

Review work sheet for grade 11 A
Chapter 3 (Motion in two and three dimensions)

Chose the correct answer of the following questions:

- 1- A moving object moves from position $(\vec{r} = 3.0\hat{x} + 2.0\hat{y})$ m to another position $(\vec{r} = 6.0\hat{x} - 4.0\hat{y})$ m, what is the magnitude of the object displacement?
A. 6.7 m
B. 4.5 m
C. 3.2 m
D. 1.8 m

- 2- A moving object moves from position $(\vec{r} = 5.0\hat{x} + 1.0\hat{y})$ m to another position $(\vec{r} = -2.0\hat{x} + 2.0\hat{y})$ m, in a time interval of 5.0 s, what is the magnitude of the object's average velocity?
A. 6.2 m/s
B. 4.1 m/s
C. 2.6 m/s
D. 1.4 m/s

- 3- The position function of a moving object is given by:
 $(\vec{r}(t) = (6.0t^2 + 2.0t)\hat{x} + (1.0t^2 - 3.0t)\hat{y})$ m, what is the speed of that object at $t=2$ s ?
A. 12 m/s, $\theta = 78^\circ$
B. 26 m/s, $\theta = 2.2^\circ$
C. 26 m/s, $\theta = 87^\circ$
D. 12 m/s, $\theta = 4.5^\circ$

- 4- A moving object moves such as the x- and y- components of its velocity as a function of time given by $v_x(t) = (2t^2 + 3)$ m/s , $v_y(t) = (3t - 5)$ m/s, what is the magnitude of the object's acceleration at $t=1$ s?
A. 5 m/s²
B. 6 m/s²
C. 7 m/s²
D. 8 m/s²

5- A bird moves with a velocity of 12 m/s and an angle of 25° east of north, what are the components of the bird velocity?

- A. (-5.1, 11)
- B. (-3.2, 9.0)
- C. (11, 5.1)
- D. (4.6, -6.2)

6- A boy throws a ball with a horizontal velocity of 3.0 m/s, from a height of 5.2 m over the ground, what is the horizontal displacement of the ball?

- A. 5.6 m
- B. 4.0 m
- C. 3.1 m
- D. 2.5 m

7- You shot an arrow with a horizontal speed of 22.4 m/s from what is the speed of the arrow after 3.0 s?

- A. 44 m/s
- B. 37 m/s
- C. 26 m/s
- D. 18 m/s

8- From the top of a building a girl throws a stone with horizontal speed of 5.2 m/s, the stone hit the ground at 12 m from the building, what is the height of the building?

- A. 26 m
- B. 21 m
- C. 16 m
- D. 12 m

9- A player kicks a ball with horizontal speed from a height of 6.0 m, when the ball reaches the height of 2.0 m the horizontal displacement was 4.0 m what is the initial speed of the ball?

- A. 4.4 m/s
- B. 8.2 m/s
- C. 5.9 m/s
- D. 2.8 m/s

10- A ball thrown with an initial velocity of 6.70 m/s and an angle of 30.0° above the horizontal, what is the range of the ball?

- A. 6.55 m
- B. 9.25 m
- C. 3.96 m
- D. 1.15 m

11- You throw a bag from a height of 4.0 m with an initial velocity of 7.7 m/s and an angle of 60.0° above the horizontal, what is the maximum height of the bag?

- A. 9.8 m
- B. 6.3 m
- C. 4.5 m
- D. 3.1 m

12- A projectile is launched from the top of a building with an initial velocity of 30.0 m/s at an angle of 60.0° above the horizontal. What is the magnitude of its velocity at $t = 5.00$ s?

- A. 44.3 m/s
- B. 39.6 m/s
- C. 14.1 m/s
- D. 27.5 m/s

13- A football is kicked with an initial velocity of 25.0 m/s and an initial angle of 30.0° . What is its hang time (the time until it hits the ground again)?

- A. 2.55 s
- B. 5.34 s
- C. 6.10 s
- D. 7.81 s

14- An object with a mass of 2.0 kg thrown from the ground with an initial velocity of $v = 2.0\hat{x} + 4.0\hat{y}$, what is the maximum height of the object?

- A. 5.9 m
- B. 1.3 m
- C. 0.82 m
- D. 2.7 m

15- A bus moves east with a velocity of 12 m/s relative to the ground, a boy inside the bus moves to the end of the bus with a velocity of 3.0 m/s relative to the bus, what is the magnitude of the boy velocity relative to the ground?

- A. 9.0 m/s
- B. 6.0 m/s
- C. 4.3 m/s
- D. 1.9 m/s

16- A bird is flying with a velocity of 4.0 m/s to the north relative to the ground and the wind was flowing with a velocity of 5.0 m/s to the west relative to the bird, what is the velocity of the wind relative to the ground?

- A. 6.4 m/s, $\theta = 141^\circ$
- B. 6.4 m/s, $\theta = 38.7^\circ$
- C. 4.3 m/s, $\theta = 125^\circ$
- D. 4.3 m/s, $\theta = 59.9^\circ$

17- An insect flies with a velocity of 3.0 m/s to the north relative to the ground and the wind was flowing with a velocity of 8.0 m/s and angle of 30° north of east relative to the insect, what is the magnitude of the wind velocity relative to the ground?

- A. 3.1 m/s
- B. 4.6 m/s
- C. 5.7 m/s
- D. 9.8 m/s

The end