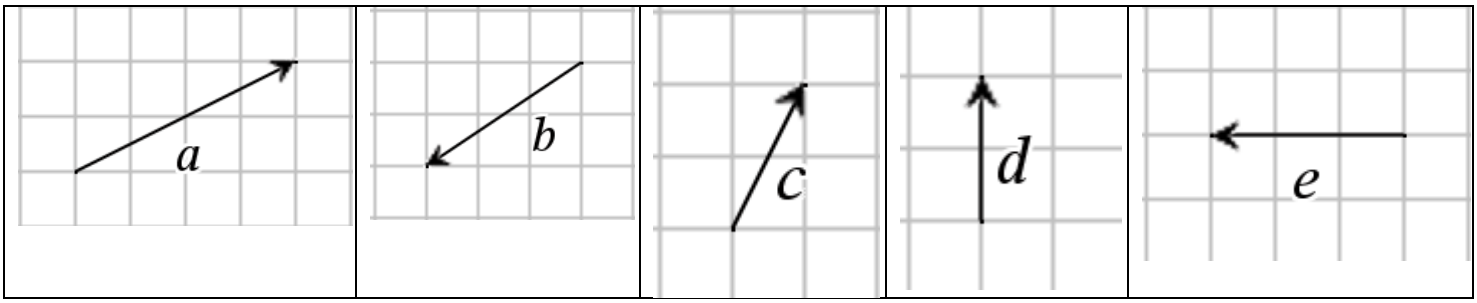
Name_____Review For Vector Quiz 1



Use the given vectors $\vec{a}$, $\vec{b}$, $\vec{c}$, $\vec{d}$, &, $\vec{e}$ to answer the questions below

1. Write vector $\vec{a}$ as a linear combination of vectors d and e _____
   (note linear combination "fancy way to say vector equation")

2. State the direction vector for w that is related to the vector polygon w = 5a+2b-6e _____

3. State the direction vectors that are orthogonal _____

4. State the direction vectors that are drawn in opposite directions _____,

   if not possible state why not_____

5. State the direction vectors that are parallel _____,

   if not possible state why not_____

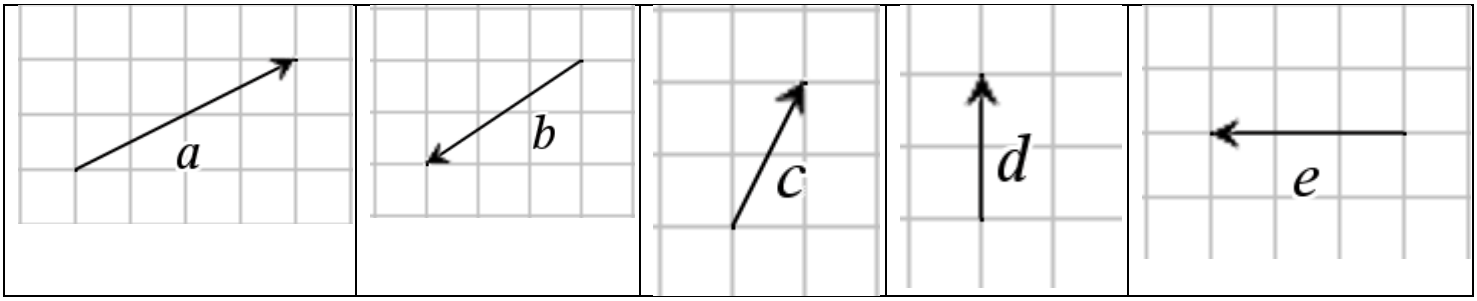
6. Which vectors can be written as a scalar multiple of a single unit vector?_____

7. Write each of the vectors above as a unit vector in component form

Unit vector related to Vector a	Unit vector related to Vector a	Unit vector related to Vector a	Unit vector related to Vector a	Unit vector related to Vector a

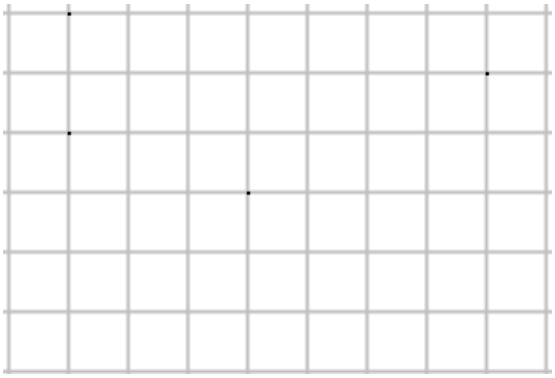
8. Write each of the vectors above in polar coordinate form (r, θ)

