



1
00:00:04,070 --> 00:00:02,310
elliott ranch elementary school this is

2
00:00:06,230 --> 00:00:04,080
mission control houston please call

3
00:00:08,070 --> 00:00:06,240
station for a voice check

4
00:00:12,230 --> 00:00:08,080
station this is elliott ranch elementary

5
00:00:12,240 --> 00:00:18,950
we hear you loud and clear

6
00:00:25,349 --> 00:00:21,590
hi my name is ritwick

7
00:00:31,429 --> 00:00:25,359
the and this question is from mr wiseman

8
00:00:35,430 --> 00:00:33,030
well that's a great question because

9
00:00:37,110 --> 00:00:35,440
right now uh my commander here steve he

10
00:00:39,830 --> 00:00:37,120
could just pick his feet up he can float

11
00:00:42,709 --> 00:00:39,840
all around so as far as we can tell

12
00:00:44,310 --> 00:00:42,719
there is no gravity up here but we're

13
00:00:46,150 --> 00:00:44,320

actually being pulled around the earth

14

00:00:47,990 --> 00:00:46,160

and the gravity that's affecting the

15

00:00:49,430 --> 00:00:48,000

space station is almost exactly what

16

00:00:57,590 --> 00:00:49,440

you're experiencing right now on the

17

00:01:09,350 --> 00:00:58,389

hi

18

00:01:13,429 --> 00:01:11,590

well alex we can see the same planets

19

00:01:15,190 --> 00:01:13,439

you can see pretty much and just like we

20

00:01:16,950 --> 00:01:15,200

look out our night sky it's kind of like

21

00:01:19,270 --> 00:01:16,960

your night sky it's just a little

22

00:01:20,870 --> 00:01:19,280

clearer and the stars and the planets

23

00:01:28,870 --> 00:01:20,880

don't twinkle because we don't have any

24

00:01:34,230 --> 00:01:31,910

hi my name is harper and this question

25

00:01:37,910 --> 00:01:34,240

is from mr

26

00:01:42,870 --> 00:01:39,910

what are the first things that you are

27

00:01:45,830 --> 00:01:42,880

3d print for the iss

28

00:01:51,749 --> 00:01:45,840

and once you're done 3d printing what

29

00:01:55,749 --> 00:01:53,350

well that's a really good question we're

30

00:01:58,149 --> 00:01:55,759

hoping to have a 3d printer up here in

31

00:01:59,830 --> 00:01:58,159

october and i really hope i get a little

32

00:02:02,230 --> 00:01:59,840

bit of time before i leave to play with

33

00:02:04,069 --> 00:02:02,240

it so the first thing that we will print

34

00:02:05,990 --> 00:02:04,079

is actually going to be a design from

35

00:02:08,389 --> 00:02:06,000

school children i think a little older

36

00:02:09,910 --> 00:02:08,399

than you all that they submitted to nasa

37

00:02:11,510 --> 00:02:09,920

and that'll be the first thing we print

38

00:02:13,110 --> 00:02:11,520

and it's still a surprise to me i don't

39

00:02:15,270 --> 00:02:13,120

know what it's going to be so i'm really

40

00:02:17,270 --> 00:02:15,280

excited to find out what uh what they

41

00:02:19,350 --> 00:02:17,280

picked but i'm sure it'll be great and

42

00:02:21,990 --> 00:02:19,360

what would i print if i could in my own

43

00:02:23,750 --> 00:02:22,000

free time right now i miss my kids so i

44

00:02:25,350 --> 00:02:23,760

think if i could make little uh 3d

45

00:02:26,630 --> 00:02:25,360

models of my kids and just float them

46

00:02:29,910 --> 00:02:26,640

around up here i think that would be

47

00:02:35,750 --> 00:02:32,630

hi my name is amina and this question is

48

00:02:38,710 --> 00:02:35,760

for dr swanson on earth we know that it

49

00:02:40,710 --> 00:02:38,720

is night and day by looking at the sky

50

00:02:44,949 --> 00:02:40,720

how do you know when it is night and day

51
00:02:49,750 --> 00:02:46,630
that's a really good question we do we

52
00:02:50,470 --> 00:02:49,760
see 16 sunrises and sunsets every day up

53
00:02:53,110 --> 00:02:50,480
here

54
00:02:54,869 --> 00:02:53,120
