



1
00:00:06,309 --> 00:00:02,550
station this is houston are you ready

2
00:00:10,150 --> 00:00:08,549
station is ready

3
00:00:11,910 --> 00:00:10,160
national geographic this is mission

4
00:00:13,990 --> 00:00:11,920
control houston please call station for

5
00:00:15,749 --> 00:00:14,000
a voice check

6
00:00:17,189 --> 00:00:15,759
station this is kathleen schwiller vice

7
00:00:19,670 --> 00:00:17,199
president for education at the national

8
00:00:21,750 --> 00:00:19,680
geographic society i'm in washington dc

9
00:00:26,070 --> 00:00:21,760
with a huge group of excited high school

10
00:00:32,630 --> 00:00:28,150
hear you loud and clear

11
00:00:36,229 --> 00:00:34,630
i'd also like to introduce my colleague

12
00:00:40,229 --> 00:00:36,239
chris albert who's going to help our

13
00:00:44,950 --> 00:00:42,470

commander thank you so much for joining

14

00:00:50,549 --> 00:00:44,960

us today at national geographic we're

15

00:00:53,430 --> 00:00:52,069

glad to be with you look forward to the

16

00:00:57,590 --> 00:00:53,440

questions

17

00:00:59,270 --> 00:00:57,600

for you and i want to get in as many as

18

00:01:02,229 --> 00:00:59,280

possible so i'm going to invite our

19

00:01:04,070 --> 00:01:02,239

first student up here tyler lee who is

20

00:01:05,750 --> 00:01:04,080

in 10th grade and then we'll just keep

21

00:01:07,590 --> 00:01:05,760

going after tyler they'll come up and

22

00:01:13,910 --> 00:01:07,600

introduce themselves and ask their

23

00:01:18,630 --> 00:01:15,910

yes hello tyler lee

24

00:01:25,030 --> 00:01:18,640

and uh my question is how does nasa

25

00:01:29,190 --> 00:01:27,109

uh very good question i don't think nasa

26

00:01:31,109 --> 00:01:29,200

is going to send anybody to mars until

27

00:01:33,030 --> 00:01:31,119

we can do it safely and get them there

28

00:01:35,109 --> 00:01:33,040

safely as well as returning them back to

29

00:01:37,109 --> 00:01:35,119

earth safely so that's a big a big

30

00:01:38,310 --> 00:01:37,119

hurdle and that's what what nasa is

31

00:01:40,069 --> 00:01:38,320

working on to make sure that the

32

00:01:44,550 --> 00:01:40,079

astronauts can get there and return

33

00:01:48,950 --> 00:01:46,789

hello my name is cheray baltimore and my

34

00:01:51,030 --> 00:01:48,960

question is since humans have not been

35

00:01:52,870 --> 00:01:51,040

yet sent to mars what is the most

36

00:01:58,550 --> 00:01:52,880

challenging aspect of sending an

37

00:02:02,069 --> 00:02:00,230

well mars that's a tough question

38

00:02:05,190 --> 00:02:02,079

because there's so many difficult things

39

00:02:07,510 --> 00:02:05,200

about getting humans to that planet

40

00:02:09,029 --> 00:02:07,520

you may know that we're about 200 miles

41

00:02:11,910 --> 00:02:09,039

up here on the space station from the

42

00:02:14,229 --> 00:02:11,920

earth and the moon's around 200 000

43

00:02:16,790 --> 00:02:14,239

miles away and then mars is around over

44

00:02:18,790 --> 00:02:16,800

20 million miles away so just that in

45

00:02:20,390 --> 00:02:18,800

itself is very difficult to get somebody

46

00:02:22,550 --> 00:02:20,400

that far away

47

00:02:24,470 --> 00:02:22,560

i think the most difficult thing will be

48

00:02:27,670 --> 00:02:24,480

being able to keep the astronauts alive

49

00:02:29,030 --> 00:02:27,680

and healthy um on their trip to mars and

50

00:02:32,150 --> 00:02:29,040

while they're there and then on their

51
00:02:35,110 --> 00:02:32,160
return trips so having systems uh on the

52
00:02:37,350 --> 00:02:35,120
spacecraft that allow us to

53
00:02:39,750 --> 00:02:37,360
stay healthy by working out by eating

54
00:02:41,350 --> 00:02:39,760
properly and those sort of things

55
00:02:44,710 --> 00:02:41,360
to to make sure that we're healthy when

56
00:02:48,470 --> 00:02:47,030
my name is shawr and my question is

57
00:02:50,630 --> 00:02:48,480
based on your previous research

58
00:02:52,309 --> 00:02:50,640
experiences what is the main topic you

59
00:02:57,750 --> 00:02:52,319
are interested in researching on this

60
00:03:01,589 --> 00:02:59,750
well i tell you i've kind of come here

61
00:03:03,190 --> 00:03:01,599
with an open mind and i've really

62
00:03:05,030 --> 00:03:03,200
enjoyed everything i've gotten to do so

63
00:03:06,309 --> 00:03:05,040

far and it's been a wide range of things

64

