Welcome Back MYP Math 9

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: 10/9 Topic: No HW - Unit 1 Test Friday	0 1 2	
Tuesday Date: 10/10 Topic: 26A Vector Representation, 26B Length	0 1 2	
Wednesday Date: 10/11 Topic: 26C Equal Vectors, 26D Vector Additior	0 1 2	
Thursday Date: _____ Topic: _____	0 1 2	
Friday Date: _____ Topic: _____	0 1 2	

Class Plan:

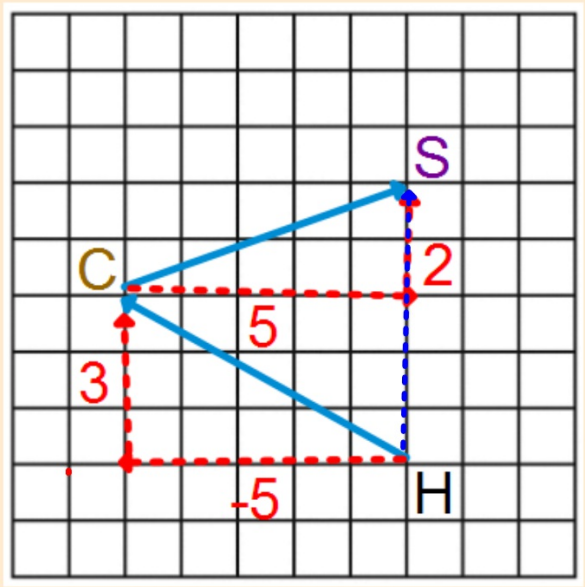
1. Warm-up
2. 26D Vector Addition (Day 2)

26E Multiplying Vectors by a Number

3. Practice

Warm-up:

A student goes to Caribou Coffee prior to driving to school. Her route is shown in red.



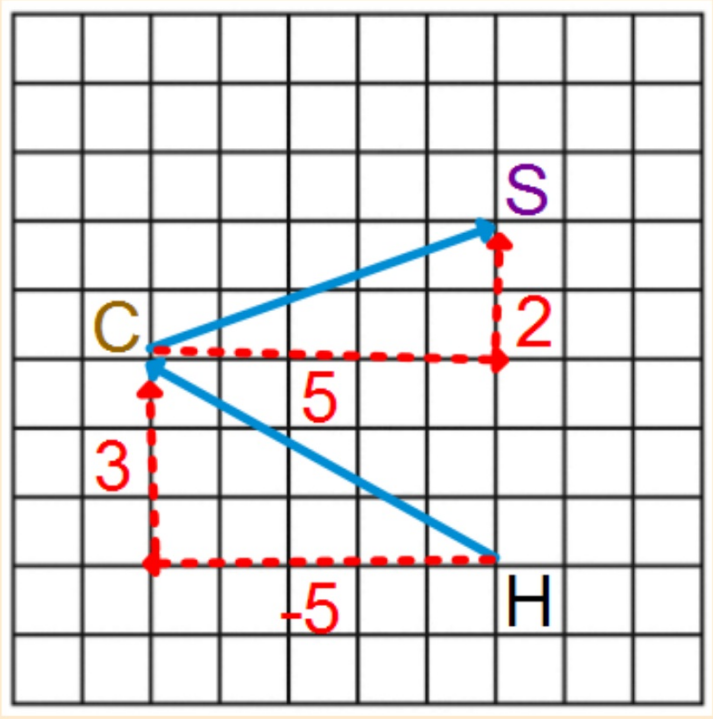
a) $\overrightarrow{HC} = \begin{pmatrix} -5 \\ 3 \end{pmatrix}$

$\overrightarrow{CS} = \begin{pmatrix} 5 \\ 2 \end{pmatrix}$

a) What is her total displacement?

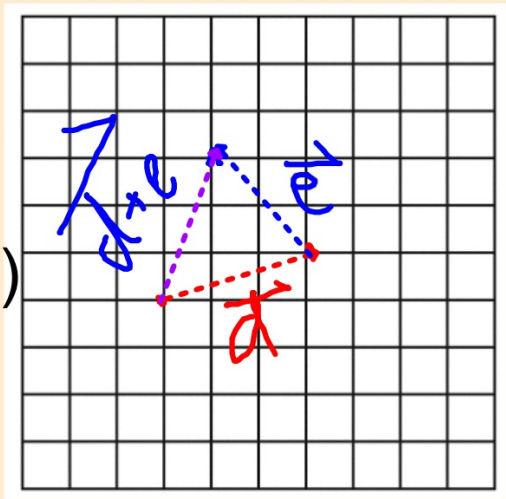
$\overrightarrow{HS} = \begin{pmatrix} 0 \\ 5 \end{pmatrix}$

HC + CS = HS



D Example: VECTOR ADDITION

Suppose $\mathbf{d} = \begin{pmatrix} 3 \\ 1 \end{pmatrix}$ and $\mathbf{e} = \begin{pmatrix} -2 \\ 2 \end{pmatrix}$.



