



GREAT NORTH AMERICAN ECLIPSE

Estimating the Speed of the Lunar Shadow

Problem 1 – For the August 17, 2017 eclipse, the distance from Newport, Oregon to Madras, Oregon is 232 km, and the time at which the total solar eclipse is observed at these two locations differ by 0.0619 hours. What is the speed of the shadow between these towns?

Problem 2 - Using data from the 2017 Eclipse you can see that the towns of Carbondale, Illinois and Hopkinsville, Kentucky are located 155 km apart. The exact time of totality at Carbondale was 18:21:56, but at Hopkinsville spectators saw the maximum eclipse at 18:26:03. How fast was the lunar shadow moving on the ground near these towns?

Problem 3 - Eagle Pass, Texas will be the first city in the United States to experience the Great North American Eclipse of **2024**. Sharp, Maine will be the last to witness the eclipse before the shadow travels into Canada. The following table gives the distances and times for the total solar eclipse viewed from several locations along the path of totality from Texas to Maine. From the tabulated information, calculate the average lunar shadow speed between each consecutive pair of points along the path.

Location	Time (CDT (GMT-5))	Distance (km)	Speed (km/hr)
Eagle Pass, TX	12:10:14	0	
Gatesville, TX	12:19:18	402	
Texarkana, TX	12:28:34	814	
Doniphan, MO	12:38:51	1263	
Carbondale, IL	12:43:01	1448	
South Salem, IN	12:53:02	1913	
Buffalo, NY	13:04:56	2496	
Sharp, MA	13:22:19	3442	



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Problem 4 – From the table, what is the total length of the path of totality from Eagle Pass, TX to Sharp, Maine during the 2024 Great North American Eclipse?

Problem 5 - Do a little research and determine which of the following vehicles (or superheroes) you would need to travel in/with to be able to keep up with the shadow and see the eclipse for the longest possible time.

Vehicle	Top Speed (km/hr)
Superman	
Spiderman	
Hennessey Venom F5	
SR71 Blackbird	
Bugatti Chiron Super Sport 300+	
MIG-25 Fox Bat Jet	
Thrust SCC (driven by Andy Green)	
XB-70 Valkyrie	
X-15	
Millennium Falcon	



Solar Eclipse Word Search

P S E C O N D C O N T A C T C
 B A T D I A M O N D R I N G S
 F A R T S A R O S C Y C L E O
 O S I T H Z D Q L D R E I G L
 U O P L I I N H O V E T P U A
 R L T R E A R O V E A V E M R
 T A O F O Y L D N M R H N B P
 H R T M L M S E C X T D U R A
 C C A W T F I B C O H G M A L
 O O L C J U G N E L N M B K O
 N R I K Q M C Y E A I T R X O
 T O T Z C D A Y K N D P A Y Z
 A N Y A F E C J P B C S S C A
 C A S O L A R S Y S T E M E T
 T F I R S T C O N T A C T L K

PARTIAL ECLIPSE	FOURTH CONTACT	
SECOND CONTACT	FIRST CONTACT	THIRD CONTACT
BAILEYS BEADS	DIAMOND RING	UMBRA
SOLARPALOOZA	SOLAR CORONA	SOLAR SYSTEM
SAROS CYCLE	PROMINENCE	TOTALITY
PENUMBRA	EARTH	

