

For each question, select the best answer from the four alternatives.

- Which vector direction is equivalent to E 58° S? (2.1) **K/U**
 - W 58° N
 - S 32° E
 - E 32° S
 - N 32° W
- For a diagram scale of 1 cm : 50 m, what is the real-world measurement of a 3.2 cm diagram measurement? (2.1) **T/I**
 - 160 m
 - 160 cm
 - 320 m
 - 32 m
- How long would a displacement of 430 m be drawn on a scale diagram of 1 cm : 75 m? (2.1) **T/I**
 - 5.7 m
 - 57 cm
 - 5.7 cm
 - 0.57 km
- What is the y -component of the displacement vector $\Delta \vec{d}_T = 74.0 \text{ m [S } 68.0^\circ \text{ W]}$? (2.2) **T/I**
 - 27.7 m [W]
 - 27.7 m [S]
 - 68.6 m [W]
 - 68.6 m [S]
- An ocean liner travels a distance of 750 km [N] before turning and travelling 370 km [W]. What is the total magnitude of displacement of the ocean liner? (2.2) **T/I**
 - 840 km
 - 1120 km
 - 380 km
 - 980 km
- Which of the following terms describes an object that moves in response to gravity along a two-dimensional curved trajectory? (2.3) **K/U**
 - trajectory
 - free-body
 - projectile
 - falling body
- What is the time of flight for a projectile that has an initial speed of 23 m/s and is launched from the ground at 57° from the horizontal? (2.3) **T/I**
 - 2.6 s
 - 1.9 s
 - 4.2 s
 - 3.9 s
- Galileo found that the distance falling bodies travel is related to the square of time by doing what? (2.4) **K/U**
 - dropping balls from buildings
 - rolling balls down ramps
 - throwing stones into the air
 - watching stones sink in water
- Which of the following best describes an accelerometer? (2.5) **K/U**
 - a tiny device made of superconducting material that causes objects to accelerate
 - a tiny device made of semiconducting material that measures acceleration
 - a tiny device that uses resistors to measure the acceleration of gravity
 - a device that uses crystals to accelerate electric circuits and saves energy

Indicate whether each statement is true or false. If you think the statement is false, rewrite it to make it true.

- The average velocity of a boat crossing a river is increased by the current when the motor of the boat is perpendicular to the current. (2.2) **K/U**
- A diagram with a scale of 1 cm : 1 nm could be used to represent something small, such as a cell or a molecule. (2.1) **K/U**
- To find the direction of the vector 30 m [N 22° W], point west and then turn 22° north. (2.1) **K/U**
- The horizontal component of a vector using the cardinal directions is the component of that vector that points north or south. (2.2) **K/U**
- The magnitude of a vector with components 4.0 m [W] and 7.0 m [S] is 11 m. (2.1) **K/U**
- The direction of the resultant vector with components 5.2 m/s [S] and 8.5 m/s [E] is [S 31° E]. (2.2) **K/U**
- The vector 57.0 m [S 22° E] has an x -component of 21.4 m [W]. (2.2) **K/U**

