Bridges to Advanced Algebra

Name: KEY

Converting Speeds

Practice converting the following speeds into the given units. Remember: d = rt

1. If I drive 100 miles on I5 in 2 hours, how fast ~~am I going~~:
   a. In miles per hour? a) $\frac{100\text{ mi}}{2\text{ hr}} = 50\text{ mph}$
   b. In miles per minute? b) $\frac{50\text{ mi}}{1\text{ hr}} \cdot \frac{1\text{ hr}}{60\text{ min}} = \frac{50\text{ mi}}{60\text{ min}} = .83\text{ mpm}$
   c. In miles per second? c) $.83\frac{\text{mi}}{\text{min}} \cdot \frac{1\text{ min}}{60\text{ sec}} = 0.014\text{ mps}$
   d. In feet per hour? d) $\frac{50\text{ mi}}{1\text{ hr}} \cdot \frac{5280\text{ ft}}{1\text{ mi}} = 264{,}000\frac{\text{ft}}{\text{hr}}$
   e. In feet per minute?
   f. In feet per second? e) $\frac{264{,}000\text{ ft}}{1\text{ hr}} \cdot \frac{1\text{ hr}}{60\text{ min}} = 4400\frac{\text{ft}}{\text{min}}$
   g. In inches per hour? g) $\frac{50\text{ mi}}{1\text{ hr}} \cdot \frac{5280\text{ ft}}{1\text{ mi}} \cdot \frac{12\text{ in}}{1\text{ ft}} = 3{,}168{,}000\frac{\text{in}}{\text{hr}}$
   h. In inches per minute? h) $\frac{3{,}168{,}000\text{ in}}{1\text{ hr}} \cdot \frac{1\text{ hr}}{60\text{ min}} = 52{,}800\frac{\text{in}}{\text{min}}$
   i. In inches per second? f) $\frac{4400\text{ ft}}{1\text{ min}} \cdot \frac{1\text{ min}}{60\text{ sec}} = 73.3\text{ fps}$ i) $\frac{52{,}800\text{ in}}{1\text{ min}} \cdot \frac{1\text{ min}}{60\text{ sec}} = 880\frac{\text{in}}{\text{sec}}$
2. A snail moves at an average speed of 0.0425 fps (not fast.) How fast is the snail traveling:
   a. In miles per hour? g) $\frac{0.0425\text{ ft}}{1\text{ sec}} \cdot \frac{60\text{ sec}}{1\text{ min}} \cdot \frac{60\text{ min}}{1\text{ hr}} \cdot \frac{1\text{ mi}}{5280\text{ ft}} = 0.29\text{ mph}$
   b. In miles per minute? b) $\frac{0.0425\text{ ft}}{1\text{ sec}} \cdot \frac{60\text{ sec}}{1\text{ min}} \cdot \frac{1\text{ mi}}{5280\text{ ft}} = .00048\text{ mpm}$
   c. In miles per second? c) $\frac{0.0425\text{ ft}}{1\text{ sec}} \cdot \frac{1\text{ mi}}{5280\text{ ft}} = .000008\text{ mps}$
   d. In feet per hour? d) $\frac{0.0425\text{ ft}}{1\text{ sec}} \cdot \frac{60\text{ sec}}{1\text{ min}} \cdot \frac{60\text{ min}}{1\text{ hr}} = 153\frac{\text{ft}}{\text{hr}}$
   e. In feet per minute?
   f. In inches per hour? e) $\frac{0.0425\text{ ft}}{1\text{ sec}} \cdot \frac{60\text{ sec}}{1\text{ min}} = 2.55\frac{\text{ft}}{\text{min}}$ f) $\frac{0.0425\text{ ft}}{1\text{ sec}} \cdot \frac{12\text{ in}}{1\text{ ft}} \cdot \frac{60\text{ sec}}{1\text{ min}} \cdot \frac{60\text{ min}}{1\text{ hr}} = 1836\frac{\text{in}}{\text{hr}}$
   g. In inches per minute? g) $\frac{0.0425\text{ ft}}{1\text{ sec}} \cdot \frac{12\text{ in}}{1\text{ ft}} \cdot \frac{60\text{ sec}}{1\text{ min}} = 30.6\frac{\text{in}}{\text{min}}$
   h. In inches per second? h) $\frac{0.0425\text{ ft}}{1\text{ sec}} \cdot \frac{12\text{ in}}{1\text{ ft}} = .51\frac{\text{in}}{\text{sec}}$

3. The Pacific tectonic plate is moving at an average speed of 3.5 inches per year. How fast is it moving:

a. In miles per hour? a) $\frac{3.5\text{in}}{1\text{yr}} \cdot \frac{1\text{yr}}{365\text{days}} \cdot \frac{1\text{day}}{24\text{hr}} \cdot \frac{1\text{ft}}{12\text{in}} \cdot \frac{1\text{mi}}{5280\text{ft}} = .00000063 \frac{\text{mi}}{\text{hr}}$ (8 zeros)

b. In miles per minute? b) $\frac{.00000063\text{ mi}}{1\text{ hr}} \cdot \frac{1\text{hr}}{60\text{min}} = .0000000105 \frac{\text{mi}}{\text{min}}$ (9 zeros)

c. In miles per second? c) $\frac{.0000000105\text{ mi}}{1\text{ min}} \cdot \frac{1\text{min}}{60\text{sec}} = .000\,000\,000\,0018 \frac{\text{mi}}{\text{sec}}$ (11 zeros)

d. In feet per hour? d) $\frac{.00000083\text{mi}}{1\text{hr}} \cdot \frac{5280\text{ft}}{1\text{mi}} = .00044\frac{\text{ft}}{\text{hr}}$

e. In feet per minute? e) $\frac{.00044\text{ft}}{1\text{hr}} \cdot \frac{1\text{hr}}{60\text{min}} = .0000073\frac{\text{ft}}{\text{min}}$

f. In feet per second? f) $\frac{.0000073\text{ft}}{1\text{min}} \cdot \frac{1\text{min}}{60\text{sec}} = .00000012\frac{\text{ft}}{\text{sec}}$

g. In inches per hour? g) $\frac{.00044\text{ft}}{1\text{hr}} \cdot \frac{12\text{in}}{1\text{ft}} = .00528\frac{\text{in}}{\text{hr}}$

h. In inches per minute? h) $\frac{.00528\text{in}}{1\text{hr}} \cdot \frac{1\text{hr}}{60\text{min}} = .000088\frac{\text{in}}{\text{min}}$

i. In inches per second? i) $\frac{.000088\text{in}}{1\text{min}} \cdot \frac{1\text{min}}{60\text{sec}} = .0000015\frac{\text{in}}{\text{sec}}$

j. Mount Mazama erupted in approximately 2290 BC and created Crater lake. Approximately how far has the Pacific tectonic plate moved since Mazama's eruption?

2290 BC = 2290 + 2017 years ago
= 4307 years.

$d = r \cdot t$

$d = \frac{3.5\text{in}}{1\text{ year}} \cdot 4307\text{ years} = 15{,}074.5\text{in}$

$15074.5\text{in} \cdot \frac{1\text{ft}}{12\text{in}} = 1256\text{ft}$

$1256\text{ft} \cdot \frac{1\text{mi}}{5280\text{ft}} = .238\text{miles}$