00:03:07,910 --> 00:03:06,319

i've only been here a few weeks but

65

00:03:09,350 --> 00:03:07,920

we've gotten to do several experiments

66

00:03:11,110 --> 00:03:09,360

already

67

00:03:13,270 --> 00:03:11,120

i'm growing some plants i'm growing

68

00:03:14,869 --> 00:03:13,280

lettuce in space so that's kind of cool

69

00:03:16,470 --> 00:03:14,879

and i've really gotten into that so

70

00:03:19,110 --> 00:03:16,480

doing a little gardening in space along

71

00:03:20,869 --> 00:03:19,120

with many medical and other science

72

00:03:22,869 --> 00:03:20,879

experiments so

73

00:03:24,470 --> 00:03:22,879

i'm not sure i have a favorite yet um

74

00:03:26,070 --> 00:03:24,480

here in three or four months when i when

75

00:03:28,309 --> 00:03:26,080

i'm winding up my mission i'll probably

76
00:03:29,830 --> 00:03:28,319
have a favorite or two but right now i'm

77
00:03:32,149 --> 00:03:29,840
enjoying everything thanks for the

78
00:03:36,470 --> 00:03:32,159
question

79
00:03:38,149 --> 00:03:36,480
since mars has similarities to earth

80
00:03:43,910 --> 00:03:38,159
would you be surprised to find any life

81
00:03:47,589 --> 00:03:45,990
well i think there you know there may be

82
00:03:49,509 --> 00:03:47,599
some types of life form i don't think

83
00:03:51,509 --> 00:03:49,519
we'll find it you know the way that we

84
00:03:53,670 --> 00:03:51,519
experience life form here on earth but

85
00:03:55,509 --> 00:03:53,680
maybe i'll maybe i'm wrong

86
00:03:57,750 --> 00:03:55,519
but it is it is something we want to go

87
00:04:00,229 --> 00:03:57,760
explore to see what's there what maybe

88
00:04:02,149 --> 00:04:00,239

was there at one time and how did it get

89

00:04:04,869 --> 00:04:02,159

to be the way it is now versus the way

90

00:04:06,949 --> 00:04:04,879

it um was back then so we have a lot to

91

00:04:09,350 --> 00:04:06,959

explore and uh you know people about

92

00:04:10,630 --> 00:04:09,360

people your age the exciting part is

93

00:04:12,710 --> 00:04:10,640

people your age are gonna be the ones

94

00:04:15,030 --> 00:04:12,720

going to mars for the first time not me

95

00:04:17,110 --> 00:04:15,040

i'll be too old by that point so

96

00:04:21,349 --> 00:04:17,120

um you guys get ready because your

97

00:04:26,070 --> 00:04:24,390

hi my name is john sandoval

98

00:04:28,790 --> 00:04:26,080

and i wanted to know if

99

00:04:34,710 --> 00:04:28,800

you've had any unforeseen complications

100

00:04:39,430 --> 00:04:36,950

so far so good we have not had anything

101
00:04:41,430 --> 00:04:39,440
completely unforeseen we've had a few

102
00:04:42,950 --> 00:04:41,440
failures and systems but they have

103
00:04:45,189 --> 00:04:42,960
happened before so we have great

104
00:04:47,030 --> 00:04:45,199
procedures and great teams on the ground

105
00:04:48,469 --> 00:04:47,040
that make sure we get through those and

106
00:04:49,670 --> 00:04:48,479
get all the systems working like they're

107
00:04:51,430 --> 00:04:49,680
supposed to

108
00:04:54,790 --> 00:04:51,440
so so far

109
00:04:58,790 --> 00:04:56,790
hello my name is lania samuels and my

110
00:05:00,950 --> 00:04:58,800
question is has the advancement in

111
00:05:05,990 --> 00:05:00,960
technology impacted your research and if

112
00:05:09,510 --> 00:05:07,749
well i'd have to answer that yes there's

113
00:05:11,189 --> 00:05:09,520

so much incredible technology that

114

00:05:13,110 --> 00:05:11,199

scientists and researchers on the ground

115

00:05:15,510 --> 00:05:13,120

have put together and actually gotten

116

00:05:17,350 --> 00:05:15,520

approved to fly up here to space

117

00:05:19,029 --> 00:05:17,360

one for example my colleague who just

118

00:05:20,469 --> 00:05:19,039

left here last week

119

00:05:22,150 --> 00:05:20,479

kate rubin she was working on a

120

00:05:23,830 --> 00:05:22,160

biomolecular sequencer where they're

121

00:05:25,350 --> 00:05:23,840

looking at dna samples up here and they

122

00:05:28,070 --> 00:05:25,360

were doing billions and billions of

123

00:05:29,909 --> 00:05:28,080

samples so that's a pretty cool thing

124

00:05:31,430 --> 00:05:29,919

i mentioned earlier about growing plants

125

00:05:33,749 --> 00:05:31,440

in space that's something that's fairly

126

00:05:35,430 --> 00:05:33,759

new with the technology we have and so

127

