# Standardized Test Prep

## MULTIPLE CHOICE

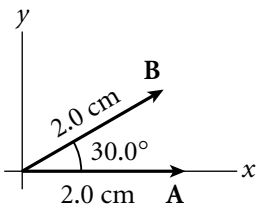
**1.** Vector **A** has a magnitude of 30 units. Vector **B** is perpendicular to vector **A** and has a magnitude of 40 units. What would the magnitude of the resultant vector **A** + **B** be?

**A.** 10 units
**B.** 50 units
**C.** 70 units
**D.** zero

**2.** What term represents the magnitude of a velocity vector?

**F.** acceleration
**G.** momentum
**H.** speed
**J.** velocity

***Use the diagram below to answer questions 3–4.***




**3.** What is the direction of the resultant vector **A** + **B**?

**A.** 15° above the *x*-axis
**B.** 75° above the *x*-axis
**C.** 15° below the *x*-axis
**D.** 75° below the *x*-axis

**4.** What is the direction of the resultant vector **A** − **B**?

**F.** 15° above the *x*-axis
**G.** 75° above the *x*-axis
**H.** 15° below the *x*-axis
**J.** 75° below the *x*-axis

***Use the passage below to answer questions 5–6.***

A motorboat heads due east at 5.0 m/s across a river that flows toward the south at a speed of 5.0 m/s.

**5.** What is the resultant velocity relative to an observer on the shore?

**A.** 3.2 m/s to the southeast
**B.** 5.0 m/s to the southeast
**C.** 7.1 m/s to the southeast
**D.** 10.0 m/s to the southeast

**6.** If the river is 125 m wide, how long does the boat take to cross the river?

**F.** 39 s
**G.** 25 s
**H.** 17 s
**J.** 12 s

**7.** The pilot of a plane measures an air velocity of 165 km/h south relative to the plane. An observer on the ground sees the plane pass overhead at a velocity of 145 km/h toward the north. What is the velocity of the wind that is affecting the plane relative to the observer?

**A.** 20 km/h to the north
**B.** 20 km/h to the south
**C.** 165 km/h to the north
**D.** 310 km/h to the south

**8.** A golfer takes two putts to sink his ball in the hole once he is on the green. The first putt displaces the ball 6.00 m east, and the second putt displaces the ball 5.40 m south. What displacement would put the ball in the hole in one putt?

**F.** 11.40 m southeast
**G.** 8.07 m at 48.0° south of east
**H.** 3.32 m at 42.0° south of east
**J.** 8.07 m at 42.0° south of east