

1

00:00:00,000 --> 00:00:03,000

It may not look like it, but we're professionals.

2

00:00:03,000 --> 00:00:05,000

Do us a favor.

3

00:00:05,000 --> 00:00:07,000

Don't try this at home! Whoa!

4

00:00:10,000 --> 00:00:13,000

On this high-flag episode of Mythbusters...

5

00:00:16,000 --> 00:00:19,000

One word for this. What?

6

00:00:19,000 --> 00:00:22,000

The whole team tackles one massive myth.

7

00:00:22,000 --> 00:00:25,000

Everything in your mind is saying, don't do it.

8

00:00:25,000 --> 00:00:28,000

Testing the tale of a spectacular mid-air mishap...

9

00:00:30,000 --> 00:00:33,000

pushes everyone to the limit.

10

00:00:33,000 --> 00:00:36,000

This whole story is just totally absurd.

11

00:00:36,000 --> 00:00:38,000

They'll need luck...

12

00:00:38,000 --> 00:00:40,000

for science...

13

00:00:40,000 --> 00:00:42,000

courage...

14

00:00:42,000 --> 00:00:44,000

This is the best day to ever!

15

00:00:44,000 --> 00:00:46,000

and some serious science...

16

00:00:46,000 --> 00:00:48,000

That's perfect.

17

00:00:48,000 --> 00:00:51,000

to tackle the myth of the man who fell to earth...

18

00:00:51,000 --> 00:00:53,000

Grant, take it away.

19

00:00:53,000 --> 00:00:55,000

struck a seesaw...

20

00:00:55,000 --> 00:00:57,000

and launched a legend.

21

00:01:00,000 --> 00:01:03,000

Who are the Mythbusters?

22

00:01:03,000 --> 00:01:05,000

Adam Savage

23

00:01:05,000 --> 00:01:07,000

True and fancy...

24

00:01:07,000 --> 00:01:09,000

and Jamie Heidemann

25

00:01:09,000 --> 00:01:11,000

You just need a little extra lubrication.

26

00:01:11,000 --> 00:01:15,000

Between them more than 30 years of special effects experience...

27

00:01:15,000 --> 00:01:17,000

I'll take you to Jamie after a while.

28

00:01:17,000 --> 00:01:19,000

Joining them...

29

00:01:19,000 --> 00:01:21,000

Tori Balechi

30

00:01:21,000 --> 00:01:23,000

Grant Imahara

31

00:01:23,000 --> 00:01:25,000

Let's go! Come on! I'm gonna be rich!

32

00:01:25,000 --> 00:01:27,000

and Carrie Byron

33

00:01:28,000 --> 00:01:30,000

That was a rush!

34

00:01:30,000 --> 00:01:32,000

They don't just tell the myths...

35

00:01:32,000 --> 00:01:35,000

they put them to the test.

36

00:01:50,000 --> 00:01:52,000

Little old for dolls, aren't we?

37

00:01:52,000 --> 00:01:54,000

This is not a doll.

38

00:01:54,000 --> 00:01:56,000

This is a demonstration model for the next story we gotta do.

39

00:01:56,000 --> 00:01:58,000

Which comes right from the fansite.

40

00:01:58,000 --> 00:02:01,000

Okay, tell me more.

41

00:02:01,000 --> 00:02:03,000

I'm a skydiver, right?

42

00:02:03,000 --> 00:02:05,000

and I fall in through the air...

43

00:02:05,000 --> 00:02:08,000

and my parachute has utterly failed.

44

00:02:08,000 --> 00:02:10,000

Looking desperately down at the ground for something...

45

00:02:10,000 --> 00:02:12,000

to break my fore-eye spy...

46

00:02:12,000 --> 00:02:14,000

our children's playground...

47

00:02:14,000 --> 00:02:16,000

and a seesaw...

48

00:02:16,000 --> 00:02:18,000

with a little girl at the other end.

49

00:02:18,000 --> 00:02:20,000

Not worrying about her, I aim for this end of the seesaw...

50

00:02:20,000 --> 00:02:22,000

go straight up right at the last second.

51

00:02:22,000 --> 00:02:24,000

I hit the seesaw...

52

00:02:24,000 --> 00:02:26,000

and catapult that poor little girl...

53

00:02:26,000 --> 00:02:28,000

up to the top of a seven-story building...

54

00:02:28,000 --> 00:02:32,000

where amazingly she lands safely.

55

00:02:32,000 --> 00:02:35,000

Wow. Sounds almost too good to be true.

56

00:02:35,000 --> 00:02:37,000

I thought the same thing.

57

00:02:37,000 --> 00:02:39,000

Improbable, yes.

58

00:02:39,000 --> 00:02:40,000

But impossible?

59

00:02:40,000 --> 00:02:43,000

Harachutes do sometimes fail to open.

60

00:02:43,000 --> 00:02:45,000

If he's jumping over a town or city...

61

00:02:45,000 --> 00:02:48,000

it's feasible he could drop over a playground.

62

00:02:48,000 --> 00:02:51,000

Common sense and basic physics...

63

00:02:51,000 --> 00:02:53,000

tells us that if he hits the seesaw...

64

00:02:53,000 --> 00:02:55,000

that lonely little girl is going...

65

00:02:55,000 --> 00:02:57,000

somewhere.

66

00:02:57,000 --> 00:02:59,000

But seven stories high...

67

00:02:59,000 --> 00:03:00,000

and she lives?

68

00:03:00,000 --> 00:03:02,000

Well, don't knock it till you've tried it.

69

00:03:02,000 --> 00:03:04,000

Jamie, I don't know about you...

70

00:03:04,000 --> 00:03:06,000

but I feel like we could just go for this one.

71

00:03:06,000 --> 00:03:08,000

Sure, we can do it right outside.

72

00:03:08,000 --> 00:03:10,000

All we need is a regulation seesaw.

73

00:03:10,000 --> 00:03:11,000

And a correctly weighted little girl.

74

00:03:11,000 --> 00:03:12,000

And a skydiver.

75

00:03:12,000 --> 00:03:14,000

Terrific. Let's do it.

76

00:03:14,000 --> 00:03:17,000

When I was a kid, seesaws were long wooden planks.

77

00:03:17,000 --> 00:03:19,000

And that's what we started looking for...

78

00:03:19,000 --> 00:03:21,000

but it turns out no one makes those anymore.

79

00:03:21,000 --> 00:03:23,000

Seesaws are made out of steel...

80

00:03:23,000 --> 00:03:26,000

and there are as many designs as there seem to be playgrounds.

81

00:03:26,000 --> 00:03:29,000

So we have chosen a mid-range, middle-of-the-road...

82

00:03:29,000 --> 00:03:31,000

simple steel seesaw.

83

00:03:31,000 --> 00:03:33,000

And that's what I'm about to build.

84

00:03:33,000 --> 00:03:37,000

For Adam, building a two-kid play thing is a one-man job.

85

00:03:37,000 --> 00:03:40,000

Inside 30 minutes, he welds a central pivot...

86

00:03:40,000 --> 00:03:43,000

from two-inch pipes at a couple of elbow joints.

87

00:03:44,000 --> 00:03:47,000

The bench itself is just a 10-foot slab of hollow steel.

88

00:03:47,000 --> 00:03:50,000

Now I've just got to attach one to the other.

89

00:03:52,000 --> 00:03:54,000

But here's the problem.

90

00:03:54,000 --> 00:03:58,000

To hit terminal velocity, the unlucky skydiver would have to fall...

91

00:03:58,000 --> 00:04:01,000

from at least 600 feet.

92

00:04:02,000 --> 00:04:05,000

So to get around that problem, at least for this first test...

93

00:04:05,000 --> 00:04:08,000

what I'm doing is trading altitude for weight.

94

00:04:08,000 --> 00:04:11,000

When I fill these barrels with water, they'll be much heavier than a man...