1. d + e $\begin{pmatrix} x \\ y \end{pmatrix}$

(algebraically, then graphically)

$$\begin{pmatrix} 3 \\ 1 \end{pmatrix} + \begin{pmatrix} -2 \\ 2 \end{pmatrix} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$$

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Suppose $\mathbf{d} = \begin{pmatrix} 3 \\ 1 \end{pmatrix}$ and $\mathbf{e} = \begin{pmatrix} -2 \\ 2 \end{pmatrix}$.

1. d + e $\begin{pmatrix} x \\ y \end{pmatrix}$

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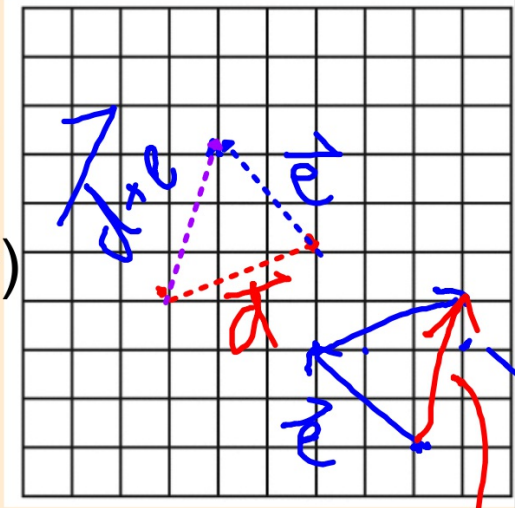
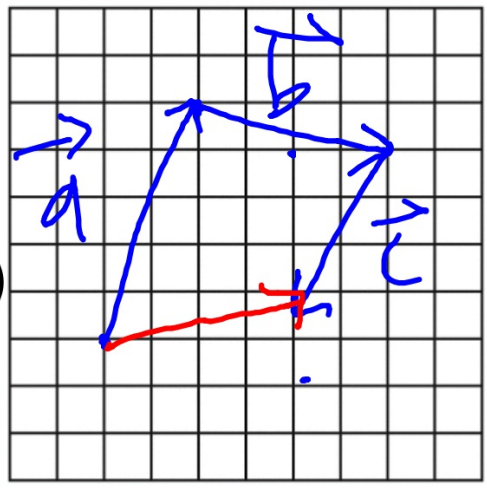


$$\begin{pmatrix} 3 \\ 1 \end{pmatrix} + \begin{pmatrix} -2 \\ 2 \end{pmatrix} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$$

$$\begin{pmatrix} -2 \\ 2 \end{pmatrix} + \begin{pmatrix} 3 \\ 1 \end{pmatrix} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$$

D Example: VECTOR ADDITION

$$\mathbf{a} = \begin{pmatrix} 2 \\ 5 \end{pmatrix}, \quad \mathbf{b} = \begin{pmatrix} 4 \\ -1 \end{pmatrix}, \quad \text{and} \quad \mathbf{c} = \begin{pmatrix} -2 \\ -3 \end{pmatrix}$$



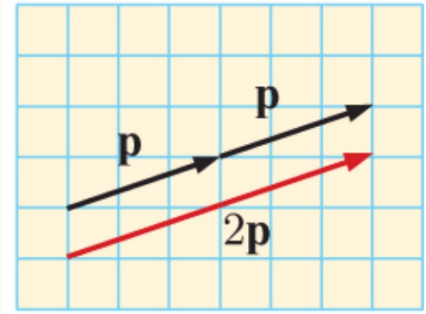
2. a + b + c
(algebraically, then graphically)

