



Name:

ID No:

Section:

CHOOSE THE CORRECT ANSWER

- Convert 5.86×10^6 cm to km
 - 5.86 km
 - 586 km
 - 0.586 km
 - 58.6 km
- How many **seconds** are in **36 days**
 - 31.104×10^5 s
 - 31.104×10^6 s
 - 31.104×10^4 s
 - 31.104×10^2 s
- If $\vec{a} = a_x \hat{i} + a_y \hat{j} + a_z \hat{k}$, the quantities (a_x, a_y, a_z) are called:
 - vector sum
 - scalar components
 - vector components
 - unit vectors
- Electric power of magnitude 2.17×10^9 watts equals:
 - 2.17 kilowatts
 - 2.17 megawatts
 - 2.17nanowatts
 - 2.17 gigawatts
- The conversion factor** used to convert a volume of 64 cm^3 to SI units is
 - $\frac{10^2 \text{ cm}}{1 \text{ m}}$
 - $\frac{10^6 \text{ cm}^3}{1 \text{ m}^3}$
 - $\frac{1 \text{ m}}{10^2 \text{ cm}}$
 - $\frac{1 \text{ m}^3}{10^6 \text{ cm}^3}$
- A car moved a distance of 215 km ,in a direction making an angle of 22° east of north . **How far east and north has the car moved?**
 - 199 km east, and 81km north
 - 91 km east, and 188 km north
 - 81 km east, and 199 km north
 - 188 km east, and 91 km north

Use the following to answer questions 7-8:

Two vectors, \vec{C} , and \vec{D} , have magnitudes $|\vec{C}| = 16m$, and $|\vec{D}| = 78m$

7. If the vectors are **anti-parallel** (متوازيان ومتعاكسان في الإتجاه) , Their vector sum has a magnitude =

- a) 0 b) 62 m c) 80 m d) 94 m

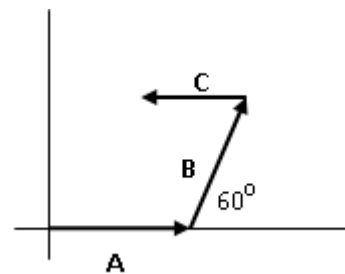
8. If the **vectors are perpendicular**, their vector sum has a magnitude =

- a) 62 m b) 94 m c) 0 d) 80 m

9. If $\vec{A} = 3\hat{i} - 3\hat{j}$, $\vec{B} = \hat{i} - 2\hat{j}$, and $\vec{C} = 5\hat{i} - 12\hat{j}$ then $\vec{A} - 2\vec{B} + \vec{C} =$

- a) $6\hat{i} - 11\hat{j}$ b) $8\hat{i} - 17\hat{j}$ c) $\hat{i} + \hat{j}$ d) $9\hat{i} + 17\hat{j}$

10. In the diagram, the magnitude of $|\vec{A}| = 12m$, the magnitude of $|\vec{B}| = 10m$ and the magnitude of $|\vec{C}| = 6m$. The **x component** of $\vec{A} + \vec{B} + \vec{C} =$



- a) 23 m b) 11 m c) 17 m d) 28 m

11. The density of silver is 10.49 g/cm^3 , **its density in kg/m^3 equals:**

- a) $10.49 \times 10^{-3} \text{ kg/m}^3$ c) $10.49 \times 10^{-6} \text{ kg/m}^3$
 b) $10.49 \times 10^3 \text{ kg/m}^3$ d) $10.49 \times 10^6 \text{ kg/m}^3$

12. If $\vec{a} = 4\hat{i} - 3\hat{j}$ and $\vec{b} = 6\hat{i} - 8\hat{j}$, then **the magnitude** of $\vec{b} - \vec{a} =$

- a) 12.5 b) 14.87 c) 18.9 d) 5.4

13. Here are three vectors in meters $\vec{d}_1 = 3\hat{i} - 3\hat{j}$, $\vec{d}_2 = \hat{i} - \hat{j}$,and $\vec{d}_3 = 2\hat{i} - 4\hat{j}$.
What is the result of $\vec{d}_1 \cdot (\vec{d}_2 + \vec{d}_3)$
- a) 34 m b) 24 m c) 14 m d) 4 m
14. If $|\vec{A}| = 44$ units, $|\vec{B}| = 16$ units, and the angle $\phi = 30^\circ$, **then the vector product $\vec{C} = \vec{A} \times \vec{B}$ is**
- a) $|\vec{C}| = 352$ units, perpendicular to \vec{A} and \vec{B}
b) $|\vec{C}| = 532$ units, perpendicular to \vec{A} and \vec{B}
c) $|\vec{C}| = 352$ units, parallel to \vec{A} and \vec{B}
d) $|\vec{C}| = 532$ units, parallel to \vec{A} and \vec{B}
15. If $\vec{a} = 2\hat{i} + 2\hat{j}$ and $\vec{b} = \hat{i} + 3\hat{k}$,**then $\vec{a} \times \vec{b} =$**
- a) $6\hat{i} - 6\hat{j} - 2\hat{k}$ b) $2\hat{i} - \hat{j} - 6\hat{k}$ c) $2\hat{i} - 6\hat{j} - 2\hat{k}$ d) $6\hat{i} - 2\hat{j} - 6\hat{k}$
16. If $\vec{C} = 35\hat{i} + 21\hat{j} - 14\hat{k}$, **then $\frac{2\vec{C}}{7} =$**
- a) $6\hat{i} + 6\hat{j} - 10\hat{k}$ b) $5\hat{i} + 3\hat{j} - 2\hat{k}$ c) $10\hat{i} + 3\hat{j} - 4\hat{k}$ d) $10\hat{i} + 6\hat{j} - 4\hat{k}$
17. For the following two vectors: $\vec{A} = 2\hat{i} + 3\hat{j}$, $\vec{B} = -3\hat{i} + 2\hat{j}$. **Find $\vec{A} \cdot 2\vec{B}$**
- a) 6 b) 12 c) zero d) 5
18. A particle enters a region with a speed of 4×10^6 m/s and then slowed at the rate of -1.5×10^{12} m/s² . **The distance the particle takes to stop is**
- a) 0.15 m b) 2 m c) 0.2 m d) 5.33 m
19. An apple fell from a 19.6 m tree, **how long did it take to reach the ground level?**
- a) 4.9 s b) 4 s c) 9.8 s d) 2 s
20. An object is thrown straight up from ground level and reached its highest point after 3.4 s . **Its initial velocity is:**
- a) 35.3 m/s b) 30.32 m/s c) 33.32 m/s d) 43.31 m/s