95

00:04:11,000 --> 00:04:14,000

so we can then drop them from a much lower height...

96

00:04:14,000 --> 00:04:16,000

and get a more or less guaranteed hit.

97

00:04:16,000 --> 00:04:19,000

And the impact for us should be exactly the same.

98

00:04:20,000 --> 00:04:23,000

That's the theory. And they can't wait to put it into practice.

99

00:04:23,000 --> 00:04:26,000

So they've picked a drop zone that's real close to home...

100

00:04:26,000 --> 00:04:29,000

the parking lot behind M5.

101

00:04:29,000 --> 00:04:31,000

And that's just getting welded down at the plate?

102

00:04:31,000 --> 00:04:32,000

Yeah.

103

00:04:32,000 --> 00:04:33,000

Okay.

104

00:04:34,000 --> 00:04:36,000

It's a stunt that will scare the neighbors.

105

00:04:36,000 --> 00:04:38,000

Given the massive forces at play...

106

00:04:38,000 --> 00:04:43,000

only a lunatic would choose this moment to trial a new technology.

107

00:04:43,000 --> 00:04:46,000

This quick release, which holds up to 10,000 pounds...

108

00:04:46,000 --> 00:04:49,000

is going to be the mechanism by which we drop our weight on the seesaw.

109

00:04:49,000 --> 00:04:53,000

And normally we'd use it in a pull-on-a-wire mode...

110

00:04:53,000 --> 00:04:55,000

now it's got an automatic cylinder release...

111

00:04:55,000 --> 00:04:58,000

which, when we connect a battery from our viewing site...

112

00:04:58,000 --> 00:05:01,000

and I say, connect the battery!

113

00:05:02,000 --> 00:05:05,000

It's going to drop the weight right on our seesaw.

114

00:05:05,000 --> 00:05:08,000

Now for the checklist. They've got the crane...

115

00:05:08,000 --> 00:05:10,000

they've got the weight...

116

00:05:10,000 --> 00:05:14,000

and Adam's built a teeter-totter that both sees and saws.

117

00:05:14,000 --> 00:05:17,000

Okay, so it is in fact a seesaw.

118

00:05:18,000 --> 00:05:20,000

It is in fact a seesaw.

119

00:05:20,000 --> 00:05:22,000

I want one of these in my office.

120

00:05:23,000 --> 00:05:25,000

All we need now is a full-scale victim...

121

00:05:25,000 --> 00:05:28,000

and this one is almost too cute to catapult.

122

00:05:28,000 --> 00:05:30,000

Almost.

123

00:05:30,000 --> 00:05:32,000

So shall we name her Ariel?

124

00:05:32,000 --> 00:05:34,000

Nice call, Jamie.

125

00:05:34,000 --> 00:05:37,000

But it's best not to get too attached to your missiles.

126

00:05:37,000 --> 00:05:41,000

Our little girl over here is supposed to be an average six-year-old...

127

00:05:41,000 --> 00:05:43,000

and so we've made her weigh 50 pounds.

128

00:05:43,000 --> 00:05:46,000

Now, if the physics in this story are correct...

129

00:05:46,000 --> 00:05:49,000

the water barrels, when they hit this end of the seesaw...

130

00:05:49,000 --> 00:05:54,000

are going to launch her straight up about 70 feet or seven stories.

131

00:05:55,000 --> 00:05:59,000

I've calculated, filling the barrels with 1,150 pounds of water...

132

00:05:59,000 --> 00:06:01,000

and then dropping them from 75 feet...

133

00:06:01,000 --> 00:06:07,000

should exactly match the Skydiver's freefall impact force of 85,000 foot-pounds.

134

00:06:08,000 --> 00:06:10,000

So I'm going to pull the safety, but you know what?

135

00:06:10,000 --> 00:06:13,000

I don't want to be anywhere on this lot when we drop this thing.

136

00:06:13,000 --> 00:06:15,000

I was thinking we should be up over there.

137

00:06:15,000 --> 00:06:17,000

I was thinking the same thing.

138

00:06:18,000 --> 00:06:22,000

So with the elements in place, Adam and Janie head for the high ground.

139

00:06:24,000 --> 00:06:28,000

Right now, I describe the situation as mayhem in potential.

140

00:06:28,000 --> 00:06:30,000

Soon we'll have actual mayhem.

141

00:06:31,000 --> 00:06:35,000

And that actual mayhem is now just moments away.

142

00:06:35,000 --> 00:06:36,000

All right, here we go.

143

00:06:36,000 --> 00:06:38,000

Skydiver's seesaw in...

144

00:06:39,000 --> 00:06:41,000

3, 2, 1...

145

00:06:54,000 --> 00:06:56,000

Oh, darn, the seesaw broke.

146

00:06:56,000 --> 00:06:58,000

It just kind of like folded in half.

147

00:06:59,000 --> 00:07:02,000

The bench is buckled, but the full extent of this disaster...

148

00:07:02,000 --> 00:07:05,000

is best assessed from ground level.

149

00:07:06,000 --> 00:07:09,000

It not only crushed it right at the pivot point...

150

00:07:09,000 --> 00:07:12,000

but it also crushed it right at the end here.

151

00:07:12,000 --> 00:07:15,000

So, you know, that's a heck of a lot of force.

152

00:07:15,000 --> 00:07:17,000

A lot more than we considered.

153

00:07:17,000 --> 00:07:18,000

We're going to have to rethink this thing.

154

00:07:18,000 --> 00:07:22,000

Yeah, even if this was a solid bar of steel, I don't think it would have taken it.

155

00:07:22,000 --> 00:07:23,000

Yeah.

156

00:07:26,000 --> 00:07:29,000

I swear, this is the best part of the job, reviewing the high-speed footage.

157

00:07:29,000 --> 00:07:32,000

I want to see if she even comes off the ground.

158

00:07:32,000 --> 00:07:35,000

I think she does. I saw her flip a couple of times.

159

00:07:35,000 --> 00:07:38,000

Little Ariel launched it exactly 23 miles per hour...

160

00:07:38,000 --> 00:07:41,000

and then flew 20 feet high.

161

00:07:41,000 --> 00:07:42,000

What was that?

162

00:07:42,000 --> 00:07:43,000

Come back.

163

00:07:43,000 --> 00:07:45,000

Come back. I'm gonna tear this.

164

00:07:45,000 --> 00:07:49,000

That's barely two stories, way short of the mythical seven.

165

00:07:54,000 --> 00:07:58,000

But with all the substitutions, this test was always more likely to be...

166

00:07:58,000 --> 00:08:01,000

an indication than an indictment.

167

00:08:02,000 --> 00:08:05,000

I can't help but feel this nagging feeling in my head...

168

00:08:05,000 --> 00:08:09,000

that there's a big difference between a thousand pounds of water in steel cans...

169

00:08:09,000 --> 00:08:16,000

and a soft, hundred-and-some-odd pound skydiver falling at terminal velocity.

170

00:08:16,000 --> 00:08:19,000

Now, we need to figure out, if we're going to make this work,

171

00:08:19,000 --> 00:08:24,000

how to get all of that energy over there to come over here to the little girl...

172

00:08:24,000 --> 00:08:28,000

without wasting itself on breaking things in the process.

173

00:08:29,000 --> 00:08:35,000

In short, the fact that a home-built seesaw cracked under the weight of three sharp-edged barrels...

174

00:08:35,000 --> 00:08:38,000

doesn't prove or disprove the myth.

175

00:08:39,000 --> 00:08:44,000

And with the help of Tori, Grant and Carrie, things will get better.

176

00:08:44,000 --> 00:08:48,000

Still to come, Jamie goes high-tech on the high jump.

177

00:08:49,000 --> 00:08:50,000

That's perfect.

178

00:08:50,000 --> 00:08:51,000

It's awesome.

