|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. | If **t** is a vector, then -4**t** can be described by | | |  | |  | | |
|  | a) the vector that has 4 times the magnitude of t, and the opposite direction of t. | | | | | | | |
|  | b) the vector that has a magnitude of -4 and the opposite direction of vector t. | | | | | | | |
|  | c) the vector that has a magnitude of -4 and the same direction of vector t. | | | | | | | |
|  | d) the vector that has a direction that is 4 times as large as the opposite direction of vector t. | | | | | | | |
| 2. | If vector **m** is 3cm due east and vector **k** is 4cm due north, find the magnitude of the vector **m+k**. | | | | | | | |
|  | a) 5 cm | | b) 7 cm | | c) 25 cm | | | d) |
| 3. | Opposite vectors have | | | | | | | |
|  | a) the same magnitude but opposite direction. | | | | | | | |
|  | b) different magnitudes and the same direction. | | | | | | | |
|  | c) opposite magnitudes but the same direction. | | | | | | | |
|  | d) opposite direction but not necessarily the same magnitude. | | | | | | | |
|  |  | | | | | | | |
| Use a protractor and ruler for the following problems. Show pictures on graph paper. | | | | | | | | |
| 4. | For the vectors below, state whether it is given as a standard bearing, quadrant bearing or true bearing and then sketch the angle that all have a magnitude of 2. | | | | | | | |
|  | a) S15W |  | | | | |  | |
|  | b) 095 |  | | | | |  | |
|  | c) 145 to the horizon |  | | | | |  | |
| 5. | Find the magnitude and direction of  if  has a magnitude 8cm, bearing 030 and  has a magnitude of 2cm, bearing 110 . | | | | | | | |
| 6. | Give the magnitude and direction of the resultant vector:  25 newtons at 160 to the horizontal and then 10 newtons at 30 to the horizontal. | | | | | | | |
| 7. | A boat leaves port on a heading of  for 35 nautical miles and then changes course to  for 20 nautical miles. Draw the arrow diagram and give the distance and direction from the port to the boat’s current location. | | | | | | | |
| 8. | An airplane is flying with an airspeed of 300 knots at a heading of 090. A 100 knot wind is blowing from a true bearing of 225. Find the airplane’s resulting speed and direction. | | | | | | | |
| 9. | A golf ball is hit at a 25 angle to the horizon with a velocity of 120 ft/sec. Find the magnitude of the horizontal and vertical components. | | | | | | | |

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| 3. | Opposite vectors have | | | | | | | |
|  | a) opposite direction but not necessarily the same magnitude. | | | | | | | |
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