

These 7 short questions based on General Physics I ideas. You should be able to answer them without any assistance or using the book. If not, you'll need to review concepts as suggested on the second page.

1. What is the sum of $1.2000 \text{ kg} + 554 \text{ g} + 732 \text{ mg}$, taking account of significant figures?
2. Joe walks 3.00 km due east, then turns north and goes 4.00 km . How far and in what direction is he from the starting point?
3. What net force magnitude acting on a 36.0-gram bullet would cause it to accelerate at 125 times the acceleration due to gravity?
4. What speed would a 36.0-gram bullet need so that its kinetic energy is 2.00 kJ ?
5. An oscillator is vibrating at a frequency of 685 Hz . What is the period of its oscillations?
6. A wave is travelling at a speed of $2.2 \times 10^8 \text{ m/s}$. What is the distance between successive wave crests if the frequency is 3.2 GHz ?
7. What minimum power is necessary to heat 1.00 kg of water from 0°C to 100°C in 10.0 minutes? [$1.00 \text{ cal} = 4.186 \text{ J}$]

These simple problems all involve concepts that you'll need to know for General Physics II. If you are having trouble proceeding with these problems, review the topics in the chapters indicated.

Answers:

Review Topics

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1. sum = 1.755 kg (precision determined by last digit of 554 g). Ch. 1, Units, sig. figs.
 2. distance = $\sqrt{x^2 + y^2} = 5.00$ km, direction is $\tan^{-1} \frac{y}{x} = 53.1^\circ$ north of east. Ch. 3, Vectors.
 3. $F = ma = m \times 125g = 44.1$ N. Chs. 4 & 5, Newton's Laws
 4. $v = \sqrt{\frac{2K}{m}} = 333$ m/s. Ch. 6, Work and Energy
 5. $T = \frac{1}{f} = 1.46 \times 10^{-3}$ s = 1.46 ms. Ch. 11, Vibrations
 6. $\lambda = \frac{v}{f} = 0.069$ m = 6.9 cm. Ch. 11, Waves
 7. $P = Q/t = mc\Delta T/t = 698$ J/s = 698 W. Chs. 6, 13 & 14, Power, Temperature & Heat