

# VECTORS

## Coloring Activity

Directions: Complete each problem. Show all work on a separate sheet of paper. Then color the picture using your selected answers. Color the regions with the same number the same color.

1. The initial and terminal points of  $\overline{AB}$  are given below. Write the vector in component form.  
 $A(-7, 2)$  and  $B(-1, -3)$

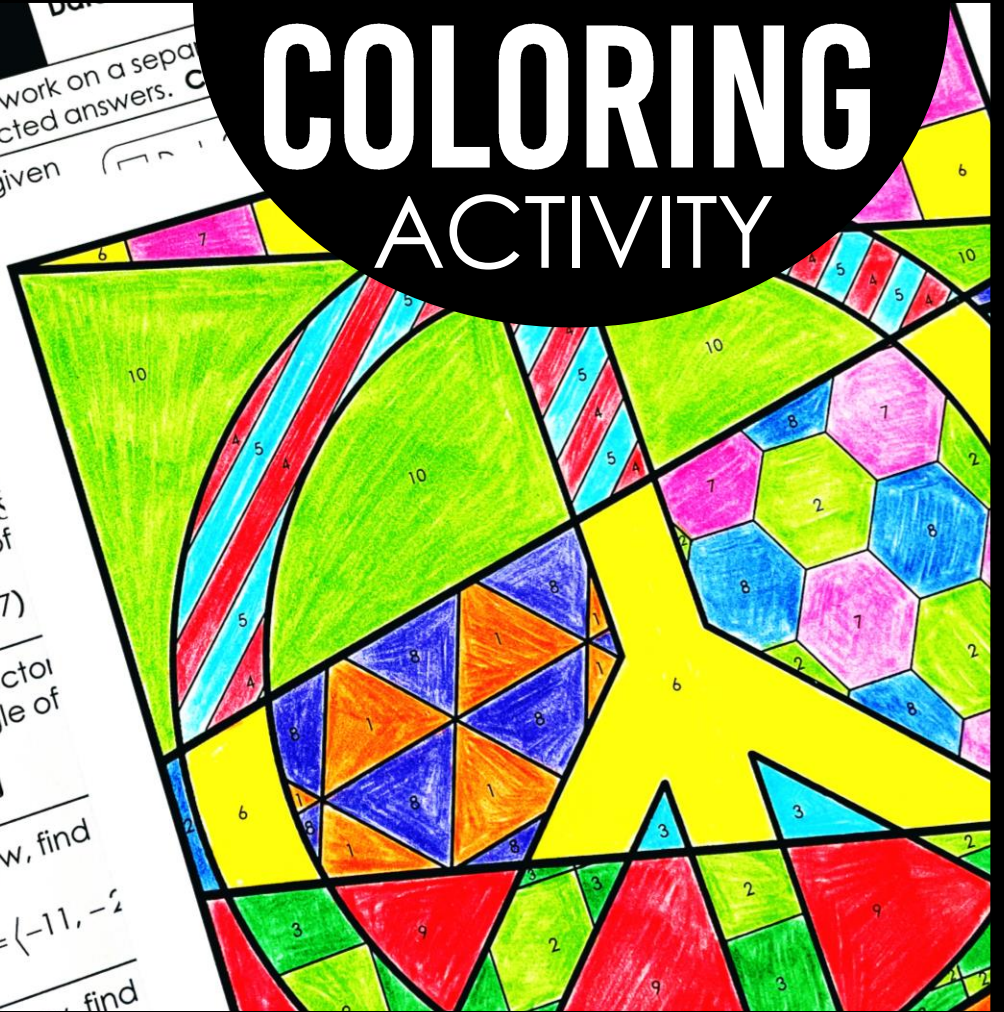
2. The initial and terminal points of  $\overline{PQ}$  are given below. Find the magnitude of the vector.  
 $P(-10, -7)$  and  $Q(-2, 9)$

3. The initial and terminal points of  $\overline{RS}$  are given below. Find the direction angle of the vector.  
 $R(-9, -1)$  and  $S(-6, -7)$

4. The linear combination of a vector  $\mathbf{v}$  is given below. Find the direction angle of the vector.  
 $\mathbf{v} = -6\mathbf{i} + 8\mathbf{j}$

5. Given vectors  $\mathbf{u}$  and  $\mathbf{v}$  below, find the magnitude of the vector  $\mathbf{u} + \mathbf{v}$ .  
 $\mathbf{u} = \langle 3, -7 \rangle$ ;  $\mathbf{v} = \langle -11, -2 \rangle$

# COLORING ACTIVITY



# VECTORS

Magnitude, Direction, & Operations

Created by: ALL THINGS ALGEBRA®

# VECTORS

## Coloring Activity

**Objective:** Write a vector in component form given its initial and terminal point; Write a vector in component form or as a linear combination given its magnitude and direction; Find the magnitude or direction of a vector given its initial and terminal point; Perform operations (addition, subtraction, and scalar multiplication) on vectors and give the magnitude and direction of the resulting vector.