Unit vector related to Vector a	Unit vector related to Vector a	Unit vector related to Vector a	Unit vector related to Vector a	Unit vector related to Vector a



Use the given vectors $\vec{a}$, $\vec{b}$, $\vec{c}$, $\vec{d}$, &, $\vec{e}$ to answer the questions below

Draw the vector PARALLELOGRAM related to $\vec{f} = \vec{a} + \vec{b}$



9. State vector f in all formats and name the format

   $\vec{f} = \begin{bmatrix} \quad \\ \quad \end{bmatrix}$ _____

   $\vec{f} =< \quad , \quad >$ _____

   $\vec{f} =$ ____ i+____ j _____

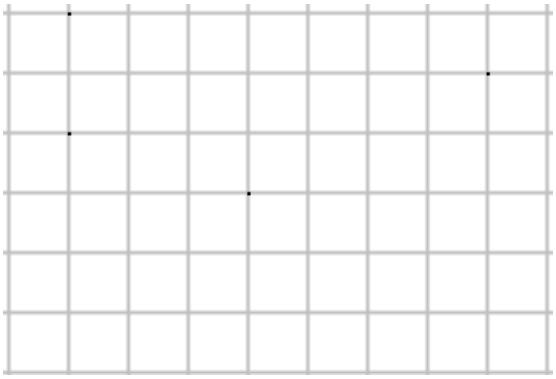
   $\vec{f} =$ (,) _____

10. Determine the angle formed with vector f and the x axis if vector f were drawn from the origin

11. Give all vectors that are parallel to vector f with a length of p

12. Give a vector that is orthogonal to vector f with length 10

Draw the angle formed by $\vec{a}$ & $\vec{b}$



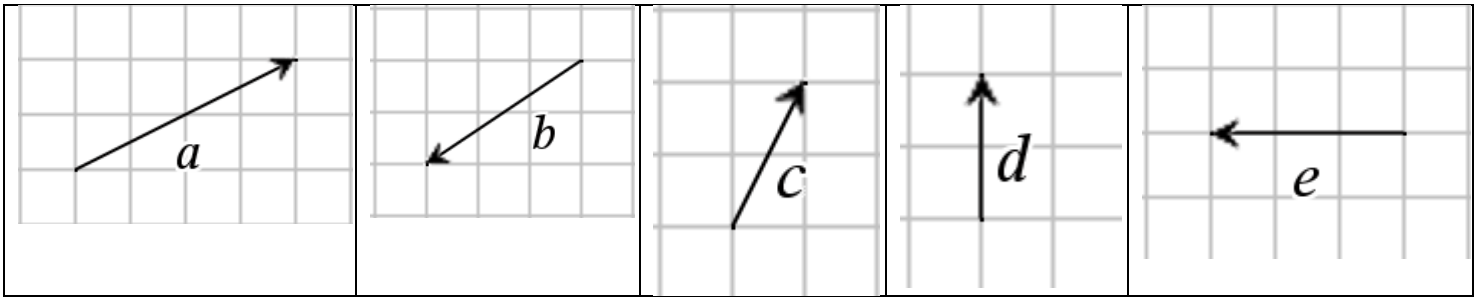
13. What is the dot product of $\vec{a}$, $\vec{b}$?

14. What is the EXACT value of the angle formed by the vectors $\vec{a}$, $\vec{b}$?
    Hint you will need inverse trigonometry to do this