179

00:08:51,000 --> 00:08:56,000

But next, Grant and Tori risk their lives to legitimize the legend.

180

00:08:59,000 --> 00:09:04,000

The Common Playground Seesaw is about as safe or as dangerous as you want to make it.

181

00:09:07,000 --> 00:09:11,000

But could it really toss a girl on top of a seven-story building?

182

00:09:11,000 --> 00:09:14,000

Well, it flipped an elephant, right?

183

00:09:17,000 --> 00:09:19,000

Dude, there is a lot to do in this myth.

184

00:09:19,000 --> 00:09:21,000

Yeah, there is, but I'm ahead of you.

185

00:09:21,000 --> 00:09:23,000

I'm not going to let you down.

186

00:09:23,000 --> 00:09:25,000

Dude, there is a lot to do in this myth.

187

00:09:25,000 --> 00:09:28,000

Yeah, there is, but I'm ahead of you.

188

00:09:28,000 --> 00:09:31,000

Reinforcements should be arriving now.

189

00:09:31,000 --> 00:09:32,000

What do you need?

190

00:09:32,000 --> 00:09:35,000

Okay, you know the seesaw myth that we're working on?

191

00:09:35,000 --> 00:09:36,000

Yeah.

192

00:09:36,000 --> 00:09:41,000

We need a way first to calculate the terminal velocity of our skydivers.

193

00:09:41,000 --> 00:09:44,000

Specifically in the myth it's stated that he is wearing a camera suit.

194

00:09:44,000 --> 00:09:46,000

That's a specific kind of skydiving suit.

195

00:09:46,000 --> 00:09:47,000

We need to know how fast he's going.

196

00:09:47,000 --> 00:09:48,000

Okay, cool.

197

00:09:48,000 --> 00:09:49,000

What else?

198

00:09:49,000 --> 00:09:54,000

Well, we need to have a delivery system for the skydiver to put him on target at terminal velocity.

199

00:09:54,000 --> 00:09:55,000

A giant crane?

200

00:09:55,000 --> 00:09:57,000

We'll figure it out.

201

00:09:57,000 --> 00:09:59,000

All right, we'll see you later.

202

00:10:02,000 --> 00:10:04,000

Great. Always have to be the hero.

203

00:10:05,000 --> 00:10:10,000

So on the very next misty morning, the team arrives at skydance skydiving

204

00:10:10,000 --> 00:10:14,000

to see just how slowly a man can fall in a camera suit.

205

00:10:15,000 --> 00:10:20,000

Grants are designated diver and Nick Armstrong's here to point him in the right direction.

206

00:10:20,000 --> 00:10:21,000

Down.

207

00:10:21,000 --> 00:10:22,000

So this is the camera suit?

208

00:10:22,000 --> 00:10:23,000

Yes, it is.

209

00:10:23,000 --> 00:10:25,000

Can you tell us a little bit about it?

210

00:10:25,000 --> 00:10:26,000

Sure.

211

00:10:26,000 --> 00:10:32,000

It's different from most of our skydiving suits in that it's built specifically for videographers.

212

00:10:32,000 --> 00:10:36,000

The key design difference is a wing-like flap from the elbows to the hips

213

00:10:36,000 --> 00:10:39,000

that should give added air resistance.

214

00:10:39,000 --> 00:10:41,000

So you can get a lot slower with one of these suits on?

215

00:10:41,000 --> 00:10:42,000

Absolutely.

216

00:10:43,000 --> 00:10:47,000

Grants not licensed to go solo, so he's doing a tandem jump.

217

00:10:49,000 --> 00:10:53,000

Nick's wearing the camera suit and a fancy alti tracker wrist computer

218

00:10:53,000 --> 00:10:56,000

to log the details of his descent.

219

00:10:56,000 --> 00:10:58,000

He and Grant are both going to go up.

220

00:10:58,000 --> 00:11:00,000

They're both going to jump at the same time.

221

00:11:00,000 --> 00:11:04,000

And when Grant gives Nick the signal, he's going to spread out as far as possible

222

00:11:04,000 --> 00:11:06,000

to see if he can slow down his descent.

223

00:11:06,000 --> 00:11:10,000

And when he gets off the plane, I'm going to take that, download into computer

224

00:11:10,000 --> 00:11:13,000

and we'll have a graph that will tell us all the speeds.

225

00:11:13,000 --> 00:11:15,000

Now after Nick is done with the spread eagle position,

226

00:11:15,000 --> 00:11:17,000

then he's going to try flapping his wings.

227

00:11:17,000 --> 00:11:20,000

Is flapping your wings going to make you slow down more?

228

00:11:20,000 --> 00:11:21,000

I don't know.

229

00:11:21,000 --> 00:11:25,000

Maybe it'll take your mind off the fact that you're falling without a parachute.

230

00:11:30,000 --> 00:11:35,000

For a veteran skydiver, flapping your wings sounds a touch undignified,

231

00:11:35,000 --> 00:11:37,000

but it's worth a shot.

232

00:11:38,000 --> 00:11:42,000

When the plane hits two miles high, the passengers push off.

233

00:11:52,000 --> 00:11:59,000

Once the guys get situated, Nick initiates part one of the test, spreading those tiny wings.

234

00:11:59,000 --> 00:12:01,000

The result is just as predicted.

235

00:12:01,000 --> 00:12:05,000

Relative to Grant, he does seem to reduce his speed.

236

00:12:06,000 --> 00:12:12,000

A few seconds later, Nick tries flapping like a giant pelican to see if that slows him down.

237

00:12:17,000 --> 00:12:20,000

Team Imahara makes a perfect four point landing.

238

00:12:22,000 --> 00:12:23,000

Nicely done.

239

00:12:23,000 --> 00:12:25,000

You made it!

240

00:12:25,000 --> 00:12:30,000

And our eye in the sky has a fair idea of what worked and what didn't.

241

00:12:30,000 --> 00:12:34,000

So he opened up his arms and he was gone just like that.

242

00:12:34,000 --> 00:12:38,000

So when he reset, he tried to start flapping. How'd that go?

243

00:12:38,000 --> 00:12:41,000

Yeah, I saw him come back down and they started flapping his arms

244

00:12:41,000 --> 00:12:43,000

and he was just falling at the same speed I was.

245

00:12:44,000 --> 00:12:48,000

To confirm Grant's account, Carrie downloads the data from Nick's wrist computer,

246

00:12:48,000 --> 00:12:51,000

and the graph couldn't be more clear.

247

00:12:51,000 --> 00:12:57,000

When Nick opened up his camera suit and went completely spread out so he had the most surface area,

248

00:12:57,000 --> 00:13:00,000

he slowed down to about 114 miles an hour.

249

00:13:00,000 --> 00:13:05,000

But over here, this is where he started flapping his wings like a cartoon to see if he could slow down.

250

00:13:05,000 --> 00:13:09,000

You know, goofy style. That didn't seem to work too well.

251

00:13:09,000 --> 00:13:13,000

So 114 miles per hour looks like the speed to aim for.

252

00:13:13,000 --> 00:13:20,000

But Grant remembered a crucial part of the story they've overlooked, so Tori needs to suit up.

253

00:13:21,000 --> 00:13:26,000

We need to send Nick up again, because amidst specifically said that the skydiver tried to land on his head.

254

00:13:27,000 --> 00:13:34,000

In other words, he fell spread-eagled like the last test, but then at the last second tried to land the jump.

255

00:13:34,000 --> 00:13:38,000

And I'm guessing that even if the guy only went perpendicular for a second or two,

256

00:13:38,000 --> 00:13:41,000

it could significantly change the speed at which he hit the seesaw.

257

00:13:46,000 --> 00:13:49,000

They all assume the standard frog position.

258

00:13:49,000 --> 00:13:55,000

It takes 10 full seconds at at least 600 feet of free fall to reach terminal velocity.

