Student Activity Sheet - Data Tables

CME #1

DAY	DISTANCE (millions of kilometers)	ANGLE (degrees)	WIDTH (millions of kilometers)	WIDTH TO SCALE (MM)
0	0	90	0.5	
0.5	20	83	7	
1	40	76	13.5	
1.5	60	69	20	
2	80	62	26.5	
2.5	100	55	33	
3	120	48	39.5	
3.5	140	41	46	

CME #2

DAY	DISTANCE (millions of kilometers)	ANGLE (degrees)	WIDTH (millions of kilometers)	WIDTH TO SCALE (MM)
0	0	180	0.5	
0.5	20	173	7	
1	40	166	13.5	
1.5	60	159	20	
2	80	152	26.5	
2.5	100	145	33	
3	120	138	39.5	
3.5	140	131	46	

CME #3

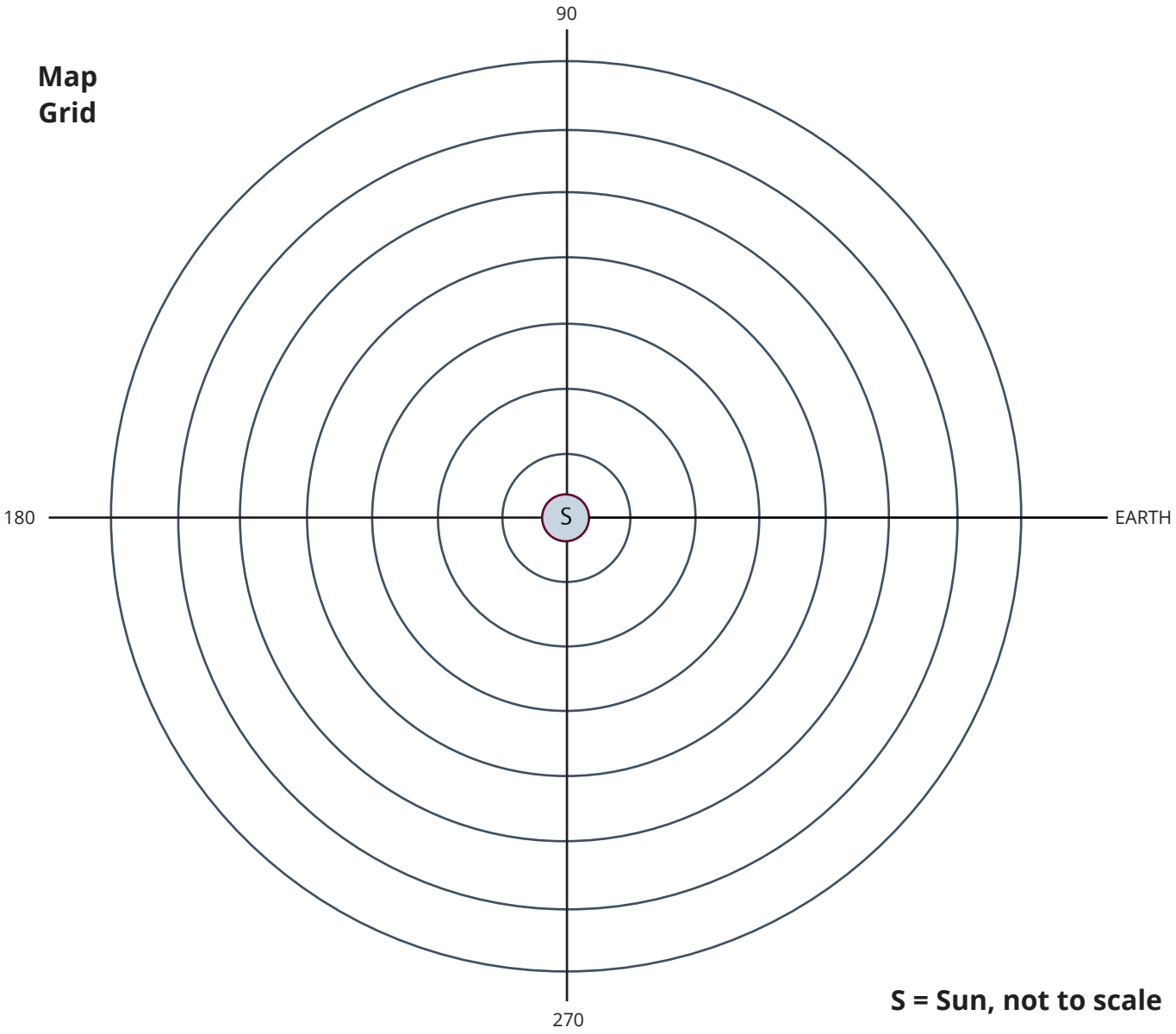
DAY	DISTANCE (millions of kilometers)	ANGLE (degrees)	WIDTH (millions of kilometers)	WIDTH TO SCALE (MM)
0	0	360	0.5	
0.5	20	353	7	
1	40	346	13.5	
1.5	60	339	20	
2	80	332	26.5	
2.5	100	325	33	
3	120	318	39.5	
3.5	140	311	46	

Student Activity Sheet - CME Plotting

CME that hits Earth:

DAY	DISTANCE (millions of kilometers)	ANGLE (degrees)	WIDTH (millions of kilometers)	WIDTH TO SCALE (MM)
0	0		0.5	
0.5	20		7	
1	40		13.5	
1.5	60		20	
2	80		26.5	
2.5	100		33	
3	120		39.5	
3.5	140		46	

Map Grid



S = Sun, not to scale

Conclusions

1. Based on your CME plot, do most Coronal Mass Ejections (CMEs) hit Earth? Why or why not?

2. The points in the tables were calculated for an assumed CME speed of 450 km/sec. How do you think CME paths or shapes might change if traveling at a speed twice as fast (900 km/sec.)? Challenge yourself by re-calculating the table entries for different speeds.

3. What are the limitations of this plotting activity? In other words, what other factors might be missing or not accounted for in this exercise. How might your results be different if you were tracking "real-life" CMEs? Explain.