

# Rocket Data Sheet and Launch Record

Rocket Description		Recovery Information		Altimeter Two Data	
Owner:	Ben & Josh	<b>Ejection Occurred</b>		Apogee Altitude:	1273 ft
Rocket Name:	Black Cat	• During Ascent	• At Apogee	Top Speed:	325 mph
Type:	Arcas	• After Apogee	• During Descent	Burn Time (burn):	1.48 s
Length: (inches)	56"	• Ejection Failure		Peak Acc (Pacc):	10.8 g
Diameter: (inches)	2.6"	<b>Parachute Deployment</b>		Avg Acc (Aacc):	6.8 g
Fins:	4	• Full	• Partial	Coast Apogee (C2AP):	6.0 s
Listed Mass: (g)	620 g	• Did not deploy		Apogee to Eject (AP2E):	-0.7 s
Date of Construction:	3/1/2016	<b>Parachute Descent</b>		Ejection Alt. (EALt):	1171 ft
Recommended Motors: (G only)		• Stable Descent	• Tangled lines	Descent Speed (dESc):	25 mph
G-38, G-40, G-53, G-64, G-71, G-76, G-77, G-78, G-79, G-80		• Some swaying	• Sprial descent	Flight Duration (durA):	39.3 s
Center Gravity(CG):	48.75 in	<b>Reason for Recovery Failure</b>		<b>Altimeter Data Analysis</b>	
Center Pressure(CP):	46.75 in	• Damaged Chute		Apogee? Apogee looks accurate. It was a much higher altitude than what we predicted though by nearly 200 feet. The G-53 did better than expected. Ejection? Ejection occurred just slightly before apogee which seems accurate. We could not tell exactly when ejection	
<b>Building Notes</b>		• Tight Upper Body tube			
everything has seemingly gone well...we checked and made sure all knots were tightened and that all the parts fit together		• Improper setup			
Estimated Cd:		• Chute Separated			
Predicted Altitude:		• Motor Ejected			
Prediction Notes		• Unplanned Separation		<b>Prediction vs Actual Analysis</b>	
This height is in between the data from the spreadsheet and the Rocksim data. It seems a fairly safe estimate. I will say however, that the G-53 engine seems to be more inconsistent than other engines.		• Other		In predicting our altitude, we stayed more conservative as we only predicted an altitude of 1077 ft, when in reality it traveled nearly 200 feet higher. Of course, these distances always vary a little, but ours was off by a lot. We underestimated the G-53 engine. Most of the other launches of G-53's we had looked at had not gone as high as ours did.	
Launch Information		<b>Descent Speed</b>			
Date:	5/3/2016	• Slow	• Average speed		
Time of Launch:	11:00	• Very fast	• Ballistic		
Location:	SW Corner of Driv	<b>Landing</b>			
Rocket Mass(g):	606	• Soft	• Water		
Motor:	G53-7FJ	• Tree	• Caught on Wire		
Motor Mass(g):	148.2	• Hard	• Crash		
Altimeter Mass(g):	9.9	• Landed on Building		<b>Lessons Learned</b>	
Liftoff Mass(g):	764.1	<b>Recovery</b>		Building the rocket was fairly simple, we just had to follow the directions. When we painted, we learned it was important to paint light colors first because painting over light with dark is easier than painting over dark with light. When predicting the rocket's launch, we learned there are a lot of variables that can affect how a launch will go. In filling out the rocket worksheets, we learned a lot about how much each factor affects a rocket flight. Also, packing your parachute correctly is vital to having a successful launch. If it isn't packed correctly then you run the risk of it not deploying, which ours did not. Thankfully, however, our rocket didn't suffer much damage at all and it remained in one piece.	
Wind Direction:	Winds out of the S	• Full Recovery	• Lost		
Wind Speed:	12 mph	• Not Recoverable	• Parts lost		
Igniter:	copper	Distance & Direction from pad: Northeast approximately 200 yards away			
No. of tries to ignite:	1	<b>Recovery Notes</b>			
<b>Ignition</b>		Rocket landed near teacher's parking lot and was successfully recovered without damage.		<b>Recovery Notes</b>	
• Successfull	• Blow Out	<b>Post Launch Information</b>		<b>Recovery Notes</b>	
• Caught on clips	• Motor Failure	<b>Flight Grade</b>		<b>Recovery Notes</b>	
<b>Trajectory</b>		• Excellent		<b>Recovery Notes</b>	
• Straight-Up	• Spinning	• Good		<b>Recovery Notes</b>	
• Corkscrew	• Non-vertical	• Fair		<b>Recovery Notes</b>	
• Into the wind	• Unstable	• Poor		<b>Recovery Notes</b>	
<b>Launch Notes</b>		• Rocket cannot launch again		<b>Recovery Notes</b>	
The Launch itself went well; we were able to ignite on the first try. The only problem we had was when our parachute popped but did not deploy. As a result our rocket came down very fast compared to the others.		<b>Describe any damage to the rocket:</b>		<b>Rocket Project Suggestions</b>	
		Aside from some scratches in the paint, the rocket was recovered in one piece without damage.		It was a fun project that ran smoothly. I think the many years of doing the rally have gotten it to a good point. We personally don't have suggestions and thought it was awesome.	