



GMT 004:17:10:00

WEST BURGESS 00:11:00-  
180 Star Conf 01:16:00-

HOUSTON TV SD

PAO

1  
00:00:06,789 --> 00:00:03,669  
everybody and i guess it's just after

2  
00:00:08,950 --> 00:00:06,799  
noon in georgia welcome to the clark

3  
00:00:10,310 --> 00:00:08,960  
creek stem academy you're looking at the

4  
00:00:12,950 --> 00:00:10,320  
international space station flight

5  
00:00:15,270 --> 00:00:12,960  
control room i'm kyle hearing a public

6  
00:00:16,870 --> 00:00:15,280  
affairs officer here in the room and

7  
00:00:19,750 --> 00:00:16,880  
i'm joined by pete

8  
00:00:22,950 --> 00:00:19,760  
hasbrouck he is a space station

9  
00:00:24,470 --> 00:00:22,960  
associate program scientist so he's

10  
00:00:26,710 --> 00:00:24,480  
knowledgeable on the science activities

11  
00:00:29,429 --> 00:00:26,720  
that are ongoing he's also been a long

12  
00:00:31,109 --> 00:00:29,439  
time flight controller with nasa so he

13  
00:00:32,870 --> 00:00:31,119

knows all about what it's like to be a

14

00:00:34,790 --> 00:00:32,880

flight controller in the room so we're

15

00:00:39,350 --> 00:00:34,800

uh we're really happy you guys are with

16

00:00:39,360 --> 00:00:45,670

thank you

17

00:00:49,830 --> 00:00:47,190

good morning and good afternoon to you

18

00:00:54,950 --> 00:00:49,840

all this is pete

19

00:00:59,349 --> 00:00:57,270

and may we present you with our first

20

00:01:02,549 --> 00:00:59,359

question absolutely we're gonna do our

21

00:01:04,710 --> 00:01:02,559

best i'm as ready as i can be

22

00:01:07,910 --> 00:01:04,720

hi my name is noah bloomer i would like

23

00:01:10,550 --> 00:01:07,920

to know how is curiosity doing

24

00:01:12,390 --> 00:01:10,560

how is curiosity doing on mars curiosity

25

00:01:13,990 --> 00:01:12,400

is doing very well thank you

26

00:01:16,070 --> 00:01:14,000

uh it's been doing very well going

27

00:01:18,870 --> 00:01:16,080

through its checkout

28

00:01:21,350 --> 00:01:18,880

it's been going through uh its initial

29

00:01:22,630 --> 00:01:21,360

observations and currently it's taken a

30

00:01:24,630 --> 00:01:22,640

long trek

31

00:01:32,069 --> 00:01:24,640

across the surface toward the center of

32

00:01:37,749 --> 00:01:34,630

hi my name is oscar and i wanted to know

33

00:01:39,670 --> 00:01:37,759

how does a telescope work

34

00:01:47,030 --> 00:01:39,680

kepler telescope

35

00:01:49,670 --> 00:01:47,040

pretty cool instrument it's been in

36

00:01:51,429 --> 00:01:49,680

orbit for about three years and it is

37

00:01:53,990 --> 00:01:51,439

looking for planets

38

00:01:57,270 --> 00:01:54,000

uh the way it works is it stares at a

39

00:01:59,030 --> 00:01:57,280

certain part of the milky way which is

40

00:02:01,749 --> 00:01:59,040

dense with stars

41

00:02:05,350 --> 00:02:01,759

and it's looking for those stars to

42

00:02:07,350 --> 00:02:05,360

blink basically and if those stars blink

43

00:02:09,190 --> 00:02:07,360

they can tell that a planet or they a

44

00:02:11,350 --> 00:02:09,200

planet may have crossed in front of that

45

00:02:12,309 --> 00:02:11,360

star and made it go just a little bit

46

00:02:13,830 --> 00:02:12,319

dimmer

47

00:02:16,070 --> 00:02:13,840

it's got to be a very sensitive

48

00:02:18,150 --> 00:02:16,080

instrument think of you know a light

49

00:02:20,150 --> 00:02:18,160

bulb way down at the end of the hallway

50

00:02:21,830 --> 00:02:20,160

and something like a piece of sand going

51  
00:02:24,070 --> 00:02:21,840  
across that light bulb and you've got to

52  
00:02:27,990 --> 00:02:24,080  
be able to tell that the dimness of that

53  
00:02:32,229 --> 00:02:29,430  
okay go

54  
00:02:34,309 --> 00:02:32,239  
hi my name is jacob and i'd like to know

55  
00:02:36,790 --> 00:02:34,319  
how far is nasa gone

56  
00:02:39,910 --> 00:02:36,800  
on building the solar cup from the

57  
00:02:41,990 --> 00:02:39,920  
national geographic november 2012

58  
00:02:43,990 --> 00:02:42,000  
magazine

59  
00:02:45,350 --> 00:02:44,000  
i have to say i don't know i appreciate

60  
00:02:46,949 --> 00:02:45,360  
that you sent that question ahead of

61  
00:02:48,710 --> 00:02:46,959  
time i tried to do some homework and i

62  
00:02:50,790 --> 00:02:48,720  
wasn't able to find the information on

63  
00:02:52,070 --> 00:02:50,800

that one

64

00:02:56,070 --> 00:02:52,080

wow

65

00:02:56,080 --> 00:03:01,110

okay it didn't take long

66

00:03:07,110 --> 00:03:04,470

is nasa exploring what oh yeah hi my

67

00:03:09,110 --> 00:03:07,120

name is and i'm brody and i would like

68

00:03:11,190 --> 00:03:09,120

to know is

69

00:03:13,350 --> 00:03:11,200

nasa exploring means of living

70

00:03:18,949 --> 00:03:13,360

underwater

71