00:05:37,029 --> 00:05:35,440

we're trying to do that not so that i

128

00:05:39,510 --> 00:05:37,039

can survive here on the space station

129

00:05:41,189 --> 00:05:39,520

but when we do send people to mars one

130

00:05:42,870 --> 00:05:41,199

day we want to be able to grow our own

131

00:05:44,390 --> 00:05:42,880

food and so we're working on those kind

132

00:05:45,749 --> 00:05:44,400

of techniques now with really nice

133

00:05:46,950 --> 00:05:45,759

technology

134

00:05:52,629 --> 00:05:46,960

and hopefully we'll be able to use this

135

00:05:57,909 --> 00:05:55,510

hello my name is revendra bizron and my

136

00:06:00,070 --> 00:05:57,919

question is given your prior experience

137

00:06:06,070 --> 00:06:00,080

and training for this mission is there

138

00:06:10,870 --> 00:06:08,390

i'll have to say that the training is

139

00:06:12,950 --> 00:06:10,880

really excellent and uh so far there's

140

00:06:14,870 --> 00:06:12,960

nothing i've been unprepared for

141

00:06:16,629 --> 00:06:14,880

the separation of being gone kind of

142

00:06:19,110 --> 00:06:16,639

goes back to my military training so

143

00:06:20,550 --> 00:06:19,120

that was something that was you know not

144

00:06:22,230 --> 00:06:20,560

always happening but it's something we

145

00:06:23,590 --> 00:06:22,240

were used to

146

00:06:25,830 --> 00:06:23,600

and then being in this incredible

147

00:06:27,350 --> 00:06:25,840

laboratory like i am the training i've

148

00:06:29,029 --> 00:06:27,360

received over the last several years

149

00:06:33,510 --> 00:06:29,039

getting me ready for the mission has

150

00:06:36,070 --> 00:06:34,950

hi

151
00:06:38,870 --> 00:06:36,080
excuse me

152
00:06:41,430 --> 00:06:38,880
hi my name is erica moore and i was

153
00:06:43,670 --> 00:06:41,440
wondering if

154
00:06:44,710 --> 00:06:43,680
any research has

155
00:06:47,590 --> 00:06:44,720
come up

156
00:06:49,510 --> 00:06:47,600
with there actually being another planet

157
00:06:55,430 --> 00:06:49,520
inside or outside our solar system that

158
00:06:58,629 --> 00:06:56,870
well i guess i'm not smart enough to

159
00:07:00,230 --> 00:06:58,639
answer that i know people are always

160
00:07:01,909 --> 00:07:00,240
looking and trying to find other life

161
00:07:07,670 --> 00:07:01,919
forms in different planets and solar

162
00:07:12,390 --> 00:07:09,909
hello my name is lavelle walls and my

163
00:07:18,710 --> 00:07:12,400

question is what has surprised you most

164

00:07:22,390 --> 00:07:20,469

let's see so far i think the thing that

165

00:07:23,990 --> 00:07:22,400

surprised me the most is how well this

166

00:07:25,830 --> 00:07:24,000

vehicle is behaving it's really an

167

00:07:27,430 --> 00:07:25,840

amazing complex

168

00:07:29,510 --> 00:07:27,440

it's very big it's about the size of a

169

00:07:30,790 --> 00:07:29,520

football field with incredible systems

170

00:07:32,469 --> 00:07:30,800

on board

171

00:07:34,550 --> 00:07:32,479

that support life

172

00:07:37,029 --> 00:07:34,560

you know air conditioning systems and

173

00:07:40,469 --> 00:07:37,039

you know bathroom systems and all kinds

174

00:07:42,150 --> 00:07:40,479

of science and research and food systems

175

00:07:44,309 --> 00:07:42,160

anything that you need to survive on

176

00:07:45,990 --> 00:07:44,319

earth we have it here but we're just

177

00:07:49,670 --> 00:07:46,000

doing it in a different environment

178

00:07:51,589 --> 00:07:49,680

about 250 miles above above earth so

179

00:07:53,990 --> 00:07:51,599

uh the surprising part is everything's

180

00:07:55,510 --> 00:07:54,000

been working great um

181

00:07:56,869 --> 00:07:55,520

you know we'll really change out some

182

00:07:58,629 --> 00:07:56,879

things to make sure the maintenance and

183

00:08:00,150 --> 00:07:58,639

everything is going well but hopefully

184

00:08:05,189 --> 00:08:00,160

this will keep up and we won't have any

185

00:08:09,909 --> 00:08:07,909

hello my name is samuel debro and my

186

00:08:11,510 --> 00:08:09,919

question for you was what sparked your

187

00:08:16,629 --> 00:08:11,520

decision to travel into space in the

188

00:08:19,430 --> 00:08:17,990

well it has to go back to when i was a

189

00:08:21,589 --> 00:08:19,440

small child

190

00:08:23,110 --> 00:08:21,599

i was inspired by the apollo astronauts

191