i know what time it is by my watch and

55
00:02:56,630 --> 00:02:54,879
that's what we live off of we live off

56
00:02:57,509 --> 00:02:56,640
of actually the time that would be in

57
00:02:59,190 --> 00:02:57,519
london

58
00:03:01,589 --> 00:02:59,200
england and that's what we set our

59
00:03:03,270 --> 00:03:01,599
watches to and when it's uh six in the

60
00:03:05,190 --> 00:03:03,280
morning we get up and when it's ten and

61
00:03:10,869 --> 00:03:05,200
8 at night we go to bed so that's how we

62
00:03:15,509 --> 00:03:13,190
hi my name is ethan and this question is

63
00:03:18,309 --> 00:03:15,519

from mr wiseman i have been researching

64

00:03:19,990 --> 00:03:18,319

the space elevator idea for the iss what

65

00:03:21,430 --> 00:03:20,000

do you think the benefits are and do you

66

00:03:25,830 --> 00:03:21,440

think it would be possible that it will

67

00:03:30,949 --> 00:03:28,070

well that's a that's a great question i

68

00:03:32,710 --> 00:03:30,959

think uh it's really complicated and

69

00:03:33,990 --> 00:03:32,720

with the materials and the and the

70

00:03:36,149 --> 00:03:34,000

engineering and science that we have

71

00:03:38,550 --> 00:03:36,159

right now i i would say it's almost

72

00:03:41,110 --> 00:03:38,560

impossible under today's technology but

73

00:03:43,270 --> 00:03:41,120

that doesn't mean it is impossible and

74

00:03:44,789 --> 00:03:43,280

what benefits well when i flew up here

75

00:03:46,630 --> 00:03:44,799

on a rocket ship

76

00:03:49,589 --> 00:03:46,640

almost 90 percent maybe even a little

77

00:03:51,830 --> 00:03:49,599

more of my vehicle was all fuel just to

78

00:03:53,990 --> 00:03:51,840

get me through the atmosphere into space

79

00:03:56,070 --> 00:03:54,000

uh so if we could have a space elevator

80

00:03:57,509 --> 00:03:56,080

that could just slowly bring cargo up to

81

00:03:59,830 --> 00:03:57,519

the space station well that would be

82

00:04:02,470 --> 00:03:59,840

phenomenal it would be a huge savings

83

00:04:03,429 --> 00:04:02,480

for time energy and money but we'll see

84

00:04:04,789 --> 00:04:03,439

i think it's a little ways in the

85

00:04:08,710 --> 00:04:04,799

distance but keep doing the research

86

00:04:12,710 --> 00:04:10,789

hi my name is evan this question is for

87

00:04:14,710 --> 00:04:12,720

dr swanson what have you found most

88

00:04:17,030 --> 00:04:14,720

surprising or challenging about your

89

00:04:18,710 --> 00:04:17,040

work on the iss that all your special

90

00:04:22,230 --> 00:04:18,720

training beforehand did not prepare you

91

00:04:26,150 --> 00:04:23,990

that's a good question too

92

00:04:27,189 --> 00:04:26,160

for me it's been when you work of course

93

00:04:29,030 --> 00:04:27,199

in this environment you can see

94

00:04:30,550 --> 00:04:29,040

everything floats and so it's actually

95

00:04:32,629 --> 00:04:30,560

keeping track of everything when you

96

00:04:35,030 --> 00:04:32,639

work on a project all your tools and all

97

00:04:36,790 --> 00:04:35,040

the parts you have to keep organized and

98

00:04:38,629 --> 00:04:36,800

keep secure someplace so they don't

99

00:04:40,390 --> 00:04:38,639

float off and all of a sudden you don't

100

00:04:41,749 --> 00:04:40,400

know where they are so that's one thing

101
00:04:43,030 --> 00:04:41,759
we really have to work on up here and

102
00:04:51,830 --> 00:04:43,040
that's i think almost the hardest thing

103
00:04:56,950 --> 00:04:54,070
hi my name is monica and this question

104
00:05:02,870 --> 00:04:56,960
is from mr wiseman what projects are you

105
00:05:08,469 --> 00:05:06,390
so uh we're super busy right now

106
00:05:10,550 --> 00:05:08,479
with more than playing with balls here