00:03:20,949 --> 00:03:18,959

we have had several successful programs

72

00:03:21,990 --> 00:03:20,959

of crew members station crew members

73

00:03:23,750 --> 00:03:22,000

especially

74

00:03:26,149 --> 00:03:23,760

living underwater

75

00:03:28,550 --> 00:03:26,159

they kind of practice living together as

76

00:03:30,789 --> 00:03:28,560

a team for a week or two at a time they

77

00:03:33,670 --> 00:03:30,799

learn how to cooperate together

78

00:03:35,509 --> 00:03:33,680

and they will go out and do what we call

79

00:03:37,509 --> 00:03:35,519

sort of a water walk instead of a space

80

00:03:39,350 --> 00:03:37,519

walk they'll put on a suit and they'll

81

00:03:41,910 --> 00:03:39,360

go out on the bottom of the ocean and

82

00:03:44,789 --> 00:03:41,920

they'll simulate doing spacewalks and

83

00:03:47,350 --> 00:03:44,799

construction tasks and communication

84

00:03:50,149 --> 00:03:47,360

so we have i believe that we've finished

85

00:03:51,830 --> 00:03:50,159

that program it was based off of the tip

86

00:03:53,750 --> 00:03:51,840

of florida and the keys

87

00:03:55,270 --> 00:03:53,760

so it's been very beneficial to us it

88

00:03:59,990 --> 00:03:55,280

helped our current crew members learn

89

00:04:02,869 --> 00:04:00,000

how to be team members on the iss

90

00:04:04,630 --> 00:04:02,879

go ahead graham hi my name is graham i

91

00:04:06,949 --> 00:04:04,640

would like to know why did the shuttle

92

00:04:09,429 --> 00:04:06,959

program end

93

00:04:11,110 --> 00:04:09,439

the shuttle was very successful for us

94

00:04:13,670 --> 00:04:11,120

and it did all of the work that we

95

00:04:16,150 --> 00:04:13,680

needed it to do the shuttle was able to

96

00:04:17,270 --> 00:04:16,160

carry very large and heavy objects into

97

00:04:19,830 --> 00:04:17,280

orbit

98

00:04:22,069 --> 00:04:19,840

and we used it to build the

99

00:04:23,830 --> 00:04:22,079

international space station to launch

100

00:04:25,270 --> 00:04:23,840

and deliver many of the parts of the

101  
00:04:27,189 --> 00:04:25,280  
space station

102  
00:04:28,629 --> 00:04:27,199  
and we knew that we had a plan for the

103  
00:04:30,710 --> 00:04:28,639  
whole space station

104  
00:04:33,189 --> 00:04:30,720  
and when the space shuttle had delivered

105  
00:04:36,469 --> 00:04:33,199  
its last pieces of the station and its

106  
00:04:38,310 --> 00:04:36,479  
last cargo it was time to finish it out

107  
00:04:41,430 --> 00:04:38,320  
the space shuttle program unfortunately

108  
00:04:43,749 --> 00:04:41,440  
was a very expensive program to run

109  
00:04:45,189 --> 00:04:43,759  
and we needed to use those funds for

110  
00:04:47,510 --> 00:04:45,199  
other things that nasa is doing

111  
00:04:49,430 --> 00:04:47,520  
including the space station including

112  
00:04:53,749 --> 00:04:49,440  
the kepler telescope and including other

113  
00:04:56,550 --> 00:04:55,749

hi my name is nicholas i would like to

114

00:04:58,710 --> 00:04:56,560

know

115

00:05:00,390 --> 00:04:58,720

how is the kepler's spacecraft

116

00:05:06,070 --> 00:05:00,400

controlled

117

00:05:07,749 --> 00:05:06,080

it uh it's out in orbit around the sun

118

00:05:09,670 --> 00:05:07,759

it's sort of near the earth but it's not

119

00:05:13,510 --> 00:05:09,680

in orbit around the earth

120

00:05:16,070 --> 00:05:13,520

so it points at a certain fixed place in

121

00:05:18,629 --> 00:05:16,080

the milky way looking at stars

122

00:05:20,230 --> 00:05:18,639

and if it were to drift and the only

123

00:05:23,590 --> 00:05:20,240

reason it would drift is because of

124

00:05:25,909 --> 00:05:23,600

solar wind it has little reaction wheels

125

00:05:29,590 --> 00:05:25,919

or maybe big reaction wheels but as

126

00:05:31,510 --> 00:05:29,600

those gyrospots gyroscopes spin

127

00:05:33,110 --> 00:05:31,520

you can push against them and sort of

128

00:05:36,230 --> 00:05:33,120

push the telescope back to where it's

129

00:05:39,909 --> 00:05:37,270

go ahead

130

00:05:41,830 --> 00:05:39,919

my name is nathan how likely is it that

131

00:05:43,909 --> 00:05:41,840

the planet of earth can be hit by a

132

00:05:45,749 --> 00:05:43,919

ashram

133

00:05:48,550 --> 00:05:45,759

well from what i know it's fairly

134

00:05:50,950 --> 00:05:48,560

unlikely uh we do the best that we can

135

00:05:53,670 --> 00:05:50,960

to track asteroids that are out there

136

00:05:56,070 --> 00:05:53,680

beyond the earth's orbit

137

00:05:58,310 --> 00:05:56,080

but if it were to happen it would be

138

00:06:00,790 --> 00:05:58,320

very severe impact obviously so we do

139

00:06:02,710 --> 00:06:00,800

pay as much attention to it as we can

140

00:06:04,390 --> 00:06:02,720