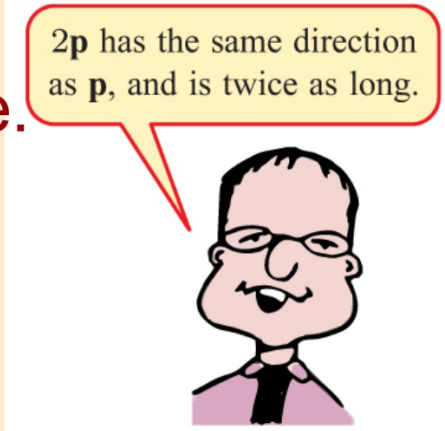
$$\begin{pmatrix} 2 \\ 5 \end{pmatrix} + \begin{pmatrix} 4 \\ -1 \end{pmatrix} + \begin{pmatrix} -2 \\ -3 \end{pmatrix} = \begin{pmatrix} 4 \\ 1 \end{pmatrix}$$

E MULTIPLYING VECTORS BY A NUMBER

A.k.a: Scalar Multiplication!

Direction and size may change.





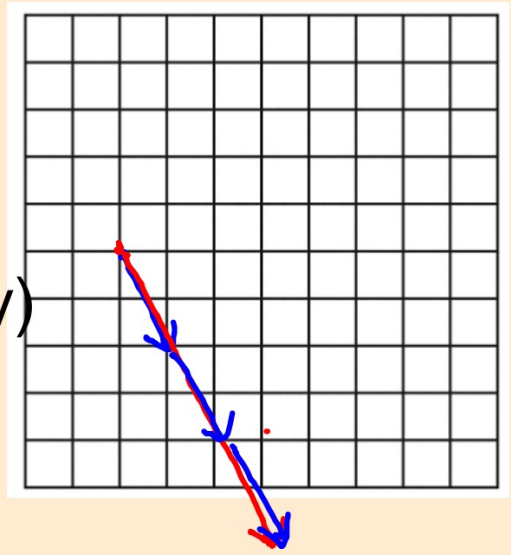
Complete the statement in your notes:

If $\mathbf{p} = \begin{pmatrix} a \\ b \end{pmatrix}$ then $k\mathbf{p} = \begin{pmatrix} ka \\ kb \end{pmatrix}$.

E MULTIPLYING VECTORS BY A NUMBER

$$\mathbf{m} = \begin{pmatrix} 1 \\ -2 \end{pmatrix}$$

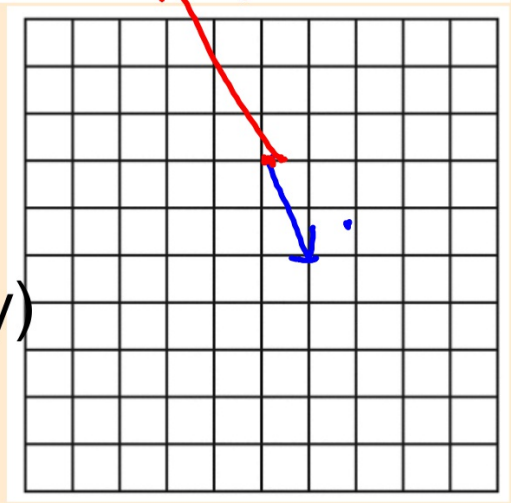
3. 3m
(algebraically, then graphically)



$$3m = \begin{pmatrix} 3 \\ -6 \end{pmatrix}$$

E MULTIPLYING VECTORS BY A NUMBER

$$\mathbf{m} = \begin{pmatrix} 1 \\ -2 \end{pmatrix}$$



4. -2m
(algebraically, then graphically)

$$-2\mathbf{m} = \begin{pmatrix} -2 \\ 4 \end{pmatrix}$$

E MULTIPLYING VECTORS BY A NUMBER

Example 7 Self Tutor

If $\mathbf{m} = \begin{pmatrix} 1 \\ -2 \end{pmatrix}$, find:

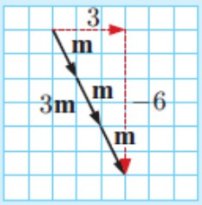
a $3\mathbf{m}$ **b** $-2\mathbf{m}$

Illustrate your answers.

a $3\mathbf{m} = 3\begin{pmatrix} 1 \\ -2 \end{pmatrix}$

$= \begin{pmatrix} 3 \times 1 \\ 3 \times -2 \end{pmatrix}$

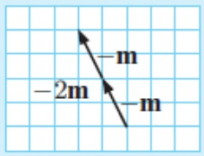
$= \begin{pmatrix} 3 \\ -6 \end{pmatrix}$



b $-2\mathbf{m} = -2\begin{pmatrix} 1 \\ -2 \end{pmatrix}$

$= \begin{pmatrix} -2 \times 1 \\ -2 \times -2 \end{pmatrix}$

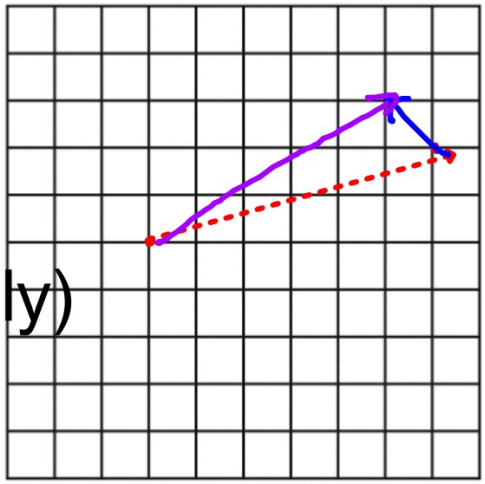
$= \begin{pmatrix} -2 \\ 4 \end{pmatrix}$



$3\mathbf{m} = \mathbf{m} + \mathbf{m} + \mathbf{m}$
$-2\mathbf{m} = (-\mathbf{m}) + (-\mathbf{m})$

E MULTIPLYING VECTORS BY A NUMBER

Suppose $\mathbf{d} = \begin{pmatrix} 3 \\ 1 \end{pmatrix}$ and $\mathbf{e} = \begin{pmatrix} -2 \\ 2 \end{pmatrix}$.



5. 2d + .5e
(algebraically, then graphically)

$2\mathbf{d} = \begin{pmatrix} 6 \\ 2 \end{pmatrix}$ $.5\mathbf{e} = \begin{pmatrix} -1 \\ 1 \end{pmatrix}$

$2\mathbf{d} + .5\mathbf{e} = \begin{pmatrix} 5 \\ 3 \end{pmatrix}$

Quiz Rubric:

-Write a vector in component form
-Calculate maginitude
-Calculate multiples of vectors (algebraically and graphically)
-Application of vectors

7 8	• Select appropriate mathematics when solving **challenging problems in both familiar and unfamiliar situations.** • Apply the selected mathematics successfully when solving these problems. • Generally solve these problems correctly.			• All problems are solved correctly ***without error.*** (8) -Component form -magnitude -vector operations -Algebraically -Graphically -Application • Vector notation is used **correctly.**

Exercises...

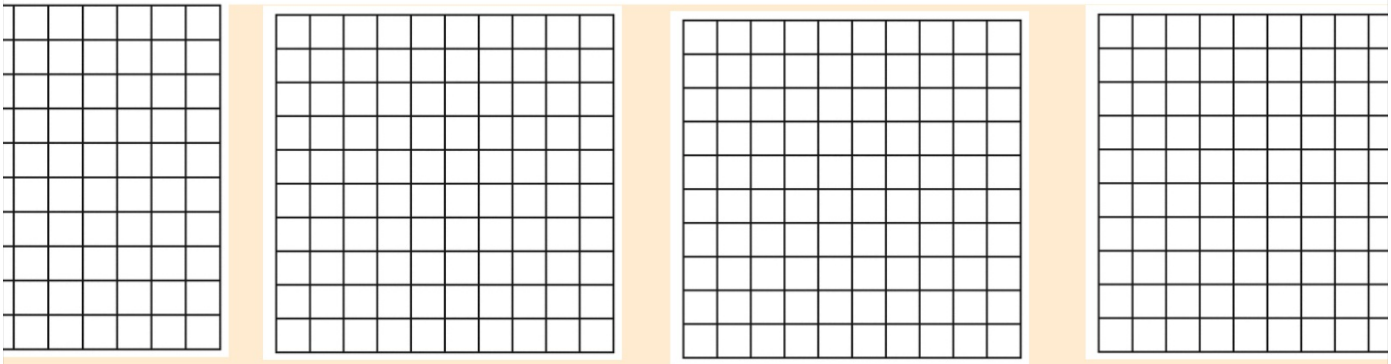
26D #2 alg&graph (a,b,g,h) #4, #8

26E #3

If $\mathbf{a} = \begin{pmatrix} 5 \\ 2 \end{pmatrix}$, $\mathbf{b} = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$, and $\mathbf{c} = \begin{pmatrix} -4 \\ 1 \end{pmatrix}$, find:

a $\mathbf{a} + \mathbf{b}$ **b** $\mathbf{b} + \mathbf{a}$ **c** $\mathbf{b} + \mathbf{c}$ **d** $\mathbf{c} +$

e $\mathbf{a} + \mathbf{a}$ **f** $\mathbf{b} + \mathbf{b}$ **g** $\mathbf{c} + \mathbf{c} + \mathbf{c}$ **h** $\mathbf{a} +$