**Directions:**

- 1) Copy the "Vectors Coloring Activity" page and coloring picture for each student. I typically copy the coloring sheet on the back to save paper.
- 2) Students solve each problem. I have my students show all work on a separate sheet of notebook paper and staple once completed. They check their answer for each problem, which identify a color for each question number.
- 3) After solving all the problems, students color the picture. The question numbers and selected answers reveal how to color the picture. For example, if "red" is checked for question # 1, then all 1's on the picture are red.

I have them staple their work to the paper and turn in for a classwork grade.

### VECTORS

*Coloring Activity*

Name: \_\_\_\_\_  
Date: \_\_\_\_\_

**Directions:** Complete each problem. Show all work on a separate sheet of paper. Check the answer, then color the picture using your selected answers. **Colors may repeat.**

- 1 The initial and terminal points of  $\overline{AB}$  are given below. Write the vector in component form.  
 $A(-7, 2)$  and  $B(-1, -3)$       Dark Green (-6, 5)      Orange (6, -5)      Light Blue (6, 5)
- 2 The initial and terminal points of  $\overline{PQ}$  are given below. Find the magnitude of the vector.  
 $P(-10, -7)$  and  $Q(-2, 9)$       Light Blue  $2\sqrt{37}$       Red  $4\sqrt{17}$       Dark Green  $2\sqrt{17}$
- 3 The initial and terminal points of  $\overline{RS}$  are given below. Find the direction angle of the vector.  
 $R(-9, -1)$  and  $S(-6, -7)$       Black  $275.14^\circ$       Pink  $283.92^\circ$       Dark Green  $291.86^\circ$
- 4 The linear combination of a vector  $\mathbf{v}$  is given below. Find the direction angle of the vector.  
 $\mathbf{v} = -6\mathbf{i} + 8\mathbf{j}$       Red  $126.87^\circ$       Yellow  $138.16^\circ$       Dark Green  $149.04^\circ$
- 5 Given vectors  $\mathbf{u}$  and  $\mathbf{v}$  below, find  $9\mathbf{u} - 4\mathbf{v}$ .  
 $\mathbf{u} = (3, -7)$ ;  $\mathbf{v} = (-11, -2)$       Pink (68, -41)      Light Blue (71, -55)      Dark Green (-7, 7)
- 6 Given vectors  $\mathbf{a}$  and  $\mathbf{b}$  below, find the magnitude of  $-\mathbf{a} + 4\mathbf{b}$ .  
 $\mathbf{a} = (10, -4)$ ;  $\mathbf{b} = (5, -4)$       Yellow  $2\sqrt{61}$       Dark Blue  $8\sqrt{6}$       Dark Green  $2\sqrt{17}$
- 7 Given vectors  $\mathbf{r}$  and  $\mathbf{s}$  below, find the direction angle of  $-3\mathbf{r} + \mathbf{s}$ .  
 $\mathbf{r} = (-8, 6)$ ;  $\mathbf{s} = (3, -6)$       Pink  $318.37^\circ$       Dark Blue  $296.47^\circ$       Dark Green  $291.86^\circ$
- 8 Given the magnitude and direction of vector  $\mathbf{m}$  below, write the vector in component form.  
 $\|\mathbf{m}\| = 14$ ,  $\theta = 150^\circ$       Gray  $(-7\sqrt{3}, 7\sqrt{3})$       Red  $(-7, 7\sqrt{3})$       Dark Green  $(-7, 7)$
- 9 Given the magnitude and direction of vector  $\mathbf{k}$  below, write the vector in component form.  
 $\|\mathbf{k}\| = 2\sqrt{6}$ ,  $\theta = \frac{7\pi}{4}$       Red  $(2\sqrt{3}, -2\sqrt{3})$       Yellow  $(2\sqrt{3}, -2)$       Dark Green  $(2\sqrt{3}, -2)$
- 10 Given the magnitude and direction of vector  $\mathbf{p}$  below, write the vector as a linear combination.  
 $\|\mathbf{p}\| = 20$ ,  $\theta = 192^\circ$       Light Blue  $-18.29\mathbf{i} - 5.04\mathbf{j}$       Dark Green  $-19.56\mathbf{i} - 4.16\mathbf{j}$       Dark Green  $-17.7\mathbf{i} - 6.2\mathbf{j}$

© Gina Wilson (All Things Algebra®), 2020