

# The Dot Product

## Practice Your Understanding

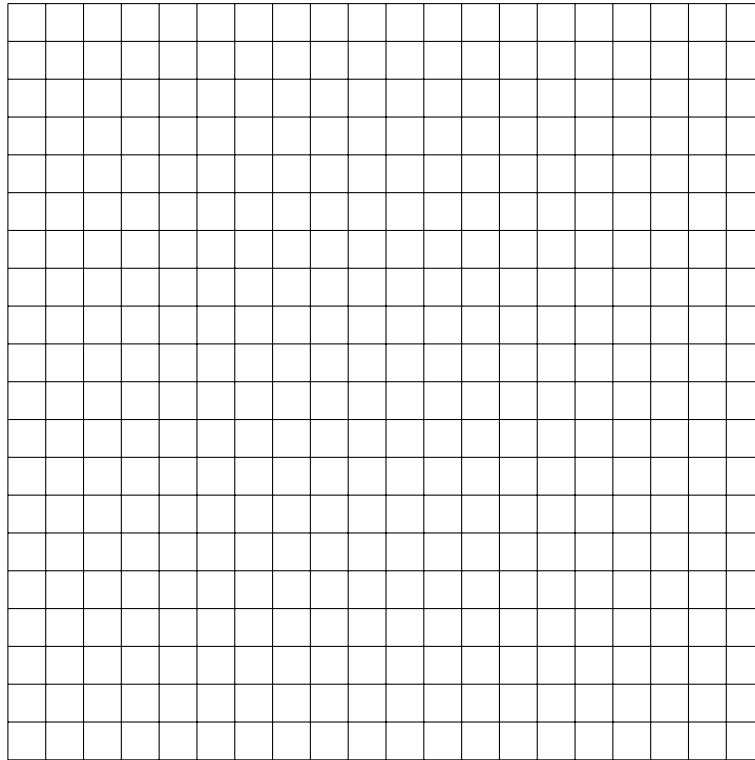
Name: \_\_\_\_\_

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

1. When calculating the dot product of vectors, what equation is used to calculate the scalar resultant value? Write the formula below.

2. Using the equation you wrote down above, calculate the dot product of the vector  $\vec{A} = -5.7\hat{i} + 23.2\hat{j} + 1.2\hat{k}$  and the vector  $\vec{B} = 4.3\hat{i} + 7.5\hat{j} - 11.6\hat{k}$ . What result do you get? Write down your answer and show your work below:

3. Using the same equation from Problem 1, calculate the dot product for the vector  $\vec{C} = 7.5\hat{i} + 10\hat{j} + 0\hat{k}$  and the vector  $\vec{D} = 6.5\hat{i} + 15.6\hat{j} + 0\hat{k}$ . What result do you get? Write down your answer and show your work below. Using the 2D Dot Product simulation as a reference, plot the  $\vec{C}$  and  $\vec{D}$  vectors. Where would the normal and scalar vectors be?



4. From 3, calculate the dot product between the vector  $\vec{E} = 11.2\hat{i} - 21\hat{j} + 0\hat{k}$  and the vector  $\vec{F} = 15.7\hat{i} - 0\hat{j} + 0\hat{k}$ . What result do you get? Write down your answer and show your work below. Using the 2D Dot Product simulation as a reference, plot the  $\vec{E}$  and  $\vec{F}$  vectors. Where would the normal and scalar vectors be?

