Lesson 6.6 • Around the World

Name _____ Period _____ Date _____

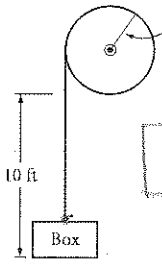
1. Alfonzo's Pizzeria bakes olive pieces in the outer crust of its 20-inch (diameter) pizza. There is at least one olive piece per inch of crust. How many olive pieces will you get in one slice of pizza? Assume the pizza is cut into eight slices.

$C = D\pi$
$C = 20(\pi)$
$= 62.832$ in

$\frac{62.832}{8 \text{ slices}} = 7.854''$ per slice

7.8 olives

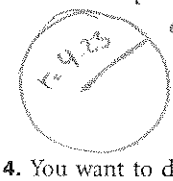
2. To use the machine at right, you turn the crank, which turns the pulley wheel, which winds the rope and lifts the box. Through how many rotations must you turn the crank to lift the box 10 feet?



$C = 2\pi r$
$= 2(7.5)(\pi)$
$= 47.124$ in $\div 12 = 3.927$ ft around

2.5 turns

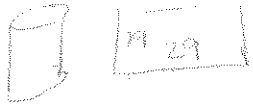
3. A satellite in *geostationary* orbit stays over the same spot on Earth. The satellite completes one orbit in the same time that Earth rotates once about its axis (23.93 hours). If the satellite's orbit has radius 4.23×10^7 m, calculate the satellite's orbital speed (tangential velocity) in meters per second.



$S = \text{dist}/\text{time}$
distance $= C$
$C = 2(4.23 \times 10^7)\pi$
$C = 26.578 \times 10^7$ m

$S = \frac{(26.578 \times 10^7 \text{m})}{23.93 \text{ h} \cdot 60 \text{m} \cdot 60 \text{s}} = 0.0030855 \times 10^3$
3.085×10^3
3,085 m/s

4. You want to decorate the side of a cylindrical can by coloring a rectangular piece of paper and wrapping it around the can. The paper is 19 cm by 29 cm. Find the two possible diameters of the can to the nearest 0.01 cm. Assume the paper fits exactly.



$C = d\pi$
$19 = d\pi$
$d = 6.05$ cm

$29 = d\pi$
$d = 9.23$ cm

5. As you sit in your chair, you are whirling through space with Earth as it moves around the sun. If the average distance from Earth to the sun is 1.4957×10^{11} m and Earth completes one revolution every 364.25 days, what is your "sitting" speed in space relative to the sun? Give your answer in km/h, rounded to the nearest 100 km/h.

$r = 1.4957 \times 10^{11}$ m
$r = 1.4957 \times 10^8$ km

$C = 2\pi r = 2.9914 \times 10^8 \pi$ km

$S = \frac{d}{t}$ $\frac{2.9914 \times 10^8 \pi \text{ km}}{364.25 \text{ days}} \cdot \frac{1 \text{ day}}{24 \text{ hrs}} = .001075 \times 10^8$ km
$= 1.07500 \frac{\text{km}}{\text{hr}}$