

A Message from your Publisher:

We are pleased that you have chosen to purchase a copy of *Physics for Scientists and Engineers*, 4th edition, by Paul Tipler. This book has been used successfully by thousands of students and is currently in its third printing. For our latest reprint, we had only a handful of minor typos to correct.

Unfortunately, due to an error at the compositor, two new errors were introduced into this latest printing and this sheet contains the lines of copy that are now missing from the third printing of Volume 1 and the second printing of the Regular and Extended hardbacks. We apologize for any inconvenience that these omissions may cause. Needless to say, we have corrected the film for all future printings.

On page 38, the last line on the page is missing. The final sentence on that page should read: "Thus, if we know the forces acting on a particle and the position and velocity of the particle at some particular time, we can find its position at all other times."

On page 51, an entire section of text has been shifted: where Problems 107-116 should appear, you will find Problems 101-109. Thus, Problems 110-116 are missing altogether. Below, we have reprinted these problems for you.

110 • Two cars are being driven at the same speed v , one behind the other, with a distance d between them. The first driver jams on her brakes and decelerates at a rate $a = 6 \text{ m/s}^2$. The second driver sees the brake lights of the first driver and reacts, decelerating at the same rate starting 0.5 s later. (a) What is the minimum distance d such that the two cars do not collide? (b) Express this answer in meters for $v = 100 \text{ km/h}$ (62 mi/h).

111 • The velocity of a particle in meters per second is given by $v = 7 - 4t$, where t is in seconds. (a) Sketch $v(t)$ versus t , and find the area between the curve and the t axis from $t = 2 \text{ s}$ to $t = 6 \text{ s}$. (b) Find the position function $x(t)$ by integration, and use it to find the displacement during the interval $t = 2 \text{ s}$ to $t = 6 \text{ s}$. (c) What is the average velocity for this interval?

112 •• Estimate how high a ball or small rock can be thrown if it is thrown straight up.

113 •• The cheetah can run as fast as $v_1 = 100 \text{ km/h}$, the falcon can fly as fast as $v_2 = 250 \text{ km/h}$, and the sailfish can swim as fast as $v_3 = 120 \text{ km/h}$. The three of them run a relay with each covering a distance L at maximum speed. What is the average speed v of this triathlon team?

114 •• In 1997, the men's world record for the 50-m freestyle was held by Tom Jager of the United States, who covered $d = 50 \text{ m}$ in $t = 21.81 \text{ s}$. Suppose Jager started from rest at a constant acceleration a , and reached his maximum speed in 2.00 s, which he then kept constant until the finish line. Find Jager's acceleration a .

115 •• The click beetle can project itself vertically with an acceleration of about $a = 400g$ (an order of magnitude more than a human could stand). The beetle jumps by "unfolding" its legs, which are about $d = 0.6 \text{ cm}$ long. How high can the click beetle jump? How long is the beetle in the air? (Assume constant acceleration while in contact with the ground, and neglect air resistance.)

116 •• The one-dimensional motion of a particle is plotted in Figure 2-37. (a) What is the acceleration in the intervals AB, BC, and CE? (b) How far is the particle from its starting point after 10 s? (c) Sketch the displacement of the particle as a function of time; label instants A, B, C, D, and E on your figure. (d) At what time is the particle traveling most slowly?

We thank you for your patience. Best wishes for great success in this most challenging and rewarding of courses!



Susan F. Brennan
Publisher, W. H. Freeman and Company