# Pre-Test Physics (Questions and Answers)

1. This important physicists work lead to the development of three laws of motion **Newton**
2. The amount of space between two objects or points **Distance**
3. This is the SI unit for mass **Grams**
4. The duration between two events usually measured in seconds **Time**
5. These digits are certain plus one **Significant Figures**
6. State the number of significant figures in each value:
   a. 50.03 km **a. 4**
   b. 0.000503 km **b. 3**
   c. 5003 km **c. 4**
   d. 5.0 km **d. 2**
   e. 0.5 km **e. 1**
7. State, in your own words, the rule for determining the number of digits allowed in an answer calculated by adding or subtracting two measured values.
   **Look at the decimal places for each measured value. The least precise number (the one with the fewest decimal places) determines the amount of decimal places in the final answer.**
8. Explain what is meant by a vector quantity, and give two examples.

   **Vector measurements contain both a magnitude (size) and a direction. E.g 20m [N] or 15 yards at 0°**

9. Explain what is meant by a scalar quantity and give two examples.

   **Scalar measurements only have a magnitude they don't include a direction. E.g 12 cm or 5 cubits.**

10. Solve for **b.** $A = \frac{1}{2}$ bh **$b = \frac{2A}{h}$**

**11.** $C = 2\pi r$ solve for r **$\frac{C}{2\pi} = r$**

**12.** An athlete completed a 5-km race in 19.5 min. Convert this time into hours **0.325 h**

13. A train is travelling at 95 km/h. Convert this speed into meters per second **26 m/s**

14. Convert 0.510 km into metres **510 m**

**15.** This is the formula for speed. **Speed = distance/time**

16. The total distance divided by the total time is known as this **Average speed**

17. Dan runs to school, a total distance of 4.5 km. He has to slow down to cross busy streets, but overall the trip takes him 0.62 h. What is Dan's average speed during the trip? **7.3 km/h**

18. Complete the statement $\Delta d$ = **$\Delta d = d_f - d_i$**

19. This is the velocity that an object is travelling at for a particular second in time **Instantaneous Velocity.**

20. What is the slope for an object that is travelling with a constant velocity? **Zero**

21. Kira is trying to predict the time required to ride her bike to the nearby beach. She knows that the distance is 45 km and from other trips, that she can usually average about 20 km/h, including slowing down for climbing hills. Predict how long the trip will take. **2.3h**
22. Jenna has a summer job helping with caribou research. She notes that they graze (move and eat grass ) at an average speed of 110m/h for about 7.0 h/d. What distance, in km, will the herd travel in two weeks (14 d)? **11 km**
23. You can find this from the slope of a distance-time graph **Speed**
24. Which graph is more useful? A distance-time graph or a position-time graph? Why?
    **A position time graph is more useful, as you can find the direction (position) of the person or object over a period of time.**
25. What interpretation can be made from a position-time graph that has a steep slope?
    **The object is travelling away from the starting position and is travelling with an increasing velocity (the object is speeding up, or accelerating).**
26. When studying motion in physics, it is customary to plot time on the horizontal axis and distance on the vertical axis even if distance is the independent variable in a particular experiment. Suggest a reason for this general rule.
    **Whereas, distance can be positive or negative (north or south), time can only move in a forward direction. By placing time on the x-axis comparisons in velocity and acceleration can easily be made from graph to graph.**
27. These dots, sometimes on a small strip of paper are used to analyse the acceleration of an object.
    **Ticker Tape or Metronome and Marker**
28. The rate of change in speed that is calculated by the ratio of the change in speed to the time interval during which the change occurred. **Acceleration**
29. Complete the formula , a = ? **$a = \Delta v \div \Delta t$**
30. A sled with an initial speed of 12m/s accelerates at 0.62 $m/s^2$ for 15s. What is the final speed of the bus? **21 m/s**
31. When a police officer uses a radar gun to measure a vehicle's speed, what type of speed is measured? **Instantaneous Acceleration**
32. A mallard duck, resting on the water, takes off and reaches a speed of 35 km/h in 4.0 min. Calculate the average acceleration of the duck in $km/min^2$.
    **$min^2$**
33. A snowmobile reaches a final speed of 22.5 m/s after accelerating at 1.2$m/s^2$ for 17 s. What was the initial speed of the snowmobile? **2.1 m/s**
34. In a race, a bus travelling at 100km/h comes to a stop in 5.0 s. What is the average acceleration?
    **-20km/h/s**
    **Or it is decelerating 20(km/h)/s**
35. A roller coaster car accelerates at 8.0$m/s^2$ for 4.0s. What is the change in the speed of the roller coaster car? **32.0 m/s**

36. The NASA space shuttle touches down on a runway at an initial speed of 95 m/s and accelerates at a rate of -4.40 m/s$^2$. How much time does it take for the shuttle to stop? **21.59 s**

37. What is found by examining the area located under a velocity –time graph? **The distance travelled**
38. This is the written formula for slope (m) **$m = \frac{\Delta y}{\Delta x}$ or $\frac{y_2 - y_1}{x_2 - x_1}$**
39. To find the slope of a curved line you must use this to find the instantaneous speed at that point. **What is a tangent line.**
40. This is the proper name for the star on a vector diagram. **Reference point**
41. This is defined as the change in position. **Displacement**
42. What is the rule for adding vectors in a vector diagram? **Connect the vectors "tip to tail" in a straight line.**
43. Jeff proclaimed "I'm on a boat" and then sailed away 300 m [N] to a buoy, and then went 500 m [E]. Draw a scale diagram to represent the vector addition for this question.
44. From question 43 calculate the amount that Jeff is displaced after his mini-journey.
45. Find the distance travelled if Peter and Lois are competing as a team in an orienteering event. They follow instructions telling them to go 50 m [N], 75 m [NE] and 100 m [30° E of S].
46. Draw the question above using a scale vector model.
47. Calculate the displacement in question 45.
48. The property line of a property runs directly across a lake. A surveyor measured around the lake 300 m [E] and then 400 m [N] to get from one corner to another corner of this property. What is another method other than a scale diagram you could use to solve for the displacement from corner to corner?
49. What is the displacement from question 48?
50. What is the distance a car covers during a car crash if the initial velocity is 12 m/s [NE] the final velocity is 0 m/s [NE} and the car comes to a rest 0.11s later? **D = 1.32 m**

***GOOD LUCK ☺***

# Pre-Test Physics (Questions)

1. This important physicists work lead to the development of three laws of motion

2. The amount of space between two objects or points

3. This is the SI unit for mass

4. The duration between two events usually measured in seconds

5. These digits are certain plus one

6. State the number of significant figures in each value:
    a. 50.03 km
    b. 0.000503 km
    c. 5003 km
    d. 5.0 km
    e. 0.5 km
7. State, in your own words, the rule for determining the number of digits allowed in an answer calculated by adding or subtracting two measured values.

8. Explain what is meant by a vector quantity, and give two examples.

9. Explain what is meant by a scalar quantity and give two examples.

**10.** Solve for **b.** $A = \frac{1}{2}$ bh

11. $C = 2\pi r$ solve for r

**12.** An athlete completed a 5-km race in 19.5 min. Convert this time into hours

13. A train is travelling at 95 km/h. Convert this speed into meters per second

14. Convert 0.510 km into metres

**15.** This is the formula for speed.

16. The total distance divided by the total time is known as this

17. Dan runs to school, a total distance of 4.5 km. He has to slow down to cross busy streets, but overall the trip takes him 0.62 h. What is Dan's average speed during the trip?

18. Complete the statement $\Delta d =$

19. This is the velocity that an object is travelling at for a particular second in time

20. What is the slope for an object that is travelling with a constant velocity?

21. Kira is trying to predict the time required to ride her bike to the nearby beach. She knows that the distance is 45 km and from other trips, that she can usually average about 20 km/h, including slowing down for climbing hills. Predict how long the trip will take.

22. Jenna has a summer job helping with caribou research. She notes that they graze (move and eat grass ) at an average speed of 110m/h for about 7.0 h/d. What distance, in km, will the herd travel in two weeks (14 d)?

23. You can find this from the slope of a distance-time graph

24. Which graph is more useful? A distance-time graph or a position-time graph? Why?

25. What interpretation can be made from a position-time graph that has a steep slope?

26. When studying motion in physics, it is customary to plot time on the horizontal axis and distance on the vertical axis even if distance is the independent variable in a particular experiment. Suggest a reason for this general rule.

27. These dots, sometimes on a small strip of paper are used to analyse the acceleration of an object.

28. The rate of change in speed that is calculated by the ratio of the change in speed to the time interval during which the change occurred.

29. Complete the formula , a = ?

30. A sled with an initial speed of 12m/s accelerates at 0.62 $m/s^2$ for 15s. What is the final speed of the bus?

31. When a police officer uses a radar gun to measure a vehicle's speed, what type of speed is measured?

32. A mallard duck, resting on the water, takes off and reaches a speed of 35 km/h in 4.0 min. Calculate the average acceleration of the duck in $km/min^2$.

33. A snowmobile reaches a final speed of 22.5 m/s after accelerating at 1.2$m/s^2$ for 17 s. What was the initial speed of the snowmobile?

34. In a race, a bus travelling at 100km/h comes to a stop in 5.0 s. What is the average acceleration?

35. A roller coaster car accelerates at 8.0$m/s^2$ for 4.0s. What is the change in the speed of the roller coaster car?

36. The NASA space shuttle touches down on a runway at an initial speed of 95 m/s and accelerates at a rate of -4.40 $m/s^2$. How much time does it take for the shuttle to stop?

37. What is found by examining the area located under a velocity –time graph?

38. This is the written formula for slope (m)

39. To find the slope of a curved line you must use this to find the instantaneous speed at that point.

40. This is the proper name for the star on a vector diagram.

41. This is defined as the change in position.

42. What is the rule for adding vectors in a vector diagram?

43. Jeff proclaimed "I'm on a boat" and then sailed away 300 m [N] to a buoy, and then went 500 m [E]. Draw a scale diagram to represent the vector addition for this question.

44. From question 43 calculate the amount that Jeff is displaced after his mini-journey.

45. Find the distance travelled if Peter and Lois are competing as a team in an orienteering event. They follow instructions telling them to go 50 m [N], 75 m [NE] and 100 m [30° E of S].

46. Draw the question above using a scale vector model.

47. Calculate the displacement in question 45.

48. The property line of a property runs directly across a lake. A surveyor measured around the lake 300 m [E] and then 400 m [N] to get from one corner to another corner of this property. What is another method other than a scale diagram you could use to solve for the displacement from corner to corner?

49. What is the displacement from question 48?

**50.** What is the distance a car covers during a car crash if the initial velocity is 12 m/s [NE] the final velocity is 0 m/s [NE} and the car comes to a rest 0.11s later? **D = 1.32 m**

***GOOD LUCK TOMORROW!*** ☺

# Pre-Test Physics (Answers)

1. **Newton**
2. **Distance**
3. **Grams**
4. **Time**
5. **Significant Figures**
6. 

| | |
|---|---|
| a. 50.03 km | **a. 4** |
| b. 0.000503 km | **b. 3** |
| c. 5003 km | **c. 4** |
| d. 5.0 km | **d. 2** |
| e. 0.5 km | **e. 1** |

7. **Look at the decimal places for each measured value. The least precise number (the one with the fewest decimal places) determines the amount of decimal places in the final answer.**
8. **Vector measurements contain both a magnitude (size) and a direction. E.g 20m [N] or 15 yards at 0°**
9. **Scalar measurements only have a magnitude they don't include a direction. E.g 12 cm or 5 cubits.**
10. $b = \frac{2A}{h}$
11. $\frac{C}{2\pi} = r$
12. **0.325 h**
13. **26 m/s**
14. **510 m**
15. **Speed = distance/time**
16. **Average speed**
17. **7.3 km/h**
18. $\Delta d = d_f - d_i$
19. **Instantaneous Velocity.**
20. **Zero**
21. **2.3h**
22. **11 km**
23. **Speed**
24. **A position time graph is more useful, as you can find the direction (position) of the person or object over a period of time.**
25. **The object is travelling away from the starting position and is travelling with an increasing velocity (the object is speeding up, or accelerating).**

26. **Whereas, distance can be positive or negative (north or south), time can only move in a forward direction. By placing time on the x-axis comparisons in velocity and acceleration can easily be made from graph to graph.**
27. **Ticker Tape or Metronome and Marker**
28. **Acceleration**
29. **$a = \frac{\Delta v}{\Delta t}$**
30. **21 m/s**
31. **Instantaneous Acceleration**
32. 0.1485 km/min$^2$
33. **2.1 m/s**
34. **-20km/h/s OR it is decelerating 20(km/h)/s**
35. **32.0 m/s**
36. **21.59 s**
37. **The distance travelled**
38. **$m = \frac{\Delta y}{\Delta x}$ or $\frac{y_2 - y_1}{x_2 - x_1}$**
39. **What is a tangent line.**
40. **Reference point**
41. **Displacement**
42. **Connect the vectors "tip to tail" in a straight line.**

43. Scale Diagram

**44. 583.1 m**

**45. Distance = 225 m**

46. Scale Vector Diagram

47. Measure displacement using scale vector model.

**48. Pythagorean Theorem**

**49. 411.1 m [NE]**

50. **D = 1.32m**

**GOOD LUCK ☺**