

## **Under Siege Projectile Motion**

When King Henry III rewarded your wit and brilliance with the title Lord of Technowizardry, you had no idea what tasks lie before you. In fact, your first task is somewhat daunting. Faced with storming newly finished Kenilworth Castle in 1266 to rid the scallywag de Montfort, you are quite afraid, since a failing on your part would lead to the demise of 12,000 troops and certainly the severing of your head.

King Henry has already tried diplomacy and even a bit of psychological warfare in having the Archbishop of Canterbury stand before the castle walls and excommunicate the beleaguered followers of de Montfort. Unfortunately, unimpressed by this example of psychological warfare, the defenders retaliated by dressing one of their number in clerics' garb and excommunicated your King and Archbishop.

Having tried non-violent methods of taking the castle, King Henry has called upon you to use your physics wizardry to lay siege on the castle. This being all new to you, you do some research and find that other sieges have used a variety of devices to throw all sorts of objects at, and over, castle walls. These include catapults: trebuchets, ballistas (arbalest), and mangonels (onager/scorpion).

However, there are other Lords of Technowizardry that are working on similar weapons. To gain favor with the King, and not lose your valuable head, your device must be the best, as judged by its performance in the field.

There are two tasks that your device must perform; throwing rocks at the wall and throwing things over the wall. Accuracy is also a key issue when it comes to rock throwing – it is best to know where your rock is going to land! Since your design team can not join the troops (they must remain home to develop more weapons), your rock thrower must be operated by others. With this in mind, you will need to develop a user's manual and make certain that the device is simple to operate.

Tasks:

1. Webquest for Device Research
2. Webquest for Physics Research
3. Design of Device
4. Construction of Device
5. Testing of Device
6. Documentation of Device

## Groups:

	4 Person Group	5 Person Group
Manager	a	a
Recorder/Documenter	b	b
Materiel Manager	b	c
Tracker/Checker	c	d
Communicator	d	e

## Timeline:

day	Activity	Product	
Day 1	Research	WQ I & II/history & physics	
Day 2	Research/ Design	WQ II/Rough sketch	
Day 3	Design	Final sketch, supplies list	
Day 4	Construct		
Day 5	Construct	Working model	
Day 6	Test/Reconstruct	Test Data/results	
Day 7	Test/Reconstruct	Final Model/Documentation due	

### Research:

1. Webquest for medieval weapons
2. Webquest for physics
3. Readings in text book
4. Worksheet of problems

### Design:

1. Preliminary sketch
2. Final sketch and materials list

### Test:

1. Accuracy
2. Predictability