2.28.20

Average Speed pt 2

Today's Objectives:

○ Practice converting units

○ Solve problems with two times and distances

○ Calculate the average speed with units

Unit Converting Practice

You won an international game show and can pick any one of these prizes.
Which one is worth the most?

$1 = 0.88 Euros
$1 = 280 Forints
$1 = 3.67 AEDs
$1 = 1,200 Won
1 bitcoin = $8,538

- 1,000 US Dollars

- 850 Euros $\dfrac{\$1}{0.88 €}$ = $ 965.91

- 3,000 Hungarian Forints $\dfrac{\$1}{280 €}$ = $10.71

- 2,000 AED Dirhams (money used in Dubai) $\dfrac{\$1}{3.67 €}$ = $544.91

- 22,000 South Korean Won $\dfrac{\$1}{1200 W}$ = $18.33

- 1 Bitcoin $\dfrac{\$8538}{1 bc}$ = $ 8,538

Calculate the average speed of each of these objects.
Give the number and the unit!!

$$\bar{v} = \frac{distance}{time}$$ ←
←

1) A driver goes 12 miles in 0.5 hrs. $\dfrac{12\,mi}{.5\,hr} = 24\ \dfrac{miles}{hour}$

2) A bullet takes 0.35 seconds to travel 850 feet. $2428.57\ ft/s$

3) Chris Johnson runs 40 yards in 4.24 seconds. $9.43\ y/s$

4) Usain Bolt runs 100 meters in 9.58 seconds. $10.4\ m/s$

5) A snail moves 12 yards in 6.5 minutes. (he was in a hurry.) $1.95\ y/min.$

6) A glacier moves 34 kilometers in 2 years. $17\ km/yr.$

7) Can we be sure the objects went the same speed the whole time? No, its an average!

Jake's cross country team leaves East at 3:00PM, and they returned at 3:45 PM.
Before he left, his GPS watch read 300 miles, afterwards it read 308 miles.
What was Jake's average speed for this run?

$$\bar{v} = \frac{distance}{time}$$

Speed to Speed Conversion

"Per" = "Divided By"

How fast is 100 m/s in miles per hour?

1 mile = 5280 ft
1 meter = 3.28 ft
1 hr = 3600 s

$$\frac{100 \text{ meters}}{1 \text{ second}} \cdot \frac{3.28 \text{ ft}}{1 \text{ meters}} \cdot \frac{1 \text{ mile}}{5280 \text{ ft}} \cdot \frac{3600 \text{ sec.}}{1 \text{ hrs}} = 223.63 \frac{\text{miles}}{\text{hour}}$$

7) Policeman Pete is setting up a speed trap. He paints white lines which are 1000 feet apart on the road, and times how long it takes cars to drive past them. Speedy Sam drives through these lines in a time of 12 seconds. The speed limit on this road is 45 miles per hour.

(HINT: Calculate each answer in this problem to <u>4 decimal places.</u>)

a) How far apart are the lines in miles?

$$\frac{1000 \text{ ft}}{} = \text{miles}$$

b) How long did it take Sam to drive through these lines in hours?

$$\frac{12 \text{ seconds}}{} = \text{hours}$$

c) Should Sam be getting a speeding ticket? Prove it with a calculation.

d) Law Abiding Larry goes through the same lines going **exactly the speed limit**, how many seconds should it take?

$$45 = \frac{\text{miles}}{\underset{\text{Solve}}{\uparrow} \text{ hour}}$$