00:08:26,230 --> 00:08:23,120

who were landing on the moon at the time

192

00:08:28,390 --> 00:08:26,240

so this was back in the early 70s way

193

00:08:30,309 --> 00:08:28,400

before you guys were born but

194

00:08:32,550 --> 00:08:30,319

that's what we as americans everybody

195

00:08:34,790 --> 00:08:32,560

was focused on landing on the moon and

196

00:08:36,790 --> 00:08:34,800

uh as a kid that really struck me as wow

197

00:08:38,949 --> 00:08:36,800

that is really incredible these brave

198

00:08:40,469 --> 00:08:38,959

men were going up to the moon you know

199

00:08:43,670 --> 00:08:40,479

really really far away

200

00:08:45,829 --> 00:08:43,680

on limited technology and succeeding and

201
00:08:47,750 --> 00:08:45,839
when i saw that that kind of sparked my

202
00:08:50,870 --> 00:08:47,760
interest and inspired me to want to be

203
00:08:55,030 --> 00:08:52,630
good afternoon commander my name is

204
00:08:56,630 --> 00:08:55,040
connell pollard my question is what role

205
00:09:02,389 --> 00:08:56,640
models or people did you have in your

206
00:09:05,670 --> 00:09:04,230
my biggest role model my whole life was

207
00:09:07,509 --> 00:09:05,680
my grandfather

208
00:09:09,110 --> 00:09:07,519
on my mother's side he was just a great

209
00:09:11,750 --> 00:09:09,120
man

210
00:09:13,190 --> 00:09:11,760
you know gentlemen and always did things

211
00:09:14,790 --> 00:09:13,200
right

212
00:09:15,670 --> 00:09:14,800
taught me a lot of great lessons along

213
00:09:17,509 --> 00:09:15,680

the way

214

00:09:20,630 --> 00:09:17,519

and so i attribute a lot of my success

215

00:09:25,110 --> 00:09:22,870

hi commander my name is renee smith and

216

00:09:31,590 --> 00:09:25,120

my question to you is what has been your

217

00:09:35,829 --> 00:09:34,150

well the favorite moment in space is

218

00:09:37,670 --> 00:09:35,839

looking out the window as you might

219

00:09:39,590 --> 00:09:37,680

imagine it's just an incredible view of

220

00:09:41,990 --> 00:09:39,600

earth and we're going around the earth

221

00:09:45,430 --> 00:09:42,000

every 90 minutes so that's pretty quick

222

00:09:47,910 --> 00:09:45,440

we're traveling 17 500 miles an hour

223

00:09:49,110 --> 00:09:47,920

so to be able to you know look at our

224

00:09:51,269 --> 00:09:49,120

planet and

225

00:09:52,630 --> 00:09:51,279

and pass it by that quickly it's just

226

00:09:53,430 --> 00:09:52,640

something that we're not used to on

227

00:09:55,350 --> 00:09:53,440

earth

228

00:09:57,750 --> 00:09:55,360

and you know the views are spectacular

229

00:09:59,590 --> 00:09:57,760

the sun comes up and down about every 45

230

00:10:02,710 --> 00:09:59,600

minutes so we get to see spectacular

231

00:10:04,230 --> 00:10:02,720

sunsets and sunrises every 45 minutes

232

00:10:06,069 --> 00:10:04,240

along with you know at nighttime the

233

00:10:07,590 --> 00:10:06,079

stars are incredibly beautiful and

234

00:10:09,030 --> 00:10:07,600

brilliant so

235

00:10:10,949 --> 00:10:09,040

it's really incredible looking at our

236

00:10:12,630 --> 00:10:10,959

planet and i think that's a thing that

237

00:10:15,430 --> 00:10:12,640

that i've enjoyed most about being up

238

00:10:20,790 --> 00:10:18,069

hi commander my name is tara minor and

239

00:10:23,030 --> 00:10:20,800

my question is what steps should i take

240

00:10:29,990 --> 00:10:23,040

as a high school student right now to

241

00:10:33,910 --> 00:10:32,630

well if you want to work at nasa or be

242

00:10:35,509 --> 00:10:33,920

an astronaut

243

00:10:37,269 --> 00:10:35,519

i think the things you need to focus on

244

00:10:39,590 --> 00:10:37,279

are math science and engineering and

245

00:10:42,069 --> 00:10:39,600

technology so those kind of

246

00:10:44,710 --> 00:10:42,079

stem systems you probably heard or what

247

00:10:45,590 --> 00:10:44,720

what people at nasa are pretty strong in

248

00:10:47,190 --> 00:10:45,600

so

249

00:10:49,190 --> 00:10:47,200

hopefully you'll start focusing on those

250

00:10:51,590 --> 00:10:49,200

and working really hard

251
00:10:52,870 --> 00:10:51,600
and then do the same in college and then

252
00:10:54,550 --> 00:10:52,880
if you're doing really well then you'll

253
00:10:56,630 --> 00:10:54,560
have a good chance and maybe getting a

254
00:10:57,910 --> 00:10:56,640
job at nasa and and if you want to be an