107
00:05:12,070 --> 00:05:10,560
but it is fun and uh so what i'm

108
00:05:14,390 --> 00:05:12,080
currently working on we just finished up

109
00:05:16,550 --> 00:05:14,400
some pretty interesting flame research

110
00:05:18,469 --> 00:05:16,560
and uh right now we're installing some

111
00:05:20,310 --> 00:05:18,479
new science racks over in our european

112
00:05:22,550 --> 00:05:20,320
module this actually has a

113
00:05:25,430 --> 00:05:22,560

electromagnetic levitator in it and we

114

00:05:27,029 --> 00:05:25,440

will have molten spheres of metal alloys

115

00:05:29,430 --> 00:05:27,039

that we will float in there and research

116

00:05:30,629 --> 00:05:29,440

what happens to them uh in all different

117

00:05:32,150 --> 00:05:30,639

sorts of states so that's going to be

118

00:05:34,230 --> 00:05:32,160

really amazing and we're spending a lot

119

00:05:36,950 --> 00:05:34,240

of time with that right now and then i

120

00:05:39,749 --> 00:05:36,960

think tomorrow dr swanson has a really

121

00:05:41,510 --> 00:05:39,759

amazing activity we have a cool robot up

122

00:05:43,189 --> 00:05:41,520

here and right now our robot doesn't

123

00:05:44,950 --> 00:05:43,199

have any legs and tomorrow he'll be

124

00:05:47,430 --> 00:05:44,960

putting the legs on the robot and we

125

00:05:49,510 --> 00:05:47,440

should be able to see this robot uh very

126
00:05:53,670 --> 00:05:49,520
soon take its first steps in space which

127
00:05:56,469 --> 00:05:53,680
will be a big big thing for us up here

128
00:05:58,309 --> 00:05:56,479
hi my name is gemma and this question is

129
00:06:00,710 --> 00:05:58,319
for dr swanson

130
00:06:03,510 --> 00:06:00,720
i like doing chores however

131
00:06:05,510 --> 00:06:03,520
if i were doing chores in zero gravity

132
00:06:07,909 --> 00:06:05,520
it would be a lot more fun

133
00:06:13,110 --> 00:06:07,919
what chores do you enjoy doing most when

134
00:06:17,830 --> 00:06:15,189
that's a good question i mean i really

135
00:06:19,670 --> 00:06:17,840
do enjoy working up here in the zero

136
00:06:21,830 --> 00:06:19,680
gravity environment it makes everything

137
00:06:24,070 --> 00:06:21,840
so much more fun and for me for the

138
00:06:25,909 --> 00:06:24,080

chores almost anything again is good but

139

00:06:27,510 --> 00:06:25,919

i think i like to repair things so when

140

00:06:28,710 --> 00:06:27,520

things break around here i kind of get

141

00:06:30,550 --> 00:06:28,720

excited because i get to repair

142

00:06:32,629 --> 00:06:30,560

something and take it apart see how it

143

00:06:34,629 --> 00:06:32,639

works and put it back together again and

144

00:06:39,749 --> 00:06:34,639

and fix it and that's ma it's the best

145

00:06:45,189 --> 00:06:42,469

hello my name is caitlin liangbob and

146

00:06:47,590 --> 00:06:45,199

this question is from mr wiseman what

147

00:06:49,909 --> 00:06:47,600

are some parts of toys you hope to 3d

148

00:06:54,469 --> 00:06:49,919

print and successfully use aboard the

149

00:06:57,510 --> 00:06:55,830

well i would say the first tool i would

150

00:06:59,589 --> 00:06:57,520

love to print is a simple one i would

151
00:07:01,670 --> 00:06:59,599
love to just have a screwdriver

152
00:07:03,270 --> 00:07:01,680
maybe slightly specialized that we could

153
00:07:05,510 --> 00:07:03,280
use around the space station that we

154
00:07:07,510 --> 00:07:05,520
built and i think that's a simple tool

155
00:07:09,510 --> 00:07:07,520
that we have at home and they'll be the

156
00:07:11,670 --> 00:07:09,520
perfect kind of simple first step for us

157
00:07:13,589 --> 00:07:11,680
to have up here and i can't imagine in

158
00:07:15,430 --> 00:07:13,599