259

00:13:57,000 --> 00:14:00,000

Then Nick tries going vertical.

260

00:14:03,000 --> 00:14:08,000

It's harder than it looks. A few seconds later, he tries again.

261

00:14:09,000 --> 00:14:15,000

Hopefully Nick stayed upright long enough for the computer to register any change in velocity.

262

00:14:15,000 --> 00:14:18,000

Then at the last second, he tries to land on his feet.

263

00:14:18,000 --> 00:14:22,000

He kind of closes up into a smaller position, and his speed shoots up a little bit.

264

00:14:22,000 --> 00:14:26,000

But since it's only one second, he gets to about 122 miles an hour.

265

00:14:26,000 --> 00:14:31,000

Now that is the important number right there, because that's going to be the final speed at which he hits the seesaw.

266

00:14:34,000 --> 00:14:38,000

After the break, the super seesaw takes shape.

267

00:14:39,000 --> 00:14:44,000

Three, two, while Adam discovers a small-scale miracle.

268

00:14:44,000 --> 00:14:47,000

Wow! That tells me there might really be something to this.

269

00:14:48,000 --> 00:14:54,000

For just the second time in Mythbusters history, the whole team has pulled together to test one fantastic fable.

270

00:14:54,000 --> 00:14:59,000

The skydiver who hit a seesaw and sent a little girl seven stories high.

271

00:14:59,000 --> 00:15:04,000

If that's not too hard to swallow, the myth says she survived the adventure.

272

00:15:04,000 --> 00:15:08,000

But that car park catastrophe still haunts Adam.

273

00:15:08,000 --> 00:15:15,000

It's not looking good for this myth, man. I mean, if our regulation seesaw made of steel, can't come close to handling the forces,

274

00:15:15,000 --> 00:15:21,000

can't transfer the energy from the skydiver to the little girl, then this thing's busted before we've seen anything fly.

275

00:15:21,000 --> 00:15:27,000

Yeah, the forces involved are really enormous, but there's nothing to stop us from improving on that,

276

00:15:27,000 --> 00:15:31,000

just to make sure that we're not going to be in the same position.

277

00:15:31,000 --> 00:15:36,000

And Jamie has some grand plans. It may not be the best seesaw ever.

278

00:15:36,000 --> 00:15:40,000

Who knows what NASA has locked away, but he's aiming high.

279

00:15:40,000 --> 00:15:44,000

We want to make sure that we're not going to be in the same position.

280

00:15:44,000 --> 00:15:49,000

But we're going to have to make sure that we're not going to be in the same position.

281

00:15:49,000 --> 00:15:53,000

And we're going to be in the same position.

282

00:15:53,000 --> 00:15:56,000

And we're not going to be in the same position.

283

00:15:56,000 --> 00:16:00,000

Who knows what NASA has locked away, but he's aiming high.

284

00:16:00,000 --> 00:16:08,000

We want to exactly be done with delivering the load from the incoming projectile right before it hits the ground.

285

00:16:08,000 --> 00:16:14,000

But why scribble when you've got the software to design and test the concept?

286

00:16:14,000 --> 00:16:21,000

We're using SolidWorks software here, which I've had for a while, but I've never really been able to use it to its full potential.

287

00:16:21,000 --> 00:16:27,000

The beauty of something like this is that it really allows me to push the limits of the material and the design.

288

00:16:27,000 --> 00:16:33,000

Because it doesn't matter if the design breaks on the computer, I'll just pull up another one, change it a little bit and try again.

289

00:16:33,000 --> 00:16:39,000

And that way by the time I get around to building the real thing, I already know it's going to work.

290

00:16:39,000 --> 00:16:44,000

Jamie's decided to build his bench in two parts, both hinged on a pivot.

291

00:16:44,000 --> 00:16:47,000

Where's that put us as far as our yield strength?

292

00:16:47,000 --> 00:16:55,000

The big picture here is to maximize the energy transfer from the falling man to the girl and to keep the seesaw intact.

293

00:16:55,000 --> 00:17:01,000

So I started thinking about what do I know that is really massively strong and lightweight.

294

00:17:01,000 --> 00:17:05,000

And so what I came up with was a construction crane like this toy here.

295

00:17:05,000 --> 00:17:11,000

Instead of relying on something to not bend, they put a cable across the top of it.

296

00:17:11,000 --> 00:17:15,000

So the load that's being experienced is on that cable.

297

00:17:15,000 --> 00:17:21,000

And instead of a bending force on this sparse structure here, you've got a compressive load.

298

00:17:21,000 --> 00:17:24,000

It's hard to see here, but the load is this way.

299

00:17:24,000 --> 00:17:31,000

And so you end up with something that's able to build whole buildings and yet there's really not a whole lot there.

300

00:17:31,000 --> 00:17:39,000

While Jamie thinks big, Adam goes small scale to get some idea of what to look for when they try this again at full force.

301

00:17:41,000 --> 00:17:44,000

Building a toy teeter totter is easy peasy.

302

00:17:44,000 --> 00:17:46,000

I don't know, kind of wholesome, you know.

303

00:17:49,000 --> 00:17:52,000

This is our little girl, as creepy as she looks.

304

00:17:52,000 --> 00:17:55,000

And this is our skydiver as much as it looks like a round ball.

305

00:17:55,000 --> 00:18:02,000

They are the equivalent weight relationship of our real skydiver and our real girl, about three and a half to one.

306

00:18:02,000 --> 00:18:08,000

What I want to investigate with this is what happens to her when the skydiver hits the seesaw.

307

00:18:08,000 --> 00:18:14,000

The seesaw doesn't break. Where does she go? What is her trajectory and what can I predict about her trajectory?

308

00:18:15,000 --> 00:18:20,000

So Adam starts test number one from ten feet up on the scissor lift.

309

00:18:20,000 --> 00:18:24,000

A plum line indicates the perfect drop point and it's bombs away.

310

00:18:24,000 --> 00:18:27,000

Three, two, one.

311

00:18:27,000 --> 00:18:40,000

Oh God, that's one of the best high speed shots ever.

312

00:18:40,000 --> 00:18:46,000

I dropped the weight from about ten feet up and she smacked into that lamp at a pretty high speed,

313

00:18:46,000 --> 00:18:51,000

which means she's going higher in the air than the lead weight is starting from.

314

00:18:51,000 --> 00:18:54,000

That tells me there might really be something to this.

315

00:18:55,000 --> 00:19:00,000

So Adam installs a scale that measures the drop height at six inch intervals.

316

00:19:00,000 --> 00:19:02,000

Alright, thirty inches.

317

00:19:02,000 --> 00:19:04,000

He starts out from just thirty inches.

318

00:19:04,000 --> 00:19:07,000

Three, two, one.

319

00:19:09,000 --> 00:19:11,000

Dropped from thirty six inches.

320

00:19:11,000 --> 00:19:16,000

For such a simple test, this one is giving me tons of data and good data.

321

00:19:16,000 --> 00:19:17,000

Forty two inches.

322

00:19:17,000 --> 00:19:22,000

Number one, I think she might actually make it to the roof of that seven-story building or higher.

323

00:19:22,000 --> 00:19:24,000

There we go with forty eight.

324

00:19:24,000 --> 00:19:26,000

Secondly, I'm noticing her flight characteristics.

325

00:19:26,000 --> 00:19:29,000

She is pretty much staying in line with this seesaw.

326

00:19:29,000 --> 00:19:30,000

Wow!

327

00:19:30,000 --> 00:19:34,000

Either landing where she took off from or landing around the center of the seesaw.

328

00:19:34,000 --> 00:19:39,000

That gives me a really good bead on where we can all safely be when we're watching this thing happen in full scale.

329

00:19:41,000 --> 00:19:46,000

When I dropped the weight from fifty four inches, she flew eight feet into the air.