255
00:11:01,509 --> 00:10:57,920
astronaut down the road maybe you'll

256
00:11:03,110 --> 00:11:01,519
have a chance at that as well

257
00:11:05,670 --> 00:11:03,120
good afternoon commander my name is

258
00:11:07,350 --> 00:11:05,680
william maya and my question is do i

259
00:11:12,389 --> 00:11:07,360
need formal flight experience to become

260
00:11:15,430 --> 00:11:13,750
that's a good question a lot of people

261
00:11:17,910 --> 00:11:15,440
think you have to be in the military you

262
00:11:19,750 --> 00:11:17,920
have to be a pilot and the answer is no

263
00:11:22,069 --> 00:11:19,760

actually most of our astronauts these

264

00:11:24,949 --> 00:11:22,079

days are not in the military maybe 30 to

265

00:11:26,550 --> 00:11:24,959

35 percent i think are military now and

266

00:11:28,710 --> 00:11:26,560

the rest are civilians so they're

267

00:11:30,550 --> 00:11:28,720

teachers and doctors and

268

00:11:32,230 --> 00:11:30,560

engineers and scientists that make up

269

00:11:33,509 --> 00:11:32,240

mostly astronaut core

270

00:11:36,630 --> 00:11:33,519

some of those folks do have flight

271

00:11:37,829 --> 00:11:36,640

experience but most of them don't so

272

00:11:39,670 --> 00:11:37,839

to answer your question no you don't

273

00:11:42,949 --> 00:11:39,680

need prior flight experience to be an

274

00:11:47,750 --> 00:11:44,949

afternoon commander my name is henry

275

00:11:50,949 --> 00:11:47,760

frazier and my question is can military

276

00:11:57,030 --> 00:11:50,959

experiences be a good a good lead to

277

00:12:00,310 --> 00:11:58,629

being in the military i i was in the

278

00:12:02,230 --> 00:12:00,320

military i was in the army i was a pilot

279

00:12:04,870 --> 00:12:02,240

in the army flying apache helicopters it

280

00:12:07,350 --> 00:12:04,880

was a great avenue for me to

281

00:12:09,590 --> 00:12:07,360

put in an application and eventually be

282

00:12:11,190 --> 00:12:09,600

accepted again it's not the only route

283

00:12:13,910 --> 00:12:11,200

like i mentioned earlier in the previous

284

00:12:15,670 --> 00:12:13,920

question but it is a good route for um

285

00:12:17,509 --> 00:12:15,680

the if there are spacecraft that we're

286

00:12:19,110 --> 00:12:17,519

going to fly like the next vehicles that

287

00:12:20,790 --> 00:12:19,120

that we're going to be developing here

288

00:12:22,629 --> 00:12:20,800

in the next few years they're going to

289

00:12:24,710 --> 00:12:22,639

have commanders and pilots very similar

290

00:12:26,550 --> 00:12:24,720

to the space shuttle had a few years ago

291

00:12:29,190 --> 00:12:26,560

so in that case we will draw from the

292

00:12:33,910 --> 00:12:29,200

military to get our pilots and test

293

00:12:39,829 --> 00:12:37,190

hello my name is maguloy lavo drama

294

00:12:42,230 --> 00:12:39,839

and my question is as a children we

295

00:12:48,389 --> 00:12:42,240

dream about exploring space is it

296

00:12:52,150 --> 00:12:50,629

it's even more than i imagined living

297

00:12:53,910 --> 00:12:52,160

and working in this really unique

298

00:12:56,230 --> 00:12:53,920

environment is just something that's

299

00:12:58,150 --> 00:12:56,240

hard to to put into words really i could

300

00:13:00,069 --> 00:12:58,160

try to describe it to all of you but

301
00:13:01,670 --> 00:13:00,079
it's just not the same as being here and

302
00:13:03,990 --> 00:13:01,680
being able to float around and you know

303
00:13:05,350 --> 00:13:04,000
i can go sideways or upside down and it

304
00:13:07,750 --> 00:13:05,360
just doesn't matter

305
00:13:09,110 --> 00:13:07,760
so it's it's kind of cool

306
00:13:10,550 --> 00:13:09,120
um

307
00:13:11,990 --> 00:13:10,560
but that's just one that's just one

308
00:13:13,670 --> 00:13:12,000
aspect of it

309
00:13:15,269 --> 00:13:13,680
being able to float around

310
00:13:18,310 --> 00:13:15,279
again looking out the window is so

311
00:13:21,190 --> 00:13:18,320
unique and so special that uh if i get

312
00:13:22,550 --> 00:13:21,200
back down here um i love doing that

313
00:13:23,910 --> 00:13:22,560

doing the science and research that

314

00:13:25,750 --> 00:13:23,920

we're doing up here

315

00:13:27,750 --> 00:13:25,760

is way more than i ever dreamed i'd be

316

00:13:29,350 --> 00:13:27,760

doing um and the cool thing about all

317