the future what kind of crazy tools

159
00:07:17,029 --> 00:07:15,440
we'll be able to think up tools that we

160
00:07:18,469 --> 00:07:17,039
haven't even dreamed of yet but we could

161
00:07:19,670 --> 00:07:18,479
just print them out use them if we need

162
00:07:25,990 --> 00:07:19,680
them and then throw them away i think

163
00:07:30,790 --> 00:07:28,070

hi my name is krishna and this question

164

00:07:32,950 --> 00:07:30,800

is for dr swanson how do we prevent or

165

00:07:37,110 --> 00:07:32,960

protect the iss from solar flares or

166

00:07:41,990 --> 00:07:39,430

good question and unfortunately we don't

167

00:07:44,230 --> 00:07:42,000

protect it from storms and so when we do

168

00:07:45,589 --> 00:07:44,240

get some activity out of the sun we

169

00:07:48,790 --> 00:07:45,599

actually can tell up here because our

170

00:07:50,869 --> 00:07:48,800

computers will have issues and uh

171

00:07:52,390 --> 00:07:50,879

and we just know about it by that way i

172

00:07:53,830 --> 00:07:52,400

mean we also get reports about what the

173

00:07:55,510 --> 00:07:53,840

sun's doing but we can tell when it

174

00:08:02,309 --> 00:07:55,520

comes because we'll have some failures

175

00:08:07,430 --> 00:08:05,110

hi my name is desha and this question

176
00:08:08,790 --> 00:08:07,440
for mr

177
00:08:12,070 --> 00:08:08,800
wiseman

178
00:08:15,589 --> 00:08:14,309
what's your favorite object

179
00:08:19,430 --> 00:08:15,599
on

180
00:08:23,110 --> 00:08:19,440
to absorb

181
00:08:27,909 --> 00:08:23,120
from the state um from the state

182
00:08:32,790 --> 00:08:30,390
so my favorite thing to look at on earth

183
00:08:34,550 --> 00:08:32,800
from the space station well

184
00:08:37,029 --> 00:08:34,560
i don't want to answer it this way but

185
00:08:38,469 --> 00:08:37,039
everything everything the mountains look

186
00:08:40,949 --> 00:08:38,479
amazing in the western part of the

187
00:08:42,469 --> 00:08:40,959
united states the oceans are so blue and

188
00:08:44,389 --> 00:08:42,479

they're so vast

189

00:08:47,190 --> 00:08:44,399

the deserts in africa the way the wind

190

00:08:49,110 --> 00:08:47,200

blows the dunes at night looking at city

191

00:08:52,230 --> 00:08:49,120

lights is absolutely incredible and then

192

00:08:54,470 --> 00:08:52,240

just last week we had a solar event to

193

00:08:55,990 --> 00:08:54,480

provide the most amazing aurora the

194

00:08:58,070 --> 00:08:56,000

northern and southern lights that we can

195

00:09:00,150 --> 00:08:58,080

see at night are just these green

196

00:09:02,150 --> 00:09:00,160

weaving snakes or worms going through

197

00:09:08,389 --> 00:09:02,160

the atmosphere and we're flying among it

198

00:09:13,269 --> 00:09:10,630

hi my name is samuel and this question

199

00:09:18,389 --> 00:09:13,279

is for doctor swanson how can i become

200

00:09:23,509 --> 00:09:20,870

well that's a good goal in life we both

201

00:09:25,030 --> 00:09:23,519

had that same goal and for us

202

00:09:27,350 --> 00:09:25,040

it just takes hard work just like

203

00:09:30,070 --> 00:09:27,360

anything else uh you have to do well in

204

00:09:32,150 --> 00:09:30,080

school and you have to find something

205

00:09:33,829 --> 00:09:32,160

that you really enjoy doing and it does

206

00:09:35,190 --> 00:09:33,839

have to be most likely for us to be in

207

00:09:38,150 --> 00:09:35,200

the science or math or engineering

208

00:09:41,030 --> 00:09:38,160

related technologies and but if you just

209

00:09:42,790 --> 00:09:41,040

do well at it and exceed in that nasa

210

00:09:43,990 --> 00:09:42,800

will see that and they'll make it you

211

00:09:50,550 --> 00:09:44,000

know that's one of the best things you