330

00:19:47,000 --> 00:19:48,000

Wow.

331

00:19:48,000 --> 00:19:52,000

I'm looking at this, I think she might actually make it to the top of the seven-story building.

332

00:19:53,000 --> 00:19:58,000

But a full scale girl won't hit those dizzy heights without Jamie's super seesaw.

333

00:20:01,000 --> 00:20:04,000

They've got the parts and now they have to put it together.

334

00:20:05,000 --> 00:20:09,000

Obviously we like the complex engineering challenges.

335

00:20:10,000 --> 00:20:11,000

Lead balloon.

336

00:20:15,000 --> 00:20:16,000

Shredded plane.

337

00:20:16,000 --> 00:20:17,000

Yeah!

338

00:20:18,000 --> 00:20:19,000

Ping-pong rescue.

339

00:20:20,000 --> 00:20:22,000

Ten, four, three, two, one!

340

00:20:23,000 --> 00:20:28,000

This is the first time we've ever resorted to computer simulations for calculating the huge amounts of energy we're dealing with.

341

00:20:28,000 --> 00:20:35,000

When that skydiver hits our seesaw, it has to transfer all of its energy, all of his energy to the girl.

342

00:20:36,000 --> 00:20:41,000

And everything that we've done thus far says that this will do that.

343

00:20:43,000 --> 00:20:44,000

I'll believe it when I see it.

344

00:20:44,000 --> 00:20:50,000

This is one of two trusses that will make the seesaw and even without welds on it, it's really strong.

345

00:20:51,000 --> 00:20:56,000

We're not only using a different material, in this case we're using chromoly steel.

346

00:20:56,000 --> 00:21:00,000

We're using a different configuration of it as well.

347

00:21:00,000 --> 00:21:07,000

The way these joints kind of grab all of the other members, it's going to be really, really sturdy once we get it all welded.

348

00:21:08,000 --> 00:21:14,000

This thing that looks like a maximum security birdhouse is in fact the vital fulcrum.

349

00:21:15,000 --> 00:21:20,000

The trusses like this are going to be welded on to here and this is where the pivoting happens.

350

00:21:20,000 --> 00:21:25,000

It's got to be really strong because there's going to be one heck of a lot of weight hitting it.

351

00:21:26,000 --> 00:21:32,000

And if this engineering marvel breaks, the girl, just like the myth, ain't going nowhere.

352

00:21:33,000 --> 00:21:37,000

Coming up, Torian Grant take the plunge to fine tune the physics.

353

00:21:40,000 --> 00:21:46,000

And later, this improbable myth comes to a shattering and surprising conclusion.

354

00:21:51,000 --> 00:21:53,000

Don't try anything you see on the show at home.

355

00:21:53,000 --> 00:21:55,000

Wear what you call experts.

356

00:22:02,000 --> 00:22:10,000

In just two days, belief in the myth of a skydiver hitting a seesaw and shooting a small girl 70 feet high has waned.

357

00:22:11,000 --> 00:22:13,000

We're going to have to rethink this thing.

358

00:22:14,000 --> 00:22:15,000

And waxed.

359

00:22:15,000 --> 00:22:16,000

Wow!

360

00:22:17,000 --> 00:22:26,000

Jamie's super seesaw looks promising, but now they need to find a way to accelerate a full weight dummy to terminal velocity and hit the target.

361

00:22:27,000 --> 00:22:31,000

Okay, so now we know the speed the buster has to fall to hit the seesaw, just over 120 miles an hour.

362

00:22:32,000 --> 00:22:33,000

Yeah, but there's a problem.

363

00:22:33,000 --> 00:22:35,000

We need at least 600 feet to get to that speed.

364

00:22:35,000 --> 00:22:36,000

600 feet?

365

00:22:36,000 --> 00:22:40,000

You know how hard it's going to be to hit a target dropping buster from 600 feet?

366

00:22:40,000 --> 00:22:46,000

Yeah, so we need to figure out a way the buster can fall faster than gravity at a reasonable distance like 100 feet and still hit the X.

367

00:22:46,000 --> 00:22:47,000

What about bungee?

368

00:22:47,000 --> 00:22:48,000

Bungee?

369

00:22:48,000 --> 00:22:54,000

Yeah, we do like a reverse bungee where we attach buster to one end of the bungee, we anchor the other end, then we stretch him up and release him.

370

00:22:54,000 --> 00:22:56,000

It hits the target every time.

371

00:22:56,000 --> 00:23:02,000

Fresh from skydiving school, Grant and Tori head for the hills to try another extreme sport.

372

00:23:02,000 --> 00:23:06,000

Again, it's all in the name of scary science.

373

00:23:07,000 --> 00:23:11,000

You know, we got close on board a slingshot, but we've never actually used bungee in an experiment.

374

00:23:11,000 --> 00:23:16,000

Yeah, I mean it's a good idea, but is it going to get our skydiver up to 122 miles an hour?

375

00:23:16,000 --> 00:23:19,000

Well, you know, there's only one way to find out.

376

00:23:19,000 --> 00:23:20,000

We're going to have to jump on.

377

00:23:20,000 --> 00:23:21,000

Yep.

378

00:23:22,000 --> 00:23:25,000

It's that reverse thrust they're looking for.

379

00:23:25,000 --> 00:23:27,000

One, two, yoo!

380

00:23:27,000 --> 00:23:30,000

Tori's the first to take the plunge.

381

00:23:30,000 --> 00:23:32,000

Don't worry, buddy, it'll all be over in a few minutes.

382

00:23:32,000 --> 00:23:34,000

I know, that's what I'm worried about.

383

00:23:34,000 --> 00:23:35,000

Ugh.

384

00:23:35,000 --> 00:23:39,000

Remember, go big. You cannot dive too hard or too far.

385

00:23:39,000 --> 00:23:40,000

Oh man.

386

00:23:40,000 --> 00:23:41,000

Go big.

387

00:23:41,000 --> 00:23:43,000

Oh man.

388

00:23:43,000 --> 00:23:46,000

Or here's a thought, just go.

389

00:23:47,000 --> 00:23:49,000

Ah! Ah!

390

00:23:54,000 --> 00:23:58,000

It sure looks like Tori rebounded faster than he fell.

391

00:23:58,000 --> 00:24:00,000

At least he had fun.

392

00:24:02,000 --> 00:24:05,000

Everything in your mind is saying, don't do it.

393

00:24:09,000 --> 00:24:12,000

And then once you get over that fear and do it,

394

00:24:12,000 --> 00:24:16,000

then there's like the sensation of all your guts going into your mouth.

395

00:24:18,000 --> 00:24:20,000

And then you hit the bottom and you bounce up

396

00:24:20,000 --> 00:24:22,000

and you do it a couple more times.

397

00:24:22,000 --> 00:24:24,000

So it's like, it continues.

398

00:24:25,000 --> 00:24:28,000

And while Tori's concerned with the state of his guts,

399

00:24:28,000 --> 00:24:32,000

Kari's about to be up to her elbows in someone else's.

400

00:24:32,000 --> 00:24:35,000

This is going to be my falling parachutist.

401

00:24:35,000 --> 00:24:39,000

Now to make him, we need something that's going to emulate the human body,

402

00:24:39,000 --> 00:24:44,000

which is approximately 75% water to 25% solid materials.

403

00:24:44,000 --> 00:24:46,000

Now to do that, we're going to use an alginate.

404

00:24:46,000 --> 00:24:50,000

This is used for life casting, taking impressions when you go to the dentist's office.

405

00:24:50,000 --> 00:24:53,000

We're going to fill this wetsuit with the wet alginate

406

00:24:53,000 --> 00:24:58,000

and hopefully we are going to have the perfect analogue for the human body to fall on our seesaw.

407

00:24:58,000 --> 00:25:02,000

In short, he'll go splat just like a real man.