and nasa is looking in the future to

141

00:06:06,390 --> 00:06:04,400

figure out ways to

142

00:06:11,270 --> 00:06:06,400

what to do if we think something would

143

00:06:16,390 --> 00:06:13,990

hi my name is parker i'd like to know

144

00:06:19,270 --> 00:06:16,400

when your body is chemically and

145

00:06:22,150 --> 00:06:19,280

mechanically digesting food why don't

146

00:06:24,790 --> 00:06:22,160

astronauts regurgitate their food due to

147

00:06:25,749 --> 00:06:24,800

the microgravity in space in the space

148

00:06:27,590 --> 00:06:25,759

station

149

00:06:29,270 --> 00:06:27,600

great question that's a good question i

150

00:06:31,670 --> 00:06:29,280

agree

151  
00:06:33,510 --> 00:06:31,680  
if you think of your own body and you

152  
00:06:35,270 --> 00:06:33,520  
think of the pictures of your stomach

153  
00:06:36,710 --> 00:06:35,280  
and your intestines

154  
00:06:39,029 --> 00:06:36,720  
if you look at those they kind of go

155  
00:06:40,790 --> 00:06:39,039  
zigzag all over the place so they don't

156  
00:06:43,029 --> 00:06:40,800  
always go down sometimes they go up

157  
00:06:45,749 --> 00:06:43,039  
sometimes left and right so our bodies

158  
00:06:48,309 --> 00:06:45,759  
have already developed the mechanism to

159  
00:06:50,550 --> 00:06:48,319  
move food through the intestines so that

160  
00:06:54,950 --> 00:06:50,560  
we can digest it so really once you get

161  
00:06:57,990 --> 00:06:55,990  
go ahead

162  
00:07:00,629 --> 00:06:58,000  
hi my name is mack and i would like to

163  
00:07:04,230 --> 00:07:00,639

know which new planet show the most

164

00:07:06,629 --> 00:07:04,240

promised to be inhabitable inhabitable

165

00:07:07,830 --> 00:07:06,639

by humans

166

00:07:10,230 --> 00:07:07,840

i don't know

167

00:07:13,029 --> 00:07:10,240

a good example for you but i know that

168

00:07:15,350 --> 00:07:13,039

kepler for instance is finding what we

169

00:07:18,469 --> 00:07:15,360

believe are a lot of new planets around

170

00:07:21,029 --> 00:07:18,479

stars that are in our milky way galaxy

171

00:07:24,390 --> 00:07:21,039

and some of those planets are at the

172

00:07:26,390 --> 00:07:24,400

right distance from their star their sun

173

00:07:28,870 --> 00:07:26,400

to be in what they call the habitable

174

00:07:30,710 --> 00:07:28,880

zone where it's not too hot it's not too

175

00:07:32,710 --> 00:07:30,720

cold and there may be liquid water and

176

00:07:34,950 --> 00:07:32,720

there may be

177

00:07:39,749 --> 00:07:34,960

conditions that would support life at

178

00:07:43,589 --> 00:07:41,350

hi my name is declan i would like to

179

00:07:45,270 --> 00:07:43,599

know what a solar flare

180

00:07:48,469 --> 00:07:45,280

a solar flare

181

00:07:51,029 --> 00:07:48,479

on our sun there are solar storms and we

182

00:07:54,309 --> 00:07:51,039

also call them sun spots and sometimes

183

00:07:57,749 --> 00:07:54,319

those spots have a big eruption and

184

00:07:59,430 --> 00:07:57,759

they'll put out a very large plasma

185

00:08:01,350 --> 00:07:59,440

i'll say eruption

186

00:08:03,189 --> 00:08:01,360

that goes out into space

187

00:08:05,990 --> 00:08:03,199

and generally those aren't a problem for

188

00:08:08,950 --> 00:08:06,000

us unless the sun is turned so that that

189

00:08:10,869 --> 00:08:08,960

sunspot is facing the earth and then

190

00:08:13,510 --> 00:08:10,879

that very large amount of radiation

191

00:08:15,670 --> 00:08:13,520

that's put out could be a problem for us

192

00:08:17,430 --> 00:08:15,680

and they call that a solar flare could

193

00:08:19,749 --> 00:08:17,440

be a problem for us because it sends

194

00:08:22,790 --> 00:08:19,759

radiation toward the earth

195

00:08:24,070 --> 00:08:22,800

you may see more auroras as those that

196

00:08:25,430 --> 00:08:24,080

radiation is coming through our

197

00:08:27,589 --> 00:08:25,440

atmosphere

198

00:08:29,990 --> 00:08:27,599

and it's also a concern to us because

199

00:08:32,070 --> 00:08:30,000

the astronauts who are in space are up

200

00:08:34,070 --> 00:08:32,080

above most of our atmosphere and most of

201  
00:08:38,310 --> 00:08:34,080  
the radiation protection that we have

202  
00:08:41,110 --> 00:08:40,230  
hi my name is hunter i would like to

203  
00:08:43,430 --> 00:08:41,120  
know

204  
00:08:44,389 --> 00:08:43,440  
how does the spacecraft differ from the

205  
00:08:45,430 --> 00:08:44,399  
rocket

206  
00:08:47,509 --> 00:08:45,440  
how are

207  
00:08:49,509 --> 00:08:47,519  
they similar

208  
00:08:52,870 --> 00:08:49,519  
the spacecraft and the rocket

209  
00:08:55,670 --> 00:08:52,880  
as you look at a rocket it's very tall

210  
00:08:58,150 --> 00:08:55,680  