212

00:09:54,790 --> 00:09:52,470

hi my name is matthew and this question

213

00:09:56,550 --> 00:09:54,800

is for mr weissman what kind of food do

214

00:09:58,150 --> 00:09:56,560

astronauts have to

215

00:10:04,310 --> 00:09:58,160

have to eat

216

00:10:08,230 --> 00:10:06,150

well uh there's that's two different

217

00:10:10,389 --> 00:10:08,240

answers uh the foods that we have to eat

218

00:10:12,230 --> 00:10:10,399

and then a healthy balanced diet so i've

219

00:10:13,829 --> 00:10:12,240

actually gained a couple pounds since i

220

00:10:16,470 --> 00:10:13,839

got up here so maybe i need to eat just

221

00:10:18,389 --> 00:10:16,480

a little bit less but all of our food is

222

00:10:20,550 --> 00:10:18,399

shipped up from the earth and it's

223

00:10:23,829 --> 00:10:20,560

basically called shelf stabilized food

224

00:10:25,590 --> 00:10:23,839

so it'll last for many years and mainly

225

00:10:27,670 --> 00:10:25,600

comes in little pouches and we just rip

226

00:10:30,230 --> 00:10:27,680

a pouch open and inside will be i don't

227

00:10:32,949 --> 00:10:30,240

know chicken fajitas or maybe some sort

228

00:10:35,190 --> 00:10:32,959

of beef enchiladas and really the food

229

00:10:37,110 --> 00:10:35,200

is actually pretty good considering uh

230

00:10:39,430 --> 00:10:37,120

how stable it is and how long it lasts

231

00:10:40,790 --> 00:10:39,440

so i eat a diet pretty much like yours

232

00:10:42,870 --> 00:10:40,800

the only thing i don't get is an

233

00:10:49,670 --> 00:10:42,880

occasional pizza and i would love to

234

00:10:54,870 --> 00:10:52,069

hi my name is caitlin snyer and this

235

00:11:01,350 --> 00:10:54,880

question is for dr swanson do you take

236

00:11:05,110 --> 00:11:03,269

uh unfortunately we don't have animals

237

00:11:07,110 --> 00:11:05,120

up here i would love to i'd love to have

238

00:11:09,030 --> 00:11:07,120

a pet i have pets at home i have three

239

00:11:11,430 --> 00:11:09,040

dogs and a cat and i would love to have

240

00:11:12,630 --> 00:11:11,440

an animal up here maybe but i think it

241

00:11:13,990 --> 00:11:12,640

would be uh

242

00:11:15,829 --> 00:11:14,000

interesting for the animal itself to

243

00:11:23,670 --> 00:11:15,839

live up here and to be a little musty to

244

00:11:28,949 --> 00:11:26,230

hi my name is john and this question is

245

00:11:30,389 --> 00:11:28,959

for dr swanson do you have any favorite

246

00:11:35,829 --> 00:11:30,399

games that you like to play when you

247

00:11:40,630 --> 00:11:38,069

yeah we do have games we do like to play

248

00:11:42,310 --> 00:11:40,640

up here uh and they all about kind of

249

00:11:44,069 --> 00:11:42,320

they're based around games on earth but

250

00:11:45,670 --> 00:11:44,079

they're all a little different up here

251
00:11:47,910 --> 00:11:45,680
because everything floats so we have

252
00:11:49,910 --> 00:11:47,920
other games we like to do

253
00:11:52,310 --> 00:11:49,920
say one of them is we'll take this ball

254
00:11:54,470 --> 00:11:52,320
and we'll try to aim it down the module

255
00:11:56,069 --> 00:11:54,480
way away and we can then change we'll

256
00:11:58,790 --> 00:11:56,079
start doing light throw on it and then

257
00:12:01,350 --> 00:11:58,800
we change where it goes by by blowing on

258
00:12:03,350 --> 00:12:01,360
either side of it and making it move and

259
00:12:05,590 --> 00:12:03,360
we'll see a little example of that he

260
00:12:07,110 --> 00:12:05,600
can make it move by that and so we try

261
00:12:08,310 --> 00:12:07,120
to aim that way it's just a game we play

262
00:12:09,829 --> 00:12:08,320
and see who can get it close to a

263
00:12:11,750 --> 00:12:09,839