408

00:25:02,000 --> 00:25:07,000

And Kari's figured the average athletic weight at 171 pounds.

409

00:25:08,000 --> 00:25:10,000

Kind of feels like guts.

410

00:25:10,000 --> 00:25:13,000

And yes, I do know what guts feel like. I've been on the show for years.

411

00:25:13,000 --> 00:25:18,000

It's Jamie's fate to carry the load, assuming he can lift it.

412

00:25:18,000 --> 00:25:19,000

Oh, geez.

413

00:25:27,000 --> 00:25:30,000

They finally do make the scales.

414

00:25:30,000 --> 00:25:35,000

Jamie's already weighed in at 180 pounds, so they'll subtract his bulk from the total.

415

00:25:35,000 --> 00:25:36,000

So how much?

416

00:25:36,000 --> 00:25:38,000

It's good. It looks like we only need about another 20 pounds.

417

00:25:38,000 --> 00:25:41,000

And I haven't done the feet or the hands yet.

418

00:25:41,000 --> 00:25:43,000

So I think we're right in the zone for the body.

419

00:25:43,000 --> 00:25:45,000

Okay, so that was only about what?

420

00:25:45,000 --> 00:25:46,000

One-fifty.

421

00:25:46,000 --> 00:25:47,000

Really?

422

00:25:47,000 --> 00:25:48,000

Yeah.

423

00:25:48,000 --> 00:25:49,000

I'm getting a hold.

424

00:25:52,000 --> 00:25:55,000

Back on the bungee bridge, it's Grant's turn.

425

00:25:58,000 --> 00:25:59,000

For science.

426

00:26:07,000 --> 00:26:09,000

This is the best day to ever.

427

00:26:11,000 --> 00:26:12,000

Let's hope so.

428

00:26:12,000 --> 00:26:16,000

Both Grant and Tori are trying to feel the pulling power of the bungee.

429

00:26:19,000 --> 00:26:21,000

Well, you know, I think this is really going to work.

430

00:26:21,000 --> 00:26:24,000

I could really feel the stretch and the acceleration on the way back up.

431

00:26:24,000 --> 00:26:28,000

Yeah, but we're definitely going to have to tweak this in order to get our skydiver to go 122 miles

an hour.

432

00:26:28,000 --> 00:26:29,000

Casey.

433

00:26:29,000 --> 00:26:30,000

How are you?

434

00:26:30,000 --> 00:26:35,000

The man who might be able to help them out is Casey Dale from bungee.com.

435

00:26:35,000 --> 00:26:36,000

Rubber bands are rubber bands.

436

00:26:36,000 --> 00:26:38,000

We can stretch rubber band for you.

437

00:26:38,000 --> 00:26:44,000

We'll need his best and biggest rubber band, which Casey calls a mongo.

438

00:26:44,000 --> 00:26:54,000

Mongo means a really big cord, New Zealand style cord, so that it has more stretch and rapid acceleration.

439

00:26:54,000 --> 00:26:58,000

So you think you'll be able to get it up to 122 miles an hour?

440

00:26:58,000 --> 00:27:02,000

Put enough rubber in, stretch it hard enough, absolutely.

441

00:27:03,000 --> 00:27:07,000

Meantime, Carrie struggles to dress her man.

442

00:27:10,000 --> 00:27:12,000

Then add some personality.

443

00:27:12,000 --> 00:27:15,000

There you go. Now you have a head.

444

00:27:15,000 --> 00:27:17,000

Better to see me with.

445

00:27:21,000 --> 00:27:25,000

Put a parachute on you and drop you out of the sky to your death.

446

00:27:27,000 --> 00:27:30,000

With the frame finished and the parts fitting perfectly.

447

00:27:31,000 --> 00:27:32,000

That's perfect.

448

00:27:32,000 --> 00:27:33,000

Awesome.

449

00:27:33,000 --> 00:27:37,000

Adam and Jamie rigged the high strength Spectra rope.

450

00:27:37,000 --> 00:27:43,000

Working just like the cables on a crane, this should give us a compression rather than a bending

load.

451

00:27:43,000 --> 00:27:46,000

Well, that's just another seesaw.

452

00:27:46,000 --> 00:27:48,000

That's what it is.

453

00:27:48,000 --> 00:27:57,000

In theory, the rope is even stronger than the spars, but no one knows for sure if this amazing structure can withstand the sudden impact.

454

00:27:58,000 --> 00:28:03,000

And then there's Ariel. Will she survive? Will she even fly?

455

00:28:05,000 --> 00:28:10,000

The big questions and a dozen little ones will all be answered tomorrow.

456

00:28:10,000 --> 00:28:14,000

Next up, the boys go heavy metal in a shipyard.

457

00:28:16,000 --> 00:28:19,000

And early testing goes totally air shaking.

458

00:28:19,000 --> 00:28:20,000

Oh my God.

459

00:28:20,000 --> 00:28:22,000

Did you see what happened?

460

00:28:28,000 --> 00:28:36,000

All five myth busters have joined forces to make or break a bizarre urban legend.

461

00:28:36,000 --> 00:28:42,000

The young girl who supposedly survived a seven story flight from the end of a seesaw.

462

00:28:42,000 --> 00:28:46,000

No surprise then that the test menu is a spectacle in itself.

463

00:28:46,000 --> 00:28:48,000

Mare Island Naval Shipyard.

464

00:28:48,000 --> 00:28:55,000

Now the myth states that once the skydiver hit the seesaw, the little girl flew 70 feet up, seven stories and landed safely on top of a building.

465

00:28:55,000 --> 00:29:02,000

Now this works out perfectly for us, this location, because the dry dock is 30 feet deep and that scaffolding right there is 40 feet tall.

466

00:29:02,000 --> 00:29:06,000

So when we place it on the side of the dry dock, that is our seven story building.

467

00:29:06,000 --> 00:29:08,000

It's our point of reference.

468

00:29:09,000 --> 00:29:14,000

Adam, Tori and Grant have arrived a day early to make things right for the big test.

469

00:29:14,000 --> 00:29:24,000

She might be wondering what these giant plates are.

470

00:29:24,000 --> 00:29:31,000

Well, we can't weld to the dry dock, we can't drill into it, we basically can't modify the dry dock in any way.

471

00:29:31,000 --> 00:29:38,000

But we still need something solid to attach our bungee cord to and to attach the seesaw to.

472

00:29:38,000 --> 00:29:40,000

So our solution? Trench plates.

473

00:29:40,000 --> 00:29:47,000

Each one of these weighs 7,500 pounds and we have two of them for a total of 15,000 pounds.

474

00:29:47,000 --> 00:29:50,000

I think that ought to be solid enough.

475

00:29:50,000 --> 00:29:58,000

While Tori welds the plates together, Adam nervously considers his next step.

476

00:29:58,000 --> 00:30:03,000

I want to make sure that my skydiver hits the seesaw square on.

477

00:30:03,000 --> 00:30:08,000

So I'm going to run two guide wires that will guide him all the way down to hit the seesaw precisely.

478

00:30:08,000 --> 00:30:15,000

I've got a weld in their bottom points, then I've got to walk out to the end of the crane and rig the spreader bar.

479

00:30:15,000 --> 00:30:17,000

That should be fun.

480

00:30:17,000 --> 00:30:21,000

It's understood that Adam has a strange idea of fun.

481

00:30:21,000 --> 00:30:27,000

The job itself is simple enough to secure a sling over the very end of the boom.

482

00:30:27,000 --> 00:30:32,000

Well, that's it, we're fully rigged up here, I'm going to go down below.

483

00:30:33,000 --> 00:30:37,000

Grant goes up to attach the spreader bar to the sling.

484

00:30:37,000 --> 00:30:41,000

Getting this right is probably the most crucial part of the setup.

