

RESEARCH PROJECT #3

How fast is a neutrino?

(Warning: this activity includes advanced math like division and decimals so you may need help from a parent and a calculator.)

How long would it take you to walk from Chicago to Soudan?

- Count the number of seconds it takes you to walk from the front end of your car to the back end. _____ seconds
- Divide the length of your car by this time in seconds to figure out how fast you can walk. Take 5 meters (this is a guess at the length of your car) and divide it by the number of seconds it took you to walk it:

$$5 \div \frac{\text{_____}}{\text{(number of seconds to walk length of car)}} = \frac{\text{_____}}{\text{(your speed)}}$$

- You can walk at a speed of _____ meters per second.
(your speed)
- Soudan is about 700,000 meters from Chicago IL (If you could walk straight there). Take this distance and divide it by your speed to get how long it will take to walk to Soudan. This will be a big number!

$$700,000 \div \frac{\text{_____}}{\text{(your speed)}} = \boxed{\frac{\text{_____}}{\text{(seconds to walk to Soudan)}}}$$

- It would take you this many seconds to walk to Soudan.
(Bonus: with 3600 seconds in an hour, can you figure out the time in hours?)

How long does it take a neutrino to get from Chicago to Soudan?

- Neutrinos travel almost as fast as light (300,000,000 meters per second)! Just as you did before, divide 700,000 meters by this speed to figure out how quickly it takes a neutrino to get to Soudan.

$$700,000 \div 300,000,000 = \boxed{\frac{\text{_____}}{\text{(seconds for neutrino to get to Soudan)}}}$$

It's too bad you can't fly on the back of a neutrino... you would get there much faster!!