\vec{p} - 3\vec{r} + \vec{q}$ algebraically.
 $2\vec{p} = \begin{pmatrix} 6 \\ 4 \end{pmatrix}$ $-3\vec{r} = \begin{pmatrix} 3 \\ -6 \end{pmatrix}$ $\vec{q} = \begin{pmatrix} -3 \\ -5 \end{pmatrix}$ $\rightarrow = \begin{pmatrix} 6+3-3 \\ 4-6-5 \end{pmatrix} = \begin{pmatrix} 6 \\ -7 \end{pmatrix}$
- B) Represent the following vector arithmetic graphically on the grid below: $\vec{h} = 2\vec{p} - 3\vec{r} + \vec{q}$



Unit 2 Review Solutions

6) Dr. Cannon purchased a drone to document the new Southwest building and its neighborhood. Before the flight, the drone must be programmed using vectors. The drone will take flight from the front doors of Southwest High and land 5 blocks East at Lake Harriet. Next, the drone will fly Northwest along the vector $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$ to Linden Hills Park. Finally, the drone will return to the front doors of Southwest High School.

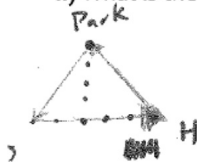
$\begin{pmatrix} 5 \\ 0 \end{pmatrix}$ "five blocks east" L.H.
 $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$ L.H. to Park

A) Consider only the 2-dimensional (horizontal, vertical) travel of the drone, answer the following:

i) How far did the drone fly from Lake Harriet to Linden Hills Park?

$$\left| \begin{pmatrix} -3 \\ 4 \end{pmatrix} \right| = \sqrt{(-3)^2 + 4^2} = \sqrt{9 + 16} = \sqrt{25} = 5 \text{ "blocks"}$$

ii) What is the return vector of the drone traveling from Linden Hills Park to Southwest?



$$\begin{pmatrix} -2 \\ -4 \end{pmatrix}$$

PS

Unit 2 Review Solutions

B) Consider the alternative route of the drone travelling from Linden Hills Park to Pershing Park, then returning to Southwest. Pershing Park is 2 blocks South of Southwest's front doors.

i) Using vectors from this scenario, write an equation to represent the total trip of the drone.

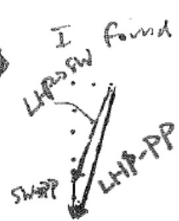
$$\begin{pmatrix} 5 \\ 0 \end{pmatrix} + \begin{pmatrix} -3 \\ 4 \end{pmatrix} + \begin{pmatrix} -2 \\ -6 \end{pmatrix} + \begin{pmatrix} 0 \\ 2 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$$

$\text{SW} \rightarrow \text{LH}$ $\text{LH} \rightarrow \text{P}$ $\text{P} \rightarrow \text{PP}$ $\text{PP} \rightarrow \text{SW}$ Total Displacement

$$\begin{pmatrix} -2 \\ -4 \end{pmatrix} + \begin{pmatrix} 0 \\ -2 \end{pmatrix}$$

because the second park is two blocks further south than Southwest!

ii) Use your equation from part (i) to find the vector from Linden Hills Park to Pershing Park.



I found the vector by recognizing that $\begin{pmatrix} -2 \\ -4 \end{pmatrix}$, the Linden Hills Park to Southwest, plus $\begin{pmatrix} 0 \\ -2 \end{pmatrix}$, Southwest to Pershing Park, would give me the vector from Linden Hills Park to Pershing Park.

Exercises...

Review for Unit Test
Tuesday 10/31