485

00:30:44,000 --> 00:30:46,000

Okie doke, I'm going to let it go.

486

00:30:46,000 --> 00:30:48,000

It looks good.

487

00:30:50,000 --> 00:30:55,000

Down in the dock, Tori welds two sturdy steel taps to the trench plates.

488

00:30:56,000 --> 00:31:01,000

Adam fastens the wires, then fantasizes about being the fall guy.

489

00:31:01,000 --> 00:31:05,000

So, right now I want you to picture me as an experimental skydiver.

490

00:31:05,000 --> 00:31:13,000

I'm a wetsuit filled with dental alginate and I am being reversely shot into the ground using these guide wires to guide me,

491

00:31:13,000 --> 00:31:19,000

falling all the way into bang our seesaw and hopefully sending our little girl flying.

492

00:31:19,000 --> 00:31:21,000

Casey, you made it.

493

00:31:21,000 --> 00:31:26,000

With impeccable timing, Casey arrives with a bag full of bungee.

494

00:31:26,000 --> 00:31:29,000

Whoa! Look at the size of it!

495

00:31:29,000 --> 00:31:32,000

Oh my God, that's crazy!

496

00:31:32,000 --> 00:31:37,000

So the first thing that goes in the big hook is this, it's a dynamometer.

497

00:31:37,000 --> 00:31:40,000

This tells us exactly how much force there is in the system.

498

00:31:42,000 --> 00:31:45,000

The dynamometer gets hooked up to the quick release.

499

00:31:45,000 --> 00:31:47,000

Now, all we need is a body,

500

00:31:47,000 --> 00:31:52,000

but they're not prepared to risk Carrie's alginate man on a dry run.

501

00:31:52,000 --> 00:31:57,000

So, for our calibration test, we're going to use this, which is an inner tube filled with sand.

502

00:31:57,000 --> 00:32:05,000

And the idea is that it weighs 171 pounds, which is exactly the same as our human analog will be.

503

00:32:05,000 --> 00:32:09,000

You know you have a good myth when you're excited about the calibration tests.

504

00:32:09,000 --> 00:32:14,000

Even in testing, this is the myth that keeps on giving.

505

00:32:14,000 --> 00:32:17,000

Alright, we're at 2240 pounds of force. We're ready to test this.

506

00:32:17,000 --> 00:32:21,000

Okay, this is calibration test number one.

507

00:32:21,000 --> 00:32:23,000

Here we go.

508

00:32:23,000 --> 00:32:26,000

Three, two, one!

509

00:32:32,000 --> 00:32:34,000

Did you see what happened?

510

00:32:34,000 --> 00:32:36,000

Yeah, we just ripped the inner tube!

511

00:32:39,000 --> 00:32:43,000

It kind of worked. I mean, if this had stayed together, it would have been perfect.

512

00:32:43,000 --> 00:32:46,000

Yeah, I mean, the bungee cord worked.

513

00:32:46,000 --> 00:32:49,000

Our guide wires worked.

514

00:32:49,000 --> 00:32:51,000

The inner tube is going to need a little bit of revision.

515

00:32:51,000 --> 00:32:56,000

Yeah, because this is not an accurate test. This is 171 pounds.

516

00:32:56,000 --> 00:33:00,000

The best possible solution is simple and cheap.

517

00:33:00,000 --> 00:33:04,000

I think what we're going to do is take a duffel bag, wrap it with ties,

518

00:33:04,000 --> 00:33:09,000

and hopefully that will keep the weight together so we can get an accurate test.

519

00:33:10,000 --> 00:33:14,000

So, slight change of plan. Instead of an inner tube, we're sending our luggage.

520

00:33:14,000 --> 00:33:16,000

Pull on safety.

521

00:33:16,000 --> 00:33:22,000

If the bag holds together, they'll get a precise fix on the speed of the falling skydiver.

522

00:33:22,000 --> 00:33:27,000

And they're hoping that's very close to 122 miles per hour.

523

00:33:27,000 --> 00:33:30,000

Calibration test number two.

524

00:33:30,000 --> 00:33:33,000

In three, two, one!

525

00:33:34,000 --> 00:33:39,000

I had a feeling that was going to happen.

526

00:33:39,000 --> 00:33:42,000

It just ripped through the straps.

527

00:33:42,000 --> 00:33:44,000

Alright, we're going to have to redo it.

528

00:33:44,000 --> 00:33:48,000

So we just did our second test. It was time the straps on the bag broke.

529

00:33:51,000 --> 00:33:54,000

So the bag didn't even get pulled down. It just fell down.

530

00:33:56,000 --> 00:34:02,000

Worse still, the bungee cord took a serious hit on the carpet-covered trench plates.

531

00:34:02,000 --> 00:34:04,000

This doesn't look good.

532

00:34:04,000 --> 00:34:06,000

Hey, Casey?

533

00:34:06,000 --> 00:34:11,000

Casey has the spare parts to build one more cord, which they'd all like to save for tomorrow.

534

00:34:11,000 --> 00:34:18,000

Still, they can't proceed without dialing in the speed, so it's well worth a parting shot.

535

00:34:18,000 --> 00:34:22,000

This last calibration test just has to work.

536

00:34:24,000 --> 00:34:25,000

Go, hit it.

537

00:34:25,000 --> 00:34:26,000

Here we go!

538

00:34:32,000 --> 00:34:34,000

It worked! Hit the target!

539

00:34:34,000 --> 00:34:36,000

The bungee didn't break!

540

00:34:36,000 --> 00:34:37,000

That's perfect!

541

00:34:37,000 --> 00:34:39,000

Now we just got to see what our speed was.

542

00:34:41,000 --> 00:34:47,000

To calculate the speed, they carefully check the high-speed replay, frame by frame.

543

00:34:47,000 --> 00:34:52,000

And there's reason to be hopeful. The bungee held and the bag fell unimpeded.

544

00:34:52,000 --> 00:34:56,000

Grant does the math, and Tori makes the big announcement.

545

00:34:56,000 --> 00:34:58,000

This bungee cord is done. We can't use it again.

546

00:34:58,000 --> 00:35:01,000

We're going to have to build a new one when we do the final test.

547

00:35:01,000 --> 00:35:05,000

But the good news is, is we got a calibration for the speed of our following skydiver.

548

00:35:05,000 --> 00:35:10,000

And it's exactly 122 miles an hour. We are gold.

549

00:35:10,000 --> 00:35:12,000

Still to come.

550

00:35:12,000 --> 00:35:15,000

Oh my god, this is better than Christmas!

551

00:35:15,000 --> 00:35:21,000

This whole crazy myth gets launched sky high, and inevitably comes crashing down.

552

00:35:21,000 --> 00:35:22,000

What?!

553

00:35:22,000 --> 00:35:23,000

What?!

554

00:35:30,000 --> 00:35:32,000

Grant, Tori, come on down!

555

00:35:32,000 --> 00:35:38,000

It's the last day of testing the Seasaw Saga. And Jamie's ready to show off his baby.

556

00:35:38,000 --> 00:35:42,000

Three, two, one, ta-da!

557

00:35:42,000 --> 00:35:43,000

Wow!

558

00:35:44,000 --> 00:35:46,000

Oh my god, this is better than Christmas!

559

00:35:46,000 --> 00:35:49,000

I've never seen a Seasaw like this before.

560

00:35:49,000 --> 00:35:57,000

I was expecting a giant piece of steel. This is beautiful. It's elegant. It's gorgeous.

561

00:35:57,000 --> 00:36:02,000

Carrie's diver dad makes a rock star entrance to the dry dock.

562

00:36:02,000 --> 00:36:06,000

That's assuming the rock star is Keith Richards.

563

00:36:06,000 --> 00:36:12,000

And Jamie's found a way to improve the energy transfer by patting the impact zone with foam.