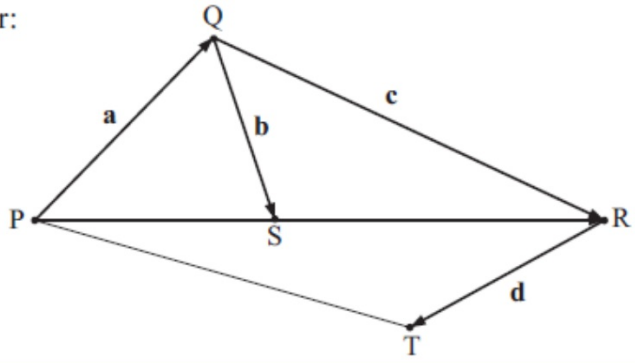


Exercises...

4 Write an expression in terms of **a**, **b**, **c**, and **d**, for:

a $\overrightarrow{PS}$ **b** $\overrightarrow{PR}$

c $\overrightarrow{QT}$ **d** $\overrightarrow{PT}$



Exercises...

8 Alongside is a hole at Hackers Golf Club.

a Jack tees off from T and his ball finishes at A. Write a vector to describe the displacement of the ball from T to A.

b Jack plays his second stroke from A to B. Write a vector to describe the displacement of the ball from this shot.

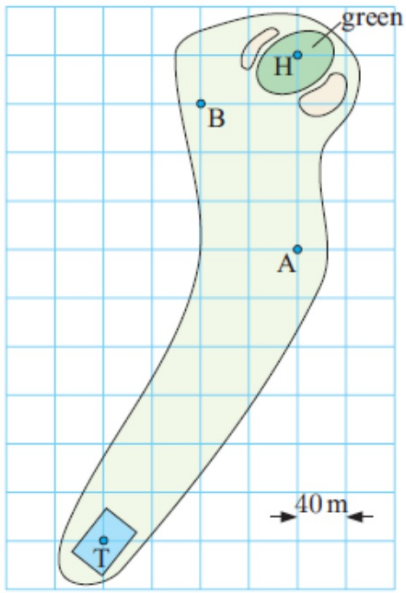
c By great luck, Jack's next shot finishes in the hole H. Write a vector which describes this shot.

d Find:

i $\overrightarrow{TA} + \overrightarrow{AB} + \overrightarrow{BH}$ **ii** $\overrightarrow{TH}$

Comment on your answers.

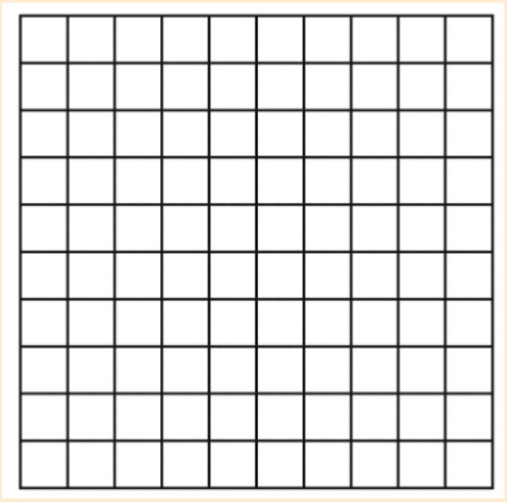
e Find the straight line distance between the tee T and the hole H.

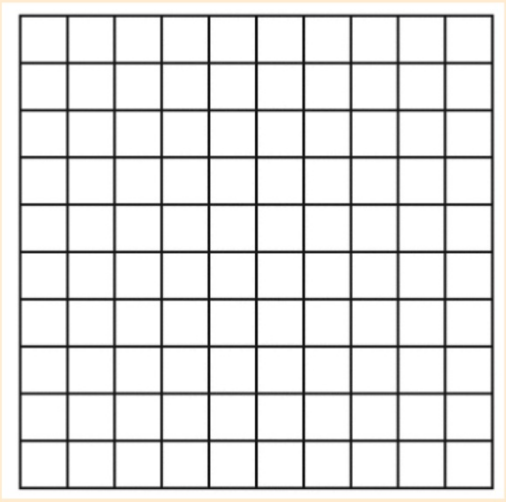


Exercises...