certain object at the end but we have

264

00:12:13,110 --> 00:12:11,760

many games like that we play

265

00:12:20,870 --> 00:12:13,120

and they're all fun up here because

266

00:12:24,310 --> 00:12:22,550

this is brian mcneil the principal at

267

00:12:29,190 --> 00:12:24,320

elliott ranch that completes our

268

00:12:33,990 --> 00:12:32,150

oh absolutely we have time for one more

269

00:12:36,629 --> 00:12:34,000

i have a question

270

00:12:38,710 --> 00:12:36,639

last week you discovered

271

00:12:41,269 --> 00:12:38,720

plant life growing on the outside of the

272

00:12:46,150 --> 00:12:41,279

space station what are your theories as

273

00:12:49,430 --> 00:12:47,829

oh i don't know that that's a great

274

00:12:51,910 --> 00:12:49,440

question i theory i've been thinking

275

00:12:53,990 --> 00:12:51,920

about this when i'm floating in my bed

276

00:12:56,949 --> 00:12:54,000

at night trying to go to sleep uh how

277

00:12:59,269 --> 00:12:56,959

could this even be so first i'm ecstatic

278

00:13:01,430 --> 00:12:59,279

that they actually have found this and

279

00:13:03,430 --> 00:13:01,440

uh it's it's just one of the many

280

00:13:05,590 --> 00:13:03,440

amazing things that happened up here

281

00:13:07,110 --> 00:13:05,600

when it's the unexpected discovery i

282

00:13:08,949 --> 00:13:07,120

think that's my favorite part of living

283

00:13:10,710 --> 00:13:08,959

on the space station uh here's something

284

00:13:12,069 --> 00:13:10,720

that we didn't think was possible we

285

00:13:13,670 --> 00:13:12,079

never even thought to look for it here

286

00:13:15,430 --> 00:13:13,680

they're looking for it and we find it

287

00:13:16,790 --> 00:13:15,440

and now we got to answer those questions

288

00:13:21,750 --> 00:13:16,800

that come from that and the answers are

289

00:13:25,269 --> 00:13:23,269

well we'd like to say thank you mr

290

00:13:27,590 --> 00:13:25,279

wiseman and dr swanson for your time we

291

00:13:28,949 --> 00:13:27,600

know you're very busy this completes all

292

00:13:32,629 --> 00:13:28,959

of the questions from elliott ranch

293

00:13:41,350 --> 00:13:33,750

it was our pleasure those were some

294

00:13:46,550 --> 00:13:43,350

i believe we have time for a question

295

00:13:48,550 --> 00:13:46,560

from the crowd possibly is that correct

296

00:13:49,590 --> 00:13:48,560

wow all right any questions from the

297

00:14:01,389 --> 00:13:49,600

crowd

298

00:14:03,350 --> 00:14:01,399

is it you

299

00:14:04,629 --> 00:14:03,360

aliens

300

00:14:09,350 --> 00:14:04,639

real

301

00:14:13,590 --> 00:14:11,910

well that's a good question uh i don't

302

00:14:16,150 --> 00:14:13,600

know sometimes i think he might be alien

303

00:14:17,990 --> 00:14:16,160

but that's a different destroy but no i

304

00:14:20,230 --> 00:14:18,000

i don't know for sure you know the way i

305

00:14:22,230 --> 00:14:20,240

look at it is there are so many planets

306

00:14:24,230 --> 00:14:22,240

out there that could be possibly have

307

00:14:25,750 --> 00:14:24,240

life in in this universe that we have i

308

00:14:27,750 --> 00:14:25,760

mean they're just it's an enormous

309

00:14:29,590 --> 00:14:27,760

number that it almost seems to be there

310

00:14:31,350 --> 00:14:29,600

has to be something out there i don't

311

00:14:37,030 --> 00:14:31,360

know what it is i don't know where it is

312

00:14:40,629 --> 00:14:38,790

all right mr wiseman and dr swanson

313

00:14:42,069 --> 00:14:40,639

thank you again so much for your time

314

00:14:44,790 --> 00:14:42,079

we'll let you get back to your busy

315

00:14:48,870 --> 00:14:44,800

schedule we appreciate your expertise

316

00:14:48,880 --> 00:14:59,350

my pleasure