564

00:36:12,000 --> 00:36:18,000

So what we're doing is slowing that delivery of energy down because it's got to crush the energy down.

565

00:36:18,000 --> 00:36:25,000

I crushed this before it gets to the Seasaw. This is kind of like the difference between a sledgehammer and a rubber hammer.

566

00:36:25,000 --> 00:36:27,000

Tori delivers the victim.

567

00:36:27,000 --> 00:36:31,000

You're going to be fine. Your dad busters a million times.

568

00:36:31,000 --> 00:36:38,000

And Grant pulls out the shock watches. The stick on patches measure the force of impact.

569

00:36:38,000 --> 00:36:46,000

If the red one triggers, she's dead. If the green one triggers, she's injured and alive, but she's not walking away.

570

00:36:46,000 --> 00:36:56,000

So they're finally all set to see if a plummeting man landing perfectly on the end of a Seesaw could really launch a 6-year-old 70 feet high.

571

00:36:56,000 --> 00:37:05,000

There's no question in my mind that there's enough energy in the parachutist as he comes down to throw that little girl way, way up in the air.

572

00:37:05,000 --> 00:37:11,000

And there's a host of problems that we could have. The dummy could just split apart and only deliver part of his energy.

573

00:37:11,000 --> 00:37:20,000

Things could not line up properly. The rig could break. And not to mention, she has to go up pretty much straight up in the air for this to work.

574

00:37:20,000 --> 00:37:25,000

Seasaw Saga. Full-size test. Grant, take it away.

575

00:37:25,000 --> 00:37:30,000

Here we go. In three, two, one.

576

00:37:31,000 --> 00:37:33,000

Woo!

577

00:37:38,000 --> 00:37:43,000

Did you expect that? It didn't go up. It shot across the dry dock.

578

00:37:43,000 --> 00:37:45,000

Wow.

579

00:37:46,000 --> 00:37:55,000

That was cool. The skydiver hit the Seasaw. The Seasaw stayed together and the little girl got washed over 55 feet in the air. That's above the dry dock.

580

00:37:56,000 --> 00:37:59,000

Oh my God!

581

00:37:59,000 --> 00:38:02,000

See, the skydiver exploded.

582

00:38:02,000 --> 00:38:04,000

One word for this. Splat.

583

00:38:04,000 --> 00:38:06,000

Looks like he landed butt first.

584

00:38:06,000 --> 00:38:15,000

His legs missed the Seasaw, but his upper torso hit it. It's probably about 60, 70% of his mass contacted it.

585

00:38:15,000 --> 00:38:23,000

And even that amount was enough to catapult her 5 stories up in the air and 70 feet laterally.

586

00:38:24,000 --> 00:38:28,000

Grant checks the shock watches and the news is grim.

587

00:38:28,000 --> 00:38:33,000

Oh, red shock watch is tripped.

588

00:38:33,000 --> 00:38:41,000

Partly surprising when the doll was flung high and wide into solid concrete, but this testing needs more finessing.

589

00:38:41,000 --> 00:38:50,000

At this point it looks like our understanding of the physics is correct. The only problem that we have is our aim of the skydiver at the target.

590

00:38:50,000 --> 00:38:59,000

Little more than half the weight hit the Seasaw. With Dan's demise, the inner tube gets a recall. Hopefully it will hold together.

591

00:38:59,000 --> 00:39:08,000

Now it is the same exact weight as the average man, but this time we're hoping that we'll impart all of its energy under the Seasaw and fling the girl the 7 stories that we talked about in the myth.

592

00:39:08,000 --> 00:39:13,000

Here we go! In 3, 2, 1!

593

00:39:13,000 --> 00:39:18,000

Oh!

594

00:39:18,000 --> 00:39:21,000

Didn't see that one coming.

595

00:39:21,000 --> 00:39:23,000

Yeah, dang it.

596

00:39:23,000 --> 00:39:25,000

Very painful.

597

00:39:25,000 --> 00:39:28,000

She got clothesline.

598

00:39:30,000 --> 00:39:37,000

Good deployment of the sandbag. Hit the Seesaw, the girl went up, but you got tangled in the wires.

599

00:39:38,000 --> 00:39:46,000

She's traveling on a much greater arc than I saw in any of my scale tests, and I think that's because our Seesaw's play is much greater than the playground Seesaw.

600

00:39:50,000 --> 00:39:57,000

Well, you can see the red grease going up her shoe. That's right, where she actually hit the guide wire. So we're going to have to reset and do this one again.

601

00:39:57,000 --> 00:40:06,000

In the best mythbusters tradition, the fast setting winter sun means this next attempt is absolutely our last one. It's now or never.

602

00:40:06,000 --> 00:40:08,000

Let's go up.

603

00:40:08,000 --> 00:40:13,000

They can only cross their fingers and hope that this time the girl misses the guide wire.

604

00:40:13,000 --> 00:40:17,000

Here we go! 3, 2, 1!

605

00:40:28,000 --> 00:40:31,000

Well, Jamie said it would work.

606

00:40:32,000 --> 00:40:37,000

The skydiver simulate did hit 122 miles per hour.

607

00:40:40,000 --> 00:40:47,000

And despite the colossal sideways arc, little aerial flew way higher than anyone dared to hope.

608

00:40:49,000 --> 00:40:54,000

She flies about level with our spreader bar, and that's 130 feet.

609

00:40:55,000 --> 00:41:03,000

That's 13 stories, and that was with an angle like this. If we got her to go straight up, she would have cleared 200 easy.

610

00:41:03,000 --> 00:41:10,000

This myth sounded totally improbable from the get-go, but Jamie and Adam kept the faith.

611

00:41:10,000 --> 00:41:18,000

The fact is, normally when we're testing myths that have to do with broad guesses about physics, they're usually grossly overestimating what's possible.

612

00:41:18,000 --> 00:41:23,000

And in this case, we've come across a myth where the physics are grossly underestimated.

613

00:41:25,000 --> 00:41:37,000

If you had an impossibly strong seesaw, if you had a parachutist that didn't just go splat when he hit it, you'd be capable of launching a little girl up at least 13 stories in the air.

614

00:41:37,000 --> 00:41:42,000

So, how do we call it? Well, sad to say it's busted.

615

00:41:42,000 --> 00:41:52,000

Jamie built the best possible seesaw and almost doubled the seven-story flight. But that little girl would be just as dead as the skydiver.

616

00:41:53,000 --> 00:42:04,000

So I've reviewed the high-speed footage, and I've calculated that the little girl was subjected to 42G, which means, well, she was likely injured just from her launch from the seesaw.

617

00:42:04,000 --> 00:42:07,000

And her landing, that's a whole other thing.

618

00:42:12,000 --> 00:42:16,000

Oh my god, that's how far she went? Nice work.

619

00:42:16,000 --> 00:42:18,000

One of seven stories I think she delivers.

620

00:42:18,000 --> 00:42:19,000

High fives.

621

00:42:19,000 --> 00:42:22,000

I think our work here is done.

622

00:42:36,000 --> 00:42:38,000

Oh, you remember the thing we did with the thing?

623

00:42:38,000 --> 00:42:39,000

Yup.

624

00:42:39,000 --> 00:42:40,000

What are you guys doing?

625

00:42:40,000 --> 00:42:44,000

Remember that thing we did with the thing, but it never actually made it to the show?

626

00:42:44,000 --> 00:42:45,000

Uh-huh.

627

00:42:45,000 --> 00:42:47,000

Well, it's on the web.

628

00:42:47,000 --> 00:42:52,000

That's right. If you want to check it out, go to discovery.com/slash-mythbusters.com and see what we're talking about.

629

00:42:52,000 --> 00:42:54,000

You two need help.

630

00:42:54,000 --> 00:42:55,000

That's what my psychiatrist said.

631

00:42:55,000 --> 00:42:57,000

Help, play it again.