3 For $\mathbf{m} = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$, draw on grid paper:

a $\mathbf{m}$ **b** $2\mathbf{m}$ **c** $-2\mathbf{m}$ **d** $-3\mathbf{m}$ **e** $\frac{1}{2}\mathbf{m}$ **f** $-\frac{1}{3}\mathbf{m}$





SOLUTIONS

EXERCISE 26D

1 **a** $\begin{pmatrix}6\\10\end{pmatrix}$ **b** $\begin{pmatrix}11\\11\end{pmatrix}$ **c** $\begin{pmatrix}8\\2\end{pmatrix}$ **d** $\begin{pmatrix}4\\-3\end{pmatrix}$

e $\begin{pmatrix}-3\\-3\end{pmatrix}$ **f** $\begin{pmatrix}-8\\-2\end{pmatrix}$ **g** $\begin{pmatrix}6\\7\end{pmatrix}$ **h** $\begin{pmatrix}5\\-2\end{pmatrix}$

2 **a** $\begin{pmatrix}7\\-1\end{pmatrix}$ **b** $\begin{pmatrix}7\\-1\end{pmatrix}$ **c** $\begin{pmatrix}-2\\-2\end{pmatrix}$ **d** $\begin{pmatrix}1\\3\end{pmatrix}$

e $\begin{pmatrix}10\\4\end{pmatrix}$ **f** $\begin{pmatrix}4\\-6\end{pmatrix}$ **g** $\begin{pmatrix}-12\\3\end{pmatrix}$ **h** $\begin{pmatrix}3\\0\end{pmatrix}$

3 **a** $\mathbf{a}=\mathbf{b}+\mathbf{c}$ **b** $\mathbf{q}=\mathbf{p}+\mathbf{r}$ **c** $\mathbf{p}=\mathbf{m}+\mathbf{n}$

d $\mathbf{b}=\mathbf{a}+\mathbf{d}+\mathbf{c}$ **e** $\mathbf{p}=\mathbf{q}+\mathbf{r}+\mathbf{s}$ **f** $\mathbf{a}=\mathbf{b}+\mathbf{d}+\mathbf{c}$

4 **a** $\mathbf{a}+\mathbf{b}$ **b** $\mathbf{a}+\mathbf{c}$ **c** $\mathbf{c}+\mathbf{d}$ **d** $\mathbf{a}+\mathbf{c}+\mathbf{d}$

5 **a** c **b** f **c** g **d** g **e** g

6 **a** $\overrightarrow{AE}$ **b** $\overrightarrow{BE}$ **c** $\overrightarrow{BE}$ **d** $\overrightarrow{AE}$

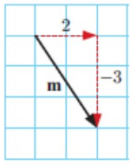
7 **a** $\overrightarrow{AB}$ **b** $\overrightarrow{PQ}$ **c** $\overrightarrow{LD}$ **d** $\overrightarrow{SN}$ **e** $\overrightarrow{ER}$ **f** $\overrightarrow{CP}$

8 **a** $\begin{pmatrix}160\\240\end{pmatrix}$ **b** $\begin{pmatrix}-80\\120\end{pmatrix}$ **c** $\begin{pmatrix}80\\40\end{pmatrix}$

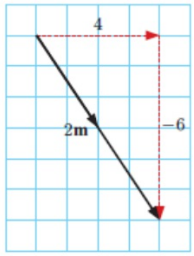
d **i** $\begin{pmatrix}160\\400\end{pmatrix}$ **ii** $\begin{pmatrix}160\\400\end{pmatrix}$ **e** ≈ 431 m

$\overrightarrow{TA}+\overrightarrow{AB}+\overrightarrow{BH}=\overrightarrow{TH}$

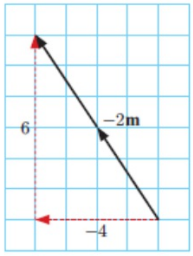
3 **a**



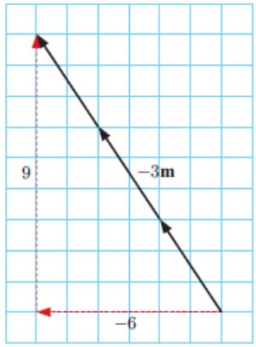
b



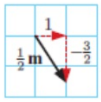
c



d



e



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