00:13:31,670 --> 00:13:29,360

the science and research is we're doing

318

00:13:34,230 --> 00:13:31,680

all this to help everybody back on earth

319

00:13:36,389 --> 00:13:34,240

it's not for us it's not for me it's for

320

00:13:39,990 --> 00:13:36,399

humanity so that's really cool that

321

00:13:45,590 --> 00:13:42,470

okay commander my name is taramana i'm

322

00:13:47,509 --> 00:13:45,600

back again i had a second question

323

00:13:49,750 --> 00:13:47,519

my question is what do you recommend

324

00:13:54,870 --> 00:13:49,760

academically to prepare one for becoming

325

00:13:58,949 --> 00:13:56,550

i'll kind of add on to the earlier

326

00:14:01,110 --> 00:13:58,959

question again math science engineering

327

00:14:02,790 --> 00:14:01,120

technology those kind of

328

00:14:04,310 --> 00:14:02,800

subjects are what you need to focus on

329

00:14:06,150 --> 00:14:04,320

and you need to do really well in them

330

00:14:07,750 --> 00:14:06,160

okay you can't just take them and not do

331

00:14:10,230 --> 00:14:07,760

well if you want to eventually be an

332

00:14:13,110 --> 00:14:10,240

astronaut or eventually be a successful

333

00:14:15,030 --> 00:14:13,120

person in life so work really hard get

334

00:14:17,110 --> 00:14:15,040

help when you need it we all need help

335

00:14:19,590 --> 00:14:17,120

along the way i'm not the smartest guy

336

00:14:22,629 --> 00:14:19,600

but i work really hard and i was able to

337

00:14:25,189 --> 00:14:22,639

accomplish a lot of my dreams

338

00:14:27,030 --> 00:14:25,199

my name is brianna kirkpatrick and i was

339

00:14:29,189 --> 00:14:27,040

wondering being in space for a long

340

00:14:31,750 --> 00:14:29,199

period of time there are everyday things

341

00:14:33,670 --> 00:14:31,760

on earth that limit our space i mean

342

00:14:36,310 --> 00:14:33,680

that are limited in space

343

00:14:41,750 --> 00:14:36,320

how can you how did you adjust to the

344

00:14:45,350 --> 00:14:43,509

well i think i get better every day at

345

00:14:46,949 --> 00:14:45,360

the daily things you know we get trained

346

00:14:49,189 --> 00:14:46,959

a lot like i mentioned earlier on all

347

00:14:51,030 --> 00:14:49,199

the systems and everything on board but

348

00:14:53,750 --> 00:14:51,040

you don't get trained on the things that

349

00:14:55,269 --> 00:14:53,760

you do all every day like eating and

350

00:14:56,710 --> 00:14:55,279

sleeping and

351

00:14:58,310 --> 00:14:56,720

brushing your teeth and those kind of

352

00:15:00,790 --> 00:14:58,320

things so those kind of things you kind

353

00:15:02,310 --> 00:15:00,800

of have to figure out on your own

354

00:15:03,990 --> 00:15:02,320

and just remember everything floats up

355

00:15:06,310 --> 00:15:04,000

here so you got to manage a lot of stuff

356

00:15:07,670 --> 00:15:06,320

if you have a packet of food and you

357

00:15:09,750 --> 00:15:07,680

have a spoon

358

00:15:11,189 --> 00:15:09,760

and you have scissors to cut it open you

359

00:15:13,110 --> 00:15:11,199

can't hold all those things at the same

360

00:15:14,870 --> 00:15:13,120

time so you got to manage them you you

361

00:15:16,790 --> 00:15:14,880

put velcro on everything and you hold

362

00:15:19,110 --> 00:15:16,800

things down so those kind of things are

363

00:15:20,629 --> 00:15:19,120

fun they're unique um

364

00:15:22,550 --> 00:15:20,639

you've probably seen some videos maybe

365

00:15:25,030 --> 00:15:22,560

on youtube of astronauts eating in space

366

00:15:27,509 --> 00:15:25,040

and it's always a good time with doing

367

00:15:28,710 --> 00:15:27,519

those kind of daily routine things one

368

00:15:30,629 --> 00:15:28,720

thing a lot of people don't know is we

369

00:15:32,870 --> 00:15:30,639

don't have showers up here so

370

00:15:34,629 --> 00:15:32,880

that's something i do miss and it's a

371

00:15:36,870 --> 00:15:34,639

daily thing that you guys i think get to

372

00:15:38,389 --> 00:15:36,880

do hopefully every day

373

00:15:39,749 --> 00:15:38,399

but something we don't have here so we

374

00:15:41,269 --> 00:15:39,759

kind of just wipe down and i'll be

375

00:15:44,790 --> 00:15:41,279

looking forward to a good shower here in

376

00:15:49,430 --> 00:15:47,269

hello commander my name is larry based

377

00:15:51,350 --> 00:15:49,440

upon the plant plant experiments on the