and it takes a lot of propellant to get

211  
00:09:00,790 --> 00:08:58,160  
a spacecraft whether it's got a crew in

212  
00:09:03,030 --> 00:09:00,800  
it or a satellite to get that spacecraft

213  
00:09:05,269 --> 00:09:03,040

up off the ground and into orbit around

214

00:09:07,829 --> 00:09:05,279

the earth so most of the rocket that you

215

00:09:09,829 --> 00:09:07,839

see is the bottom probably nine tenths

216

00:09:11,829 --> 00:09:09,839

of that rocket and it's full of

217

00:09:13,829 --> 00:09:11,839

propellant and it's got some engines in

218

00:09:16,310 --> 00:09:13,839

it and its whole job is to get that

219

00:09:18,630 --> 00:09:16,320

little spacecraft little in comparison

220

00:09:25,590 --> 00:09:18,640

up into orbit so that that spacecraft

221

00:09:31,030 --> 00:09:28,310

hi my name is joe and i would like to

222

00:09:32,870 --> 00:09:31,040

know is curiosity controlled by mission

223

00:09:40,470 --> 00:09:32,880

control

224

00:09:42,710 --> 00:09:40,480

here in houston it's out in california

225

00:09:44,389 --> 00:09:42,720

and uh it's at the jet propulsion

226

00:09:46,310 --> 00:09:44,399

laboratory i believe

227

00:09:48,389 --> 00:09:46,320

and they are very experienced with

228

00:09:50,470 --> 00:09:48,399

controlling the robot

229

00:09:53,110 --> 00:09:50,480

the rovers on mars

230

00:09:55,269 --> 00:09:53,120

and they have a little different uh way

231

00:09:57,269 --> 00:09:55,279

of operating because they can only see

232

00:09:59,350 --> 00:09:57,279

mars at certain times of the day whereas

233

00:10:01,350 --> 00:09:59,360

here in houston we have continuous

234

00:10:03,990 --> 00:10:01,360

satellite coverage and the iss is going

235

00:10:05,269 --> 00:10:04,000

over the earth around us and in view

236

00:10:06,790 --> 00:10:05,279

continuously

237

00:10:08,630 --> 00:10:06,800

yeah so this

238

00:10:10,630 --> 00:10:08,640

this room that you're looking at here

239

00:10:12,310 --> 00:10:10,640

and and maybe we can get a wide shot of

240

00:10:14,630 --> 00:10:12,320

it for you you may have seen it at the

241

00:10:15,590 --> 00:10:14,640

beginning but this is human space flight

242

00:10:16,630 --> 00:10:15,600

and so

243

00:10:18,310 --> 00:10:16,640

you know we're watching over the

244

00:10:19,910 --> 00:10:18,320

international space station here all of

245

00:10:22,310 --> 00:10:19,920

these the flight controllers you see at

246

00:10:24,389 --> 00:10:22,320

each one of these consoles and for

247

00:10:26,310 --> 00:10:24,399

curiosity there's a mission control

248

00:10:28,470 --> 00:10:26,320

obviously like pete said that they

249

00:10:30,470 --> 00:10:28,480

oversee all the instruments on that on

250

00:10:32,630 --> 00:10:30,480

that rover as well

251

00:10:35,670 --> 00:10:32,640

great question

252

00:10:39,509 --> 00:10:35,680

uh mr hasbrook and mr herring we are not

253

00:10:41,750 --> 00:10:39,519

able our image from your uh from houston

254

00:10:44,069 --> 00:10:41,760

is just frozen we're not seeing mission

255

00:10:46,710 --> 00:10:44,079

control i didn't know if that was

256

00:10:48,389 --> 00:10:46,720

um but when you mention when you look at

257

00:10:50,949 --> 00:10:48,399

mission control we're not getting that

258

00:10:53,110 --> 00:10:50,959

view it's just a frozen picture oh okay

259

00:10:55,350 --> 00:10:53,120

well you i guess you can see it behind

260

00:10:57,269 --> 00:10:55,360

me but um but you know there's a bunch

261

00:10:58,389 --> 00:10:57,279

of consoles that that flight controller

262

00:11:01,590 --> 00:10:58,399

supported

263

00:11:03,829 --> 00:11:01,600

look over all the systems we do not

264

00:11:05,990 --> 00:11:03,839

we do not see anything mission control

265

00:11:09,990 --> 00:11:06,000

it's been the same picture since we've

266

00:11:12,870 --> 00:11:10,000

been uh giving you our questions okay

267

00:11:14,790 --> 00:11:12,880

oh there you are yay now we see you

268

00:11:16,710 --> 00:11:14,800

we're excellent i think we had a little

269

00:11:17,910 --> 00:11:16,720

touch okay great technical glitch there

270

00:11:19,509 --> 00:11:17,920

but very

271

00:11:23,590 --> 00:11:19,519

thank you

272

00:11:25,110 --> 00:11:23,600

he

273

00:11:27,350 --> 00:11:25,120

all right

274

00:11:30,389 --> 00:11:27,360

hi my name is amelia i would like to

275

00:11:34,550 --> 00:11:30,399

know how possible might it be for

276

00:11:37,030 --> 00:11:34,560

cosmonauts to land on an asteroid

277

00:11:40,310 --> 00:11:37,040

we think it is very possible uh an

278

00:11:42,710 --> 00:11:40,320

asteroid is relatively small so it's not

279

00:11:44,870 --> 00:11:42,720

going to have much gravity so really

280

00:11:47,750 --> 00:11:44,880