15. What is the APPROXIMATE value of the angle formed by the vectors $\vec{a}$, $\vec{b}$?

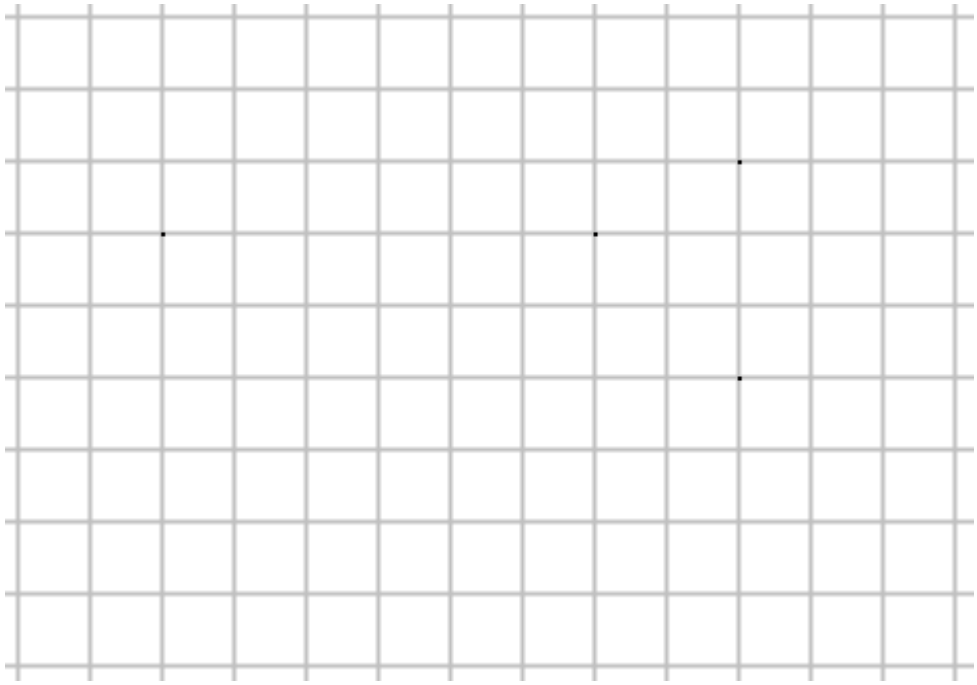
16. Name the TWO resultant vector's direction in component form if you connect the endpoints of each vector $\vec{a}$, $\vec{b}$

    $\vec{g} =< \quad , \quad >$ and $\vec{h} =< \quad , \quad >$



Use the given vectors $\vec{a}$, $\vec{b}$, $\vec{c}$, $\vec{d}$, &, $\vec{e}$ to answer the questions below

Draw the vector POLYGON related to $\vec{m} = 2\vec{c} + 3\vec{e} - \vec{a}$



17. State vector m in all formats

$\vec{m}$ =< , > $\vec{m} = \begin{bmatrix} & \\ & \end{bmatrix}$

$\vec{m}$ = _____ i+_____ j

$\vec{m}$= (,)

18. Determine the angle formed with vector m and the x axis if vector m were drawn from the origin

19. Give all vectors that are orthogonal to vector m with a length of w

Draw the angle formed by $\vec{m}$ & $\vec{d}$

20. What is the dot product of $\vec{m}$, $\vec{d}$?

21. What is the EXACT value of the angle formed by the vectors $\vec{m}$, $\vec{d}$?
Hint you will need inverse trigonometry to do this

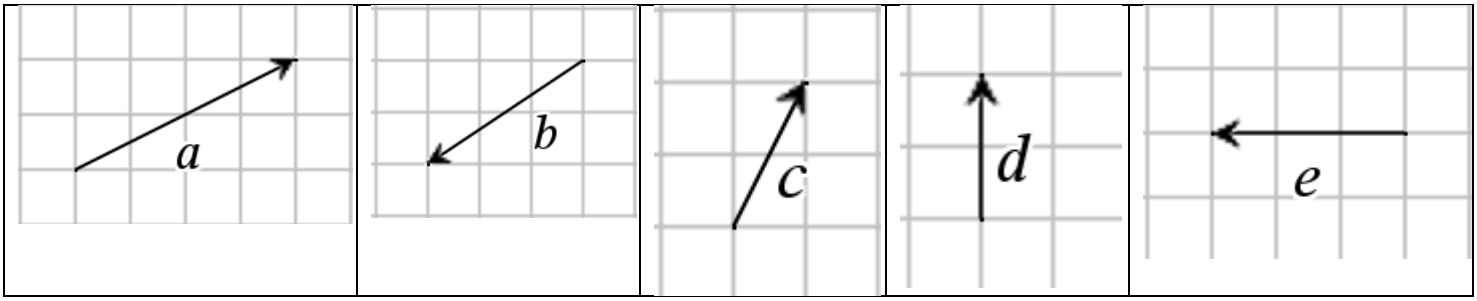
22. What is the APPROXIMATE value of the angle formed by the vectors $\vec{m}$, $\vec{d}$?