378

00:15:53,350 --> 00:15:51,360

spaces station and the knowledge we have

379

00:15:54,949 --> 00:15:53,360

in mars do you believe it is possible to

380

00:16:01,189 --> 00:15:54,959

grow plants using non-traditional

381

00:16:04,870 --> 00:16:03,350

yeah i actually do because i've actually

382

00:16:06,710 --> 00:16:04,880

planted some stuff like i mentioned

383

00:16:08,790 --> 00:16:06,720

earlier and i'm seeing

384

00:16:10,230 --> 00:16:08,800

seeing the sprouts already and here in

385

00:16:13,509 --> 00:16:10,240

three or four more weeks i think we'll

386

00:16:15,749 --> 00:16:13,519

see some some real products of lettuce

387

00:16:17,269 --> 00:16:15,759

and cabbage that we're growing so that's

388

00:16:18,710 --> 00:16:17,279

pretty cool and if we can do it here i

389

00:16:20,949 --> 00:16:18,720

think there's no reason we can't do that

390

00:16:23,990 --> 00:16:20,959

sort of thing on a planet like mars

391

00:16:28,230 --> 00:16:25,829

commander i promise this is my last

392

00:16:36,230 --> 00:16:30,470

at what moment in your life did you want

393

00:16:40,710 --> 00:16:37,990

well i talked a little bit about earlier

394

00:16:42,310 --> 00:16:40,720

i was probably five or six years old

395

00:16:43,509 --> 00:16:42,320

when i first saw the men walking on the

396

00:16:44,550 --> 00:16:43,519

moon and that kind of sparked my

397

00:16:46,550 --> 00:16:44,560

interest

398

00:16:47,990 --> 00:16:46,560

it wasn't you know i think everybody at

399

00:16:49,990 --> 00:16:48,000

my age back then wanted to be an

400

00:16:51,749 --> 00:16:50,000

astronaut so you know eventually i went

401
00:16:53,189 --> 00:16:51,759
to college and actually when i went to

402
00:16:54,790 --> 00:16:53,199
college at the united states military

403
00:16:56,629 --> 00:16:54,800
academy at west point

404
00:16:57,990 --> 00:16:56,639
um i figured that that dream of mine

405
00:16:59,670 --> 00:16:58,000
being astronaut was gone because i

406
00:17:02,710 --> 00:16:59,680
didn't realize you could be in the army

407
00:17:05,590 --> 00:17:02,720
and be an astronaut so i just went there

408
00:17:07,270 --> 00:17:05,600
i went to serve in the army as a pilot

409
00:17:08,309 --> 00:17:07,280
and eventually i realized you could do

410
00:17:10,390 --> 00:17:08,319
both

411
00:17:13,029 --> 00:17:10,400
so that kind of flame

412
00:17:15,510 --> 00:17:13,039
in my brain kicked in again and i really

413
00:17:18,150 --> 00:17:15,520

wanted to be an astronaut so i got lucky

414

00:17:20,789 --> 00:17:18,160

enough i applied a few times and finally

415

00:17:24,470 --> 00:17:20,799

they accepted me in 2004

416

00:17:27,429 --> 00:17:26,230

commander this is chris albert again

417

00:17:29,110 --> 00:17:27,439

from national geographic we have a

418

00:17:31,110 --> 00:17:29,120

couple other questions that we collected

419

00:17:32,710 --> 00:17:31,120

i think we have about a little over two

420

00:17:34,390 --> 00:17:32,720

and a half minutes left can you tell us

421

00:17:36,310 --> 00:17:34,400

a little bit about the science

422

00:17:41,350 --> 00:17:36,320

experiments uh that you're doing up

423

00:17:46,070 --> 00:17:43,590

so we got several what we call payloads

424

00:17:47,830 --> 00:17:46,080

going on yesterday we did some 3d

425

00:17:49,270 --> 00:17:47,840

printing which is kind of cool in space

426

00:17:51,190 --> 00:17:49,280

so i pulled out an element that was

427

00:17:52,870 --> 00:17:51,200

printed there's another one in there

428

00:17:54,390 --> 00:17:52,880

today i think that i could pull out at

429

00:17:56,549 --> 00:17:54,400

any time

430

00:17:58,310 --> 00:17:56,559

the japanese have a combustion module in

431

00:18:00,310 --> 00:17:58,320

their chamber which i was working on

432

00:18:01,990 --> 00:18:00,320

yesterday so that's pretty cool

433

00:18:04,310 --> 00:18:02,000

technology

434

00:18:05,350 --> 00:18:04,320

we have uh let's see what else the

435

00:18:07,510 --> 00:18:05,360

plants that i mentioned that were

436

00:18:09,430 --> 00:18:07,520

growing in the european module

437

00:18:10,789 --> 00:18:09,440

that's pretty special there the module

438

00:18:11,990 --> 00:18:10,799

i'm standing in now is the u.s

439

00:18:13,750 --> 00:18:12,000

laboratory

440

00:18:16,070 --> 00:18:13,760

we also have a furnace