instead of landing on it we're going to

281

00:11:49,910 --> 00:11:47,760

fly up next to it and figure out a way

282

00:11:52,949 --> 00:11:49,920

to anchor ourselves or at least keep the

283

00:11:55,030 --> 00:11:52,959

spacecraft near that asteroid and then

284

00:11:56,949 --> 00:11:55,040

the crew if they're going to explore it

285

00:11:58,230 --> 00:11:56,959

will have to put on spacesuits and go

286

00:12:00,550 --> 00:11:58,240

out in airlock

287

00:12:03,430 --> 00:12:00,560

and again somehow maneuver along that

288

00:12:05,910 --> 00:12:03,440

astronaut asteroid but the gravity is

289

00:12:08,310 --> 00:12:05,920

not going to really easily keep the crew

290

00:12:11,750 --> 00:12:08,320

or the spacecraft next to it

291

00:12:14,150 --> 00:12:11,760

it's a good challenge

292

00:12:14,949 --> 00:12:14,160

hi my name is samira i would like to

293

00:12:18,710 --> 00:12:14,959

know

294

00:12:19,829 --> 00:12:18,720

how does space travel positively affect

295

00:12:22,870 --> 00:12:19,839

um

296

00:12:26,150 --> 00:12:22,880

how does it

297

00:12:28,069 --> 00:12:26,160

negatively affects the human body

298

00:12:31,430 --> 00:12:28,079

that's a good question

299

00:12:33,110 --> 00:12:31,440

as far as positively affected

300

00:12:35,430 --> 00:12:33,120

other than being weightless and being

301

00:12:37,350 --> 00:12:35,440

able to maneuver very easily

302

00:12:39,350 --> 00:12:37,360

i have a hard time thinking of how it's

303

00:12:41,750 --> 00:12:39,360

positively affected there are a lot of

304

00:12:43,910 --> 00:12:41,760

risks that we have to keep track of it's

305

00:12:46,150 --> 00:12:43,920

easy to lose your muscle tone if you're

306

00:12:47,990 --> 00:12:46,160

not pushing off of things or walking to

307

00:12:50,230 --> 00:12:48,000

keep your muscles in shape

308

00:12:53,350 --> 00:12:50,240

we know that the crew members bodies

309

00:12:55,590 --> 00:12:53,360

their bones lose bone mass

310

00:12:57,310 --> 00:12:55,600

which is significant

311

00:12:59,350 --> 00:12:57,320

especially if you compare it to

312

00:13:01,670 --> 00:12:59,360

osteoporosis which older people have

313

00:13:03,350 --> 00:13:01,680

here where their bones get weaker

314

00:13:04,870 --> 00:13:03,360

another thing that happens in space is

315

00:13:07,430 --> 00:13:04,880

with no gravity

316

00:13:09,829 --> 00:13:07,440

the fluid that normally is pushed down

317

00:13:12,310 --> 00:13:09,839

into our legs can shift up into the crew

318

00:13:14,069 --> 00:13:12,320

members chest and their face starts to

319

00:13:15,750 --> 00:13:14,079

look puffy and that's something that

320

00:13:17,190 --> 00:13:15,760

they get over it just looks a little

321

00:13:21,509 --> 00:13:17,200

funny their first couple of days in

322

00:13:25,990 --> 00:13:23,269

hi my name is lauren i would like to

323

00:13:28,389 --> 00:13:26,000

know what types of weather do cosmonauts

324

00:13:31,030 --> 00:13:28,399

experience in outer space

325

00:13:34,310 --> 00:13:31,040

what types of weather

326

00:13:36,310 --> 00:13:34,320

really the crew members inside the iss

327

00:13:38,550 --> 00:13:36,320

have an environment just like you and i

328

00:13:40,470 --> 00:13:38,560

have here it's what we call a shirt

329

00:13:42,710 --> 00:13:40,480

sleeve environment you don't need a coat

330

00:13:44,230 --> 00:13:42,720

it's nice and warm and comfortable the

331

00:13:46,069 --> 00:13:44,240

humidity is just like you and i

332

00:13:46,949 --> 00:13:46,079

experience

333

00:13:49,750 --> 00:13:46,959

they

334

00:13:53,350 --> 00:13:49,760

though

335

00:13:55,990 --> 00:13:53,360

we do have to worry about probably two

336

00:13:58,550 --> 00:13:56,000

things at least one is the sun in the

337

00:14:00,389 --> 00:13:58,560

sun things can get very hot when you're

338

00:14:02,870 --> 00:14:00,399

not in the sun like on the dark side of

339

00:14:05,189 --> 00:14:02,880

the earth things can get very cold

340

00:14:06,949 --> 00:14:05,199

the other type of space weather and

341

00:14:09,590 --> 00:14:06,959

that's what we call it is space weather

342

00:14:11,430 --> 00:14:09,600

is the radiation environment so if the

343

00:14:13,269 --> 00:14:11,440

crew members were outside on a space

344

00:14:15,430 --> 00:14:13,279

walk and there was a solar flare that

345

00:14:16,790 --> 00:14:15,440

was directed toward the earth then would

346

00:14:19,110 --> 00:14:16,800

we would be concerned about the

347

00:14:20,629 --> 00:14:19,120

radiation and if it was severe we would

348

00:14:23,189 --> 00:14:20,639

bring them back inside as soon as we

349

00:14:26,790 --> 00:14:24,790

so um

350

00:14:28,629 --> 00:14:26,800