21. A change from an initial position to a final position is called:
- a) speed b) displacement c) acceleration d) velocity
22. A car can go from zero to 32 m/s in 16 s. **The average acceleration** of the car is:
- a) 2 m/s² b) 3 m/s² c) 4 m/s² d) 7 m/s²
23. **The speed** of a particle moving with instantaneous velocity of - 15 m/s is:
- a) 15 m/s b) 10 m/s c) 5 m/s d) 12 m/s

Use the following to answer questions 24-25:

A particle moves from $y_1 = - 5$ m to $y_2 = - 2$ m

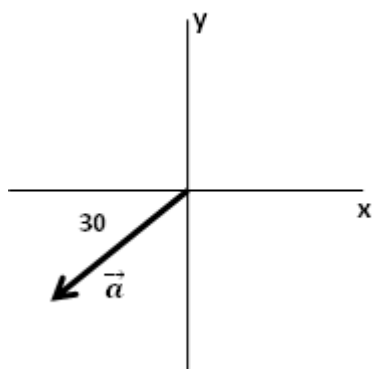
24. **The magnitude** of the displacement is:
- a) -3 m b) 3 m c) -7 m d) 7 m
25. **The direction** of the displacement is:
- a) up b) down c) right d) left
26. A particle's position on x-axis is: $x(t) = \frac{2}{t^2} - \frac{4}{t} + 9$ with **x** in meters and **t** in seconds. **Its position at t = 3 s is**
- a) 10.34 m b) 7.89 m c) 6.87 m d) 9.37 m
27. A man drives a truck from a gasoline station a long a straight road for 11.2 km in 0.23 h , then he returns back to the station in 45 min , his **average speed and average velocity , respectively**, are :
- a) $s_{avg} = 0$, $v_{avg} = 22.86$ km/h c) $s_{avg} = 0$, $v_{avg} = 12.7$ km/h
b) $s_{avg} = 22.86$ km/h , $v_{avg} = 0$ d) $s_{avg} = 12.7$ km/h , $v_{avg} = 0$
28. A particle's position on x-axis is: $x(t) = 13 - 24t + 2t^3$ with **x** in meters and **t** in seconds. **Its acceleration at t = 5 s is:**
- a) 60 m/s² b) 12 m/s² c) 36 m/s² d) 52 m/s²

29. In the following sentences, **which one is wrong?**

" the free fall acceleration"

- a) is the same for all objects.
- b) has a magnitude of 9.8 m/s^2 .
- c) is the same during ascent and descent.
- d) is equal to zero at the highest point.

30. From the figure, the angle that vector \vec{a} makes with the +x axis (counterclockwise) is:



- a) 30°
- b) 210°
- c) 150°
- d) 120°

Use the following to answer questions 31-32:

Two vectors: $\vec{A} = 3\hat{i} + 2\hat{j}$ and $\vec{C} = 5\hat{i}$

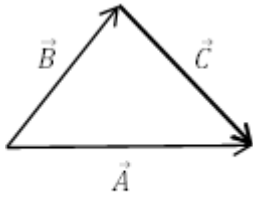
31. The angle between vector \vec{A} and the x axis is:

- a) 21.8°
- b) 30.9°
- c) 56.3°
- d) 33.7°

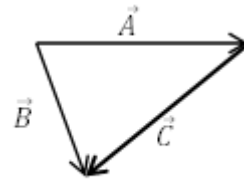
32. The angle between vector \vec{A} and vector \vec{C} is:

- a) 33.7°
- b) 137°
- c) 130°
- d) 37.3°

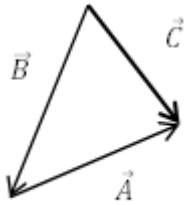
33. In which figure of the following \vec{C} is the vector sum?



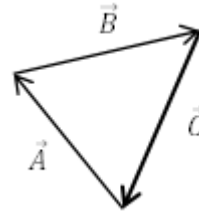
a)



c)



b)



d)

Answer Key

1. d
2. a
3. b
4. d
5. d
6. c
7. b
8. d
9. a
10. b
11. b
12. d
13. b
14. a
15. a
16. d
17. c
18. d
19. d
20. c
21. b
22. a
23. a
24. b
25. a
26. b
27. b
28. a
29. d
30. b
31. d
32. a
33. b