441

00:18:17,669 --> 00:18:16,080

up here where i'm pointing uh one thing

442

00:18:19,190 --> 00:18:17,679

people don't think about

443

00:18:20,230 --> 00:18:19,200

because we're so used to being on earth

444

00:18:21,830 --> 00:18:20,240

is

445

00:18:23,909 --> 00:18:21,840

here in space like

446

00:18:25,909 --> 00:18:23,919

this isn't just a wall to my right or to

447

00:18:27,350 --> 00:18:25,919

my left there's a wall above me and

448

00:18:28,549 --> 00:18:27,360

below me so there's drawers and

449

00:18:30,710 --> 00:18:28,559

experiments

450

00:18:33,110 --> 00:18:30,720

below me above me and to my right and

451
00:18:34,950 --> 00:18:33,120
left so we can use all this space

452
00:18:37,270 --> 00:18:34,960
just like it we can only use the you

453
00:18:39,190 --> 00:18:37,280
know the sidewalks on earth we can use

454
00:18:40,870 --> 00:18:39,200
all the volume here in space so that's

455
00:18:42,150 --> 00:18:40,880
kind of unique

456
00:18:43,830 --> 00:18:42,160
and so there's there's a lot of there's

457
00:18:45,669 --> 00:18:43,840
a lot of russian experiments as well my

458
00:18:47,590 --> 00:18:45,679
colleagues i have two cosmonauts i'm up

459
00:18:48,789 --> 00:18:47,600
here with right now they're down on the

460
00:18:51,830 --> 00:18:48,799
russian segment doing a lot of

461
00:18:53,190 --> 00:18:51,840
experiments as well so the total product

462
00:18:55,590 --> 00:18:53,200
and all the stuff that we're going to do

463
00:18:58,710 --> 00:18:55,600

over time is going to produce really

464

00:19:00,630 --> 00:18:58,720

huge benefits for humanity

465

00:19:07,270 --> 00:19:00,640

can you tell us a little bit more about

466

00:19:11,029 --> 00:19:09,029

i don't know if you can see this device

467

00:19:12,950 --> 00:19:11,039

to my left here can you guys see that

468

00:19:16,310 --> 00:19:12,960

that i'm shaking or not

469

00:19:21,430 --> 00:19:18,230

okay so that's our stationary bike that

470

00:19:23,430 --> 00:19:21,440

we ride we do that a few times a week

471

00:19:26,310 --> 00:19:23,440

for exercise up here we have to exercise

472

00:19:28,310 --> 00:19:26,320

about two to two and a half hours a day

473

00:19:30,070 --> 00:19:28,320

about an hour of weight lifting of

474

00:19:31,909 --> 00:19:30,080

course nothing weighs up anything up

475

00:19:33,270 --> 00:19:31,919

here but we have a great machine called

476
00:19:35,029 --> 00:19:33,280
a red

477
00:19:37,190 --> 00:19:35,039
that we get on and you can crank up

478
00:19:39,350 --> 00:19:37,200
really heavy loads and you can do squats

479
00:19:41,669 --> 00:19:39,360
and bench press and shoulder press and

480
00:19:43,029 --> 00:19:41,679
crunches and curls and anything you can

481
00:19:45,029 --> 00:19:43,039
do on earth you can pretty much do on

482
00:19:46,630 --> 00:19:45,039
this machine so we do that for about an

483
00:19:48,230 --> 00:19:46,640
hour and then we ride this

484
00:19:50,150 --> 00:19:48,240
for aerobic activity we ride the

485
00:19:51,110 --> 00:19:50,160
stationary bike or we have a treadmill

486
00:19:52,950 --> 00:19:51,120
as well

487
00:19:55,029 --> 00:19:52,960
that we do for about an hour each day

488
00:19:57,110 --> 00:19:55,039

and that keeps our bones

489

00:19:58,630 --> 00:19:57,120

and bone density and muscle mass and

490

00:20:00,470 --> 00:19:58,640

muscle density

491

00:20:02,950 --> 00:20:00,480

very similar to what it what it was when

492

00:20:06,789 --> 00:20:05,029

so i think we're about out of time i

493

00:20:09,029 --> 00:20:06,799

just want to ask all of our students

494

00:20:11,029 --> 00:20:09,039

here if you guys could give a big

495

00:20:12,789 --> 00:20:11,039

yell mars to the commander and then

496

00:20:18,149 --> 00:20:12,799

we'll say thank you so ready on three

497

00:20:21,510 --> 00:20:19,669

and thanks all right best of luck to all

498

00:20:22,549 --> 00:20:21,520

of you is great chatting with you good

499

00:20:24,710 --> 00:20:22,559

luck

500

00:20:29,350 --> 00:20:24,720

thank you so much commander thank you be

501

00:20:34,149 --> 00:20:31,110

station this is houston acr that

502

00:20:35,830 --> 00:20:34,159

concludes the event thank you

503

00:20:37,909 --> 00:20:35,840

thank you to all participants and guests

504

00:20:39,669 --> 00:20:37,919

from national geographic station we're