23. Name the TWO resultant vector's direction in component form if you connect the endpoints of each vector $\vec{m}$, $\vec{d}$?

$\vec{n} = \begin{bmatrix} & \\ & \end{bmatrix}$

and

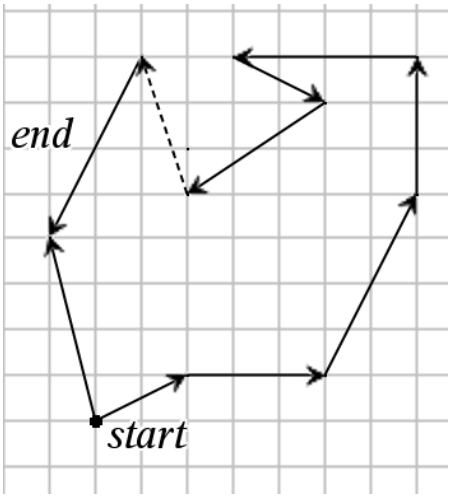
$\vec{r} = \begin{bmatrix} & \\ & \end{bmatrix}$



Use the given vectors $\vec{a}$, $\vec{b}$, $\vec{c}$, $\vec{d}$, &, $\vec{e}$ to answer the questions below

Write the equation for the vector POLYGON related to $\vec{t}$ using $\vec{a}$, $\vec{b}$, $\vec{c}$, $\vec{d}$, &, $\vec{e}$

You need to use all of the vectors, or a scalar multiple of the vectors $\vec{a}$, $\vec{b}$, $\vec{c}$, $\vec{d}$, &, $\vec{e}$



Hint: the dotted vector is difficult!

24. Write the vector polygon equation for vector t in the figure above

25. State vector t in all formats

$\vec{t}$ =< , > $\vec{t}$ = $\begin{bmatrix} & \\ & \end{bmatrix}$

$\vec{t}$ = _____ i+_____ j

$\vec{t}$ = (,)

26. Write vector t as ONLY a linear combination of d and e

27. Give all vectors that are in the opposite direction to vector t with a length of twice that of vector a

28. What is the missing component is vector v is parallel to vector c?

$\vec{v} = \begin{bmatrix} -1.8 \\ \\ \end{bmatrix}$

29. Using real scalars q and z with q > 0 and z <0
State the set of vectors that is parallel in the same direction to vector b?

$\begin{bmatrix} & \\ & \end{bmatrix}$

30. Using real scalars q and z with q > 0 and z <0
State the set of vectors that is parallel in the opposite direction to vector a?

$\begin{bmatrix} & \\ & \end{bmatrix}$

Sometimes/Always/Never If you respond sometimes, then you need to explain why

31. _____ If a vector's DOT PRODUCT is zero, then the vectors form a 0° angle

32. _____ If a vector's DOT PRODUCT is zero, then the vectors form a 90° angle

33. _____ If a vector's DOT PRODUCT is 0, then the vectors form a 180° angle

34. _____ If a vector's DOT PRODUCT is 0, then the vectors form an acute angle

35. _____ If a vector's DOT PRODUCT is 0, then the vectors form an obtuse angle

36. _____ If a vector's DOT PRODUCT is positive, then the vectors form a 0° angle

37. _____ If a vector's DOT PRODUCT is positive, then the vectors form a 90° angle

38. _____ If a vector's DOT PRODUCT is positive, then the vectors form a 180° angle

39. _____ If a vector's DOT PRODUCT is positive, then the vectors form an acute angle

40. _____ If a vector's DOT PRODUCT is positive, then the vectors form an obtuse angle

41. _____ If a vector's DOT PRODUCT is negative, then the vectors form a 0° angle

42. _____ If a vector's DOT PRODUCT is negative, then the vectors form a 90° angle

43. _____ If a vector's DOT PRODUCT is negative, then the vectors form a 180° angle

44. _____ If a vector's DOT PRODUCT is negative, then the vectors form an acute angle