with respect to your answer with the

351

00:14:31,430 --> 00:14:28,639

last question about positive effects on

352

00:14:33,829 --> 00:14:31,440

the human body there's really none no

353

00:14:36,069 --> 00:14:33,839

positive effects on the human body with

354

00:14:38,790 --> 00:14:36,079

space travel

355

00:14:40,389 --> 00:14:38,800

well you get taller

356

00:14:42,550 --> 00:14:40,399

that's true

357

00:14:44,389 --> 00:14:42,560

you and i as we stand on earth

358

00:14:46,550 --> 00:14:44,399

are affected by gravity and our spines

359

00:14:47,990 --> 00:14:46,560

are always compressed that's why you

360

00:14:49,189 --> 00:14:48,000

might have heard f in the morning when

361

00:14:51,350 --> 00:14:49,199

you get up after you've been lying

362

00:14:52,870 --> 00:14:51,360

horizontal all day your spine has

363

00:14:54,710 --> 00:14:52,880

relaxed a little bit and you're a little

364

00:14:56,470 --> 00:14:54,720

taller in the morning perhaps than you

365

00:14:58,710 --> 00:14:56,480

are at the end of the day

366

00:15:00,310 --> 00:14:58,720

whereas in space you don't have gravity

367

00:15:01,030 --> 00:15:00,320

always pulling you down

368

00:15:03,829 --> 00:15:01,040

so

369

00:15:06,550 --> 00:15:03,839

crew members get an inch or two taller

370

00:15:10,550 --> 00:15:08,550

hi my name is genesis

371

00:15:13,030 --> 00:15:10,560

now i'd like to know do the astronauts

372

00:15:17,269 --> 00:15:13,040

have computers on board the staystation

373

00:15:21,990 --> 00:15:19,590

they have a lot of computers on board

374

00:15:23,269 --> 00:15:22,000

most of them are laptop computers

375

00:15:24,790 --> 00:15:23,279

and there are a couple of different kind

376

00:15:27,430 --> 00:15:24,800

of software

377

00:15:29,350 --> 00:15:27,440

the space station software i think is

378

00:15:31,990 --> 00:15:29,360

linux based it's a very technical

379

00:15:33,910 --> 00:15:32,000

language the laptops that the crew uses

380

00:15:35,670 --> 00:15:33,920

for their timelines and their procedures

381

00:15:37,189 --> 00:15:35,680

and for their email i believe those are

382

00:15:39,269 --> 00:15:37,199

windows based

383

00:15:41,750 --> 00:15:39,279

and then we do have a couple of new

384

00:15:43,430 --> 00:15:41,760

tablet computers on board

385

00:15:47,189 --> 00:15:43,440

and i'm not sure the operating system

386

00:15:51,269 --> 00:15:49,350

go ahead hi my name is george and i

387

00:15:52,230 --> 00:15:51,279

would like to know how does the high

388

00:15:54,949 --> 00:15:52,240

iron

389

00:15:57,749 --> 00:15:54,959

content of largest soil affect the idea

390

00:16:00,230 --> 00:15:57,759

of visiting plants

391

00:16:03,430 --> 00:16:00,240

how does the high iron content i'm not

392

00:16:04,790 --> 00:16:03,440

really sure i do know that it's we're

393

00:16:07,990 --> 00:16:04,800

able to land

394

00:16:10,629 --> 00:16:08,000

mars rovers and other landers on mars so

395

00:16:13,350 --> 00:16:10,639

the iron doesn't affect it in that way

396

00:16:15,910 --> 00:16:13,360

they may be able to use that iron for

397

00:16:18,150 --> 00:16:15,920

some kind of a benefit in construction

398

00:16:19,509 --> 00:16:18,160

if we were going to use martian soil but

399

00:16:21,110 --> 00:16:19,519

beyond that i

400

00:16:24,710 --> 00:16:21,120

probably am not qualified to guess

401  
00:16:28,790 --> 00:16:26,550  
hi my name is leslie and i would like to

402  
00:16:31,990 --> 00:16:28,800  
know what new planets are are being

403  
00:16:36,870 --> 00:16:35,110  
well that's a good question kepler is

404  
00:16:39,030 --> 00:16:36,880  
it's been staring at the sky for three

405  
00:16:42,629 --> 00:16:39,040  
years they have identified something

406  
00:16:45,350 --> 00:16:42,639  
over 400 i think possible planets

407  
00:16:47,430 --> 00:16:45,360  
and they as they say have confirmed i

408  
00:16:49,350 --> 00:16:47,440  
think over 100 that they're pretty sure

409  
00:16:51,749 --> 00:16:49,360  
are planets and that may be just by

410  
00:16:53,590 --> 00:16:51,759  
kepler it may be using space telescope

411  
00:16:55,670 --> 00:16:53,600  
the hubble or another one to look at the

412  
00:16:57,509 --> 00:16:55,680  
planet the star after they found what

413  
00:17:00,150 --> 00:16:57,519

they think is a planet

414

00:17:02,470 --> 00:17:00,160

the types of planets that we can see

415

00:17:04,949 --> 00:17:02,480

are in they're either very close to that

416

00:17:07,350 --> 00:17:04,959

star or maybe in the habitable zone that

417

00:17:09,669 --> 00:17:07,360

i talked about or maybe farther out so

418

00:17:11,350 --> 00:17:09,679

they may be very close and very hot

419

00:17:13,350 --> 00:17:11,360

