

20 October 2020 – Building a Stomp Rocket Launcher

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00:00:12.179 --> 00:00:20.970

Torey Earle: Hi everybody and welcome to the Kentucky 4-H virtual experience. Today we're going to talk about SET or Science, Engineering and Technology.

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00:00:21.930 --> 00:00:32.550

Torey Earle: My name is Torey Earle and I am an Extension Specialist for 4-H Youth Development with the University of Kentucky College of Agriculture, Food and Environment Cooperative Extension Service.

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00:00:40.080 --> 00:00:55.080

Torey Earle: The activity we're going to do today is part one of two focused on the 4-H Aerospace project. You're going to get to build a stop rocket launcher and this design is adapted from the

4

00:00:56.370 --> 00:01:00.480

Torey Earle: 4-H National Youth Science Day experiment called Rockets to the Rescue.

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00:01:01.590 --> 00:01:10.170

Torey Earle: Now in this design, you can have a chance to modify a little bit to make it suit your needs, or try to make it a little bit better.

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00:01:11.160 --> 00:01:21.870

Torey Earle: Keeping that in mind, you may also want to enlist your parents help in cutting some of the things and assembling some of the things we're going to see as we start putting it together.

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00:01:23.160 --> 00:01:39.150

Torey Earle: This activity should probably be done outside, that is the launching part and you can build it inside with your parents help, but keep in mind that you do want to launch your rocket outside

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00:01:40.680 --> 00:01:44.850

Torey Earle: The supplies you'll need to gather to start building your stop rocket launcher.

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00:01:46.170 --> 00:02:00.810

Torey Earle: Are here on the table, and I'll go through and explain some things about each one of them in total, you will need a four-foot piece of Schedule 40, ½" PVC pipe.

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00:02:01.890 --> 00:02:12.120

Torey Earle: Pipe you'll need to cut it into 3 - twelve-inch sections, 2 - five inch sections and 1 - two inch section.

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00:02:13.590 --> 00:02:18.510

Torey Earle: In addition to that, you'll need two ½" PVC tees.

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00:02:19.530 --> 00:02:28.260

Torey Earle: You'll need two ½" PVC in caps and you'll need one ½" PVC coupler

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00:02:29.490 --> 00:02:31.710

Torey Earle: In addition to that, you'll need a two-liter bottle.

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00:02:33.750 --> 00:02:40.230

Torey Earle: A tape measure in order to cut the longer or mark and cut a longer piece of PVC pipe.

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00:02:41.610 --> 00:02:56.310

Torey Earle: And I recommend having a roll of electrical tape as well. The electrical tape can be used to help seal your launcher together as we are not going to glue any of the parts, but we're just going to see them if you need to.

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00:02:57.450 --> 00:02:58.830

Torey Earle: Now, and assembling

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00:03:01.980 --> 00:03:22.950

Torey Earle: Our stomp rocket launcher. The first step we're going to do is take one of the 12-inch pieces of ½" PVC and we're going to insert it into the mouth of our two-liter bottle. This is going to act as the propulsion system for our rocket. It's what's going to make it go

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00:03:25.320 --> 00:03:30.810

Torey Earle: And to keep it sealed up well, what I recommend is taking your electrical tape.

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00:03:32.130 --> 00:03:33.570

Torey Earle: wrapping it around.

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00:03:35.580 --> 00:03:36.690

Torey Earle: The mouth of the bottle.

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00:03:38.100 --> 00:03:39.300

Torey Earle: And on to

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00:03:40.590 --> 00:03:42.240

Torey Earle: The piece of PVC pipe.

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00:03:44.310 --> 00:03:56.880

Torey Earle: So it forms a seal like that the pipe will not come out. Now I do recommend the electrical tape also because it's easy to remove. Because what you're going to do to launch your rocket

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00:03:58.080 --> 00:04:07.500

Torey Earle: It's literally a stop rocket, you are going to stop on this two-liter bottle. When you do that will force air out through here and into the rest of our launcher.

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00:04:11.430 --> 00:04:13.200

Torey Earle: To complete the rest of our launcher.

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00:04:14.400 --> 00:04:17.880

Torey Earle: We're going to take one PVC tee

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00:04:20.160 --> 00:04:25.290

Torey Earle: Put one of the five-inch pieces of PVC that you cut into one end of it.

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00:04:26.580 --> 00:04:32.880

Torey Earle: But the other five-inch piece of the PVC that you put into the other end of that tee. So it looks like this.

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00:04:34.860 --> 00:04:43.110

Torey Earle: We don't want air to escape. So we're going to close up the ends with a two PVC in caps.

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00:04:45.030 --> 00:04:45.600

Torey Earle: Like that.

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00:04:48.450 --> 00:04:54.450

Torey Earle: Then we're going to set this to the side and we're going to take our other PVC tee.

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00:04:56.070 --> 00:05:02.190

Torey Earle: And we're going to put the two-inch piece of PVC pipe that you cut into one end of it.

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00:05:03.870 --> 00:05:08.580

Torey Earle: And we're going to insert that into the tee with the to five-inch pieces on it.

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00:05:11.040 --> 00:05:11.700

Torey Earle: Next,

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00:05:13.170 --> 00:05:20.760

Torey Earle: We will take one of our 12-inch piece of PVC and inserted into the other end of that tee

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00:05:22.290 --> 00:05:25.410

Torey Earle: Then we'll put our coupler onto the end of that.

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00:05:27.900 --> 00:05:29.700

Torey Earle: This is the base of our launcher.

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00:05:30.870 --> 00:05:34.680

Torey Earle: Now all we have to do is attach our propulsion system.

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00:05:36.930 --> 00:05:44.670

Torey Earle: Which we made all ago with our two-liter bottle. So, all this just slips together.

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00:05:46.170 --> 00:05:54.840

Torey Earle: Chances are, you will not have to take any of this because stomping on this will be quick enough that you won't have to worry about air leaking out

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00:05:56.760 --> 00:06:00.930

Torey Earle: What about this last piece 12-inch piece of PVC pipe.

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00:06:02.190 --> 00:06:03.630

Torey Earle: We're going to insert it

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00:06:04.920 --> 00:06:10.680

Torey Earle: Into the top of that tee by that and this way.

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00:06:12.720 --> 00:06:14.130

Torey Earle: You can move it back and forth.

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00:06:15.360 --> 00:06:30.600

Torey Earle: And this serves as our launch tube for the high-powered paper rockets that we will make In segment two of this 4-H Aerospace Kentucky Virtual Experience.

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00:06:33.330 --> 00:06:43.170

Torey Earle: You have now completed the assembly of your stomp rocket launcher and we're ready to move to part two.

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00:06:44.820 --> 00:06:49.770

Torey Earle: Which will be our next segment on building a high-powered paper rocket

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00:06:51.030 --> 00:07:02.880

Torey Earle: In part two of this Kentucky 4-H Virtual Experience. We're going to put together our high-powered paper rocket and you will need one thing from your launcher. In order to do that.

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00:07:04.590 --> 00:07:10.110

Torey Earle: You're actually going to need one of the pieces 12-inch pieces of PVC pipe from your

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00:07:11.160 --> 00:07:16.260

Torey Earle: Launcher that you just built in order to construct your high-powered paper rocket

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00:07:17.520 --> 00:07:29.370

Torey Earle: That will be in our next segment, so stay tuned for that one. Thank you for joining me today for the Kentucky 4-H virtual experience focused on Science, Engineering and Technology.

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00:07:30.240 --> 00:07:40.890

Torey Earle: For more information about any of the Kentucky 4-H projects or programs. Please check out your local University of Kentucky Cooperative Extension office.