

P27-28, Chapter 1: Review

1. Areas of physics:
 - a) vibrations and wave phenomena, electromagnetism
 - b) mechanics, vibrations and wave phenomena
 - c) optics, thermodynamics
 - d) thermodynamics, mechanics
3. To select a car by using the scientific method, I would:
 - a) First observe the various kinds available and collect information on them.
 - b) I would make a hypothesis about what kind of car would suit my needs, and test the cars to see if its specifications are suitable.
 - c) I would review the results of my tests, filter out which cars would not meet my requirements, and reevaluate the remaining cars again.
 - d) When all of the remaining cars meet my requirements, I can decide on which of the remaining cars I would most prefer, and I will then have chosen my new car.
5. SI base units:
 - a) minutes (min)
 - b) kilogram (kg)
 - c) meters (m)
 - d) centimeters (cm)
 - e) grams (g)
 - f) megaseconds (Ms)
 - g) kilometers (km)
 - h) kilograms (kg)
 - i) meters (m)
 - j) centimeters (cm)
7. 1 kg/s
9. Having the meter defined in terms of the distance light travels in a given time allows the meter to be defined on a universal constant that can be proved and determined mathematically, rather than a particular metal bar, which could vary in length and which could not be determined mathematically unless access to the bar was available.
11. Unit conversion:

- | | |
|-----------------------------|------|
| a) 200 mm | a) 3 |
| b) 7 800 s | b) 4 |
| c) 16 000 000 μg | c) 3 |
| d) 75 000 cm | d) 2 |
| e) 0.000 675 | |
| f) 0.000 462 cm | |
| g) 58.333 m/s | |

13. $3.00 \times 10^8 \text{ m/s} =$

$3.00 \times 10^5 \text{ km/s} =$

$5.00 \times 10^3 \text{ km/min} =$

$8.33 \times 10^1 \text{ km/h}$

15. A set of measurements can have a very close precision and exactness, if they are not close to the correct or accepted value of the quantity that is measured, then they would not necessarily be accurate.

17. Unit accuracy:

- a) The unit conversion is correct.
- b) The unit conversion is correct.
- c) The unit conversion is correct.
- d) The unit conversion is incorrect: 16 oz has only two significant figures, while 473.13mL has five.

19. Significant figures: