More Math Worksheet

(Unit Conversions, Radians, Problem Solving, Trigonometry)

(answers are provided in [ ])

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1. A glacier advances at 4.8×10^{-6} cm/sec. How far will it move in 6.3×10^{4} seconds? . . . how far in 7.00 years? [.30 cm, 1.1×10^{3} cm]

2. Endis Neer sets his starship for 6.90×10^{7} m/sec. How far does he travel in one day? [5.96×10^{12}m]

3. To protect her new two-wheeler, Rhoda Bicycle buys a length of chain. She finds that its linear density is .90 lb/ft, but wants to keep its weight at 1.7 lb. What length chain should she buy? [1.9 ft]

4. Convert 254 N/cm^2 to lb/in^2. [368 lb/in^2]

5. Convert 11.2 (N x m^3)/sec^2 into (lb x ft^3)/min^2. [3.20×10^{5} (lb x ft^3)/min^2]

6. Convert 26.2 radians into degrees. [1.50×10^{3} degrees]

7. Convert 41.0 degrees into radians. [.716 rad]

8. Convert 3.50×10^{-3} revolutions into radians. [.0220 rad]

9. A stationary bicycle wheel with a 13.5 inch radius turns through 4.00 radians. How far has a point on the rim moved? Remember that radians, when used in equations, are considered "unitless". [54.0 in]

10. Arnold Ant stands on the edge of a lemon filled carrot cake, 9.00 inches in diameter. With mandibles quivering, he walks 1.60 inches around the edge. Through what central angle has he moved? Express your answer in degrees. [20.4^o]

11. A sphere of metal measures 4.6 cm in radius and has a density of 7.9 g/cm^3. What is the mass of the sphere? [3.2×10^{3} gram]

12. Find the area and volume for a) half of a solid sphere of radius r, and b) for a disk of radius r and height h with a square hole of side s removed from its middle. Think of this as a donut with a square hole. [for a, area = $3\pi r^2$, volume = $2\pi r^3/3$]; [for b, area = $2(\pi r^2-s^2)+2\pi rh+4sh$; volume = $(\pi r^2-s^2)h$]

13. A plane takes off from CSX (Corvallis International Airport) and files in a direction that is 17.0^o east of due north. When the plane has traveled a distance of 260.0 miles (relative to the ground), how far east of CSX is the plane? [76.0 miles]

14. Manual L Abor needs to make a ramp for his wheelbarrow in order to get his wheelbarrow over up and over a small retaining wall. If the wall is 1.5 feet high, and Manual wishes the ramp to make an angle of 12^o relative to the flat ground, how long will the ramp end up being? [7.2 ft]

15. To let in more sunlight, Tim Burr decides to cut down a tree near his house. Unfortunately, when he cuts his tree down, the top of the tree lands on his house. If the tree was located 112 feet away from his house, and the tree, as it rests on his house, now makes an angle of 9.00^o with the ground,
    a) How tall was the tree? [113 ft]
    b) How tall is his house (now that the tree has landed on it)? [17.7 ft]