45. _____ If a vector's DOT PRODUCT is negative, then the vectors form an obtuse angle

$$\cos\theta = \frac{a \bullet b}{|a||b|}$$

46. _____ If $\frac{a \bullet b}{|a||b|}=0$, then the vectors form a 0° angle

47. _____ If $\frac{a \bullet b}{|a||b|}=1$, then the vectors form a 0° angle

48. _____ If $\frac{a \bullet b}{|a||b|}=-1$, then the vectors form a 0° angle

49. _____ If $\frac{a \bullet b}{|a||b|}=0$, then the vectors form a 90° angle

50. _____ If $\frac{a \bullet b}{|a||b|}=1$, then the vectors form a 90° angle

51. _____ If $\frac{a \bullet b}{|a||b|}=-1$, then the vectors form a 90° angle

52. _____If $\frac{a \bullet b}{|a||b|}$=0,

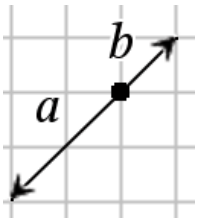
then the vectors form a 180° angle

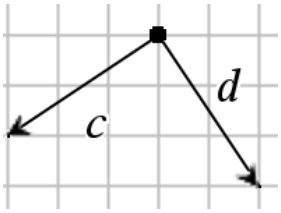
53. _____ If $\frac{a \bullet b}{|a||b|}$=1,

then the vectors form a 180° angle

54. _____ If $\frac{a \bullet b}{|a||b|}$=-1,

then the vectors form a 180° angle





Use vectors a, b, c, and d for the next questions only

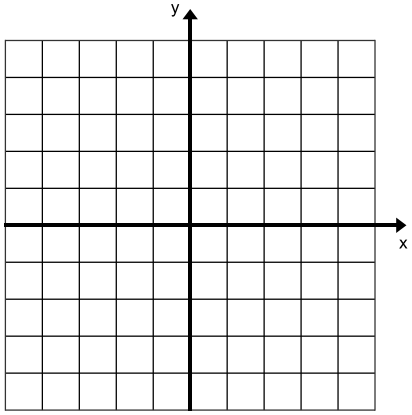
55. Vector _____is a scalar multiple of _____

Write the smaller vector as a scalar multiple of the larger vector

56. Vector _____& _____ are orthogonal

57. Draw these vectors from the same endpoint

$\vec{a} =< 1 \ , \ 2 > \ \vec{b} = \begin{bmatrix} 2 \\ 4 \end{bmatrix}$



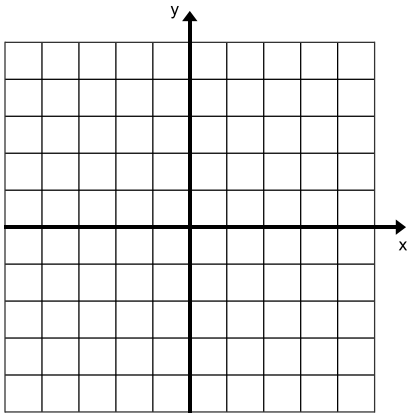
58. State the related dot product_____

59. State the related $\frac{a \bullet b}{|a||b|}$ _____

60. These vectors are _____
    a. Parallel in same direction
    b. Parallel in opposite direction
    c. Orthogonal
    d. None of these

61. Draw these vectors from the same endpoint

$\vec{c} =< 1 \ , \ -2 > \ \vec{d} = \begin{bmatrix} 4 \\ 2 \end{bmatrix}$



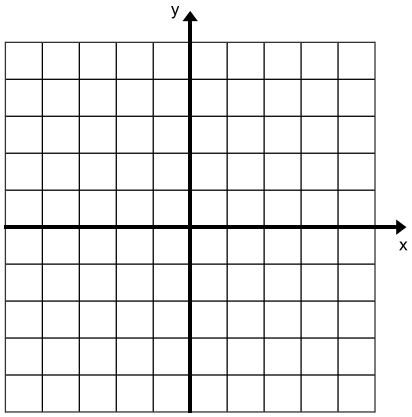
62. State the related dot product_____

63. State the related $\frac{c \bullet d}{|c||d|}$ _____

64. These vectors are _____
    a. Parallel in same direction
    b. Parallel in opposite direction
    c. Orthogonal
    d. None of these

65. Draw these vectors from the same endpoint

$\vec{e} =< -1 \ , \ 2 > \ \vec{e} = \begin{bmatrix} 2 \\ -4 \end{bmatrix}$



66. State the related dot product_____

67. State the related $\frac{e \bullet f}{|e||f|}$ _____

68. These vectors are _____
    a. Parallel in same direction
    b. Parallel in opposite direction
    c. Orthogonal
    d. None of these