heated up by that star

420

00:17:15,909 --> 00:17:13,360

maybe in the zone where there's

421

00:17:18,309 --> 00:17:15,919

mostly gas and water or

422

00:17:20,309 --> 00:17:18,319

let's say methane liquid or they could

423

00:17:24,710 --> 00:17:20,319

be farther out and totally frozen kind

424

00:17:28,950 --> 00:17:26,870

hi my name is maya and i'd like to know

425

00:17:30,150 --> 00:17:28,960

are there experiments using recyclable

426

00:17:37,669 --> 00:17:30,160

material

427

00:17:38,710 --> 00:17:37,679

is that what you said

428

00:17:44,870 --> 00:17:38,720

yes

429

00:17:47,270 --> 00:17:44,880

be the atmosphere of the station and the

430

00:17:50,230 --> 00:17:47,280

water that's in the station

431

00:17:53,029 --> 00:17:50,240

the crew as they urinate we are able to

432

00:17:53,830 --> 00:17:53,039

recycle that into pure water and take

433

00:17:56,789 --> 00:17:53,840

the

434

00:17:59,190 --> 00:17:56,799

harmful anything contaminating out of it

435

00:18:01,029 --> 00:17:59,200

as the atmosphere becomes humid we need

436

00:18:03,669 --> 00:18:01,039

to take the humidity out and we're able

437

00:18:05,510 --> 00:18:03,679

to as we say reclaim the water out of

438

00:18:07,669 --> 00:18:05,520

the atmosphere

439

00:18:09,350 --> 00:18:07,679

we also are able to take the carbon

440

00:18:12,310 --> 00:18:09,360

dioxide and

441

00:18:13,909 --> 00:18:12,320

regenerate that and turn in

442

00:18:17,029 --> 00:18:13,919

either it's a chemical reaction that

443

00:18:19,990 --> 00:18:17,039

will regain some of the oxygen out of it

444

00:18:22,070 --> 00:18:20,000

as far as recyclable hard materials on

445

00:18:24,390 --> 00:18:22,080

board i can't think of very many on the

446

00:18:27,029 --> 00:18:24,400

iss i do know that we're working on a

447

00:18:28,870 --> 00:18:27,039

program for future exploration to be

448

00:18:31,430 --> 00:18:28,880

able to take the trash whether it's food

449

00:18:33,830 --> 00:18:31,440

containers or bottles or duct tape and

450

00:18:36,230 --> 00:18:33,840

turn it into little tiles that might be

451  
00:18:37,750 --> 00:18:36,240  
used for radiation protection something

452  
00:18:39,590 --> 00:18:37,760  
that the crew can take their trash and

453  
00:18:41,190 --> 00:18:39,600  
make it something useful maybe put it

454  
00:18:42,390 --> 00:18:41,200  
around the inside of their spacecraft or

455  
00:18:45,270 --> 00:18:42,400  
their sleep station to protect

456  
00:18:49,909 --> 00:18:47,590  
go ahead just read your question how do

457  
00:18:52,070 --> 00:18:49,919  
solar flares or solar storms

458  
00:18:53,669 --> 00:18:52,080  
affect the space station

459  
00:18:54,630 --> 00:18:53,679  
that's a good question how do solar

460  
00:18:57,110 --> 00:18:54,640  
flares

461  
00:18:58,070 --> 00:18:57,120  
affect the space station when a solar

462  
00:18:59,909 --> 00:18:58,080  
flare

463  
00:19:02,630 --> 00:18:59,919

heads toward the earth

464

00:19:04,870 --> 00:19:02,640

all that energy and all that radiation

465

00:19:06,950 --> 00:19:04,880

can tend to heat up the earth's

466

00:19:07,669 --> 00:19:06,960

atmosphere and so it expands a little

467

00:19:09,830 --> 00:19:07,679

bit

468

00:19:12,710 --> 00:19:09,840

and even though it's mostly a vacuum

469

00:19:15,270 --> 00:19:12,720

around the iss there is just a very very

470

00:19:17,750 --> 00:19:15,280

thin bit of atmosphere and the space

471

00:19:19,830 --> 00:19:17,760

station is dragged a little bit by that

472

00:19:22,310 --> 00:19:19,840

atmosphere so if we have a solar flare

473

00:19:23,830 --> 00:19:22,320

and the atmosphere expands we get a

474

00:19:26,150 --> 00:19:23,840

little bit more drag on the space

475

00:19:28,070 --> 00:19:26,160

station and it tends to lower our orbit

476

00:19:33,270 --> 00:19:28,080

so it may mean that we need to do a

477

00:19:39,590 --> 00:19:35,510

what would happen if your spacesuit or

478

00:19:42,230 --> 00:19:39,600

emu became infected with fungi

479

00:19:43,909 --> 00:19:42,240

i think it would be unpleasant

480

00:19:47,110 --> 00:19:43,919

you could be it depends on what the

481

00:19:49,190 --> 00:19:47,120

fungi is whether you're reacting to it

482

00:19:51,510 --> 00:19:49,200

you could be itchy

483

00:19:53,270 --> 00:19:51,520

we do take very high precautions to make

484

00:19:55,430 --> 00:19:53,280

sure our space suits are clean after

485

00:19:57,990 --> 00:19:55,440

each use the crew wipes them out with a

486

00:19:59,830 --> 00:19:58,000

fungistat cloth and lets them dry and

487

00:20:04,470 --> 00:19:59,840

make sure that nothing is able to go to

488

00:20:07,830 --> 00:20:05,990

what will happen to the kepler

489

00:20:09,750 --> 00:20:07,840

spacecraft after its mission is

490

00:20:14,549 --> 00:20:09,760

completed

491

00:20:17,990 --> 00:20:14,559

just stay in the orbit it's in right now

492

00:20:21,029 --> 00:20:18,000

uh it is in a sun orbit so it's like the

493

00:20:22,390 --> 00:20:21,039

earth it's going around the sun it's i

494

00:20:25,350 --> 00:20:22,400

don't know how many hundred thousand

495

00:20:26,950 --> 00:20:25,360

miles behind the earth in that orbit

496

00:20:29,510 --> 00:20:26,960

but there's really no danger to the

497

00:20:31,110 --> 00:20:29,520

earth to leave it out there and once

498

00:20:36,149 --> 00:20:31,120

it's finished we'll just leave it there

499

00:20:41,110 --> 00:20:39,350

how was the moon different from a planet

500

00:20:42,789 --> 00:20:41,120

how is the moon different from a planet

501  
00:20:44,230 --> 00:20:42,799  
that's a good question i had to look up

502  
00:20:47,110 --> 00:20:44,240  
the definition

503  
00:20:49,430 --> 00:20:47,120  
and a planet has to satisfy three things

504  
00:20:50,310 --> 00:20:49,440  
it has to orbit a star in our case the

505  
00:20:52,630 --> 00:20:50,320  
sun

506  
00:20:54,630 --> 00:20:52,640  
it has to be generally round so have

507  
00:20:57,190 --> 00:20:54,640  
been there long enough to have its

508  
00:20:59,590 --> 00:20:57,200  
gravity make it into a sphere

509  
00:21:02,230 --> 00:20:59,600  
and then thirdly it has to have really

510  
00:21:03,590 --> 00:21:02,240  
cleared its orbit around the sun or

511  
00:21:05,110 --> 00:21:03,600  
around the star

512  
00:21:06,070 --> 00:21:05,120  
and so the earth has done all those

513  
00:21:07,830 --> 00:21:06,080

things

514

00:21:09,750 --> 00:21:07,840

and really the last item is what got

515

00:21:11,270 --> 00:21:09,760

pluto in trouble it hasn't been there

516

00:21:13,270 --> 00:21:11,280

long enough to have cleared all the

517

00:21:14,470 --> 00:21:13,280

other asteroids and junk out from its

518

00:21:19,750 --> 00:21:14,480

orbit

519

00:21:22,070 --> 00:21:19,760

it's round and it's really cleared our

520

00:21:26,310 --> 00:21:22,080

our area but since it's not going around

521

00:21:29,350 --> 00:21:27,110

go

522

00:21:31,510 --> 00:21:29,360

how is nanotechnology being used in

523

00:21:33,669 --> 00:21:31,520

space

524

00:21:35,750 --> 00:21:33,679

that's a tough question and i don't know

525

00:21:37,830 --> 00:21:35,760

if i know enough i do know of one

526

00:21:41,669 --> 00:21:37,840

experiment where we're using nano

527

00:21:44,070 --> 00:21:41,679

particles it's called in space and it's

528

00:21:46,149 --> 00:21:44,080

what they call a colloid which is

529

00:21:47,830 --> 00:21:46,159

suspending very tiny particles in a

530

00:21:49,110 --> 00:21:47,840

liquid

531

00:21:51,669 --> 00:21:49,120

and so in this case those would be

532

00:21:55,110 --> 00:21:51,679

nanoparticles and then when you apply a

533

00:21:57,430 --> 00:21:55,120

magnetic field around that liquid it

534

00:21:59,350 --> 00:21:57,440

changes its properties and in this case

535

00:22:01,110 --> 00:21:59,360

it can become more dense

536

00:22:03,830 --> 00:22:01,120

so that's an area of research that might

537

00:22:05,430 --> 00:22:03,840

help us in the future in shock absorbers

538

00:22:11,190 --> 00:22:05,440

making them lighter

539

00:22:15,990 --> 00:22:13,909

are there any nasa underwater research

540

00:22:17,350 --> 00:22:16,000

centers like nasa's

541

00:22:20,950 --> 00:22:17,360

aquarius

542

00:22:23,110 --> 00:22:20,960

if so where are they located and what is

543

00:22:34,310 --> 00:22:23,120

being studied

544

00:22:40,789 --> 00:22:37,350

go ahead kyle talk about nemo well i

545

00:22:43,350 --> 00:22:40,799

pete already referenced the underwater

546

00:22:45,669 --> 00:22:43,360

the nemo where crew members in the same

547

00:22:48,149 --> 00:22:45,679

kind of environment could learn how to

548

00:22:49,590 --> 00:22:48,159

live together in space for long periods

549

00:22:51,430 --> 00:22:49,600

of time

550

00:22:52,950 --> 00:22:51,440

the only underwater facility that we

551  
00:22:54,630 --> 00:22:52,960  
have near here

552  
00:22:57,029 --> 00:22:54,640  
is where the astronauts train for

553  
00:23:00,390 --> 00:22:57,039  
spacewalks because it's uh they can

554  
00:23:02,390 --> 00:23:00,400  
simulate the the environment of

555  
00:23:04,470 --> 00:23:02,400  
what it's like outside the space station

556  
00:23:05,990 --> 00:23:04,480  
in fact we have astronauts out at the

557  
00:23:08,230 --> 00:23:06,000  
swimming pool we call it the neutral

558  
00:23:09,270 --> 00:23:08,240  
buoyancy laboratory right now training

559  
00:23:11,029 --> 00:23:09,280  
for their

560  