

# 8<sup>th</sup> Century Traction Trebuchet

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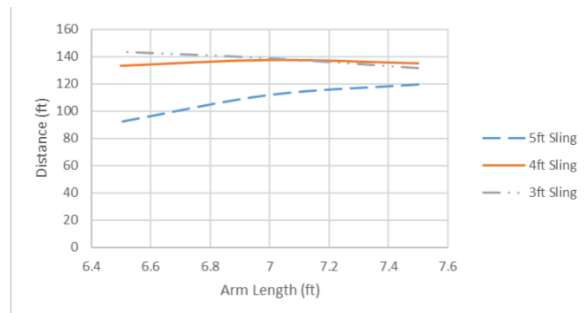
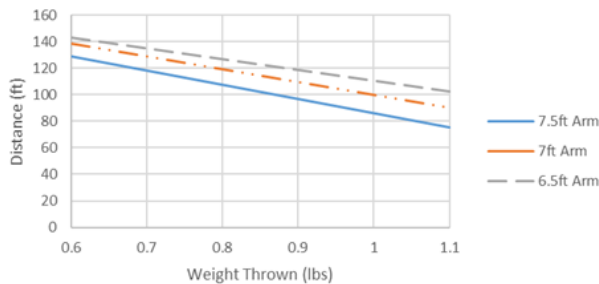
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The 13<sup>th</sup> century painting, “Cantigas de Santa Maria” shows a picture of a traction trebuchet in the 8<sup>th</sup> century. The team will design a support frame and determine the dimensions of the traction trebuchet based on dynamic equations and historical documentation of the capabilities of trebuchets of the time.

Arm Length (ft)	Sling Length (ft)		
	5	4	3
	Max Distance (ft)		
7.5	119.55	135.14	131.68
7	111.93	137.72	138.8
6.5	92.31	133.21	143.41
	Standard Deviation of Max Distance of Different Sling Lengths (ft)		
	11.47	1.85	4.83



The team evaluated different arm lengths, projectile weights, and sling lengths to determine which produce the best distance through excel and Matlab programming. The team then tested the trebuchet to determine the accuracy of the data and the efficiency of the trebuchet. The graphs below show the comparison between different arm lengths, sling length, and projectile weight and which would produce the farthest distance.



After collecting data and testing the trebuchet it was determined that a 7 foot arm, 0.6lb projectile, and a 3.5 foot sling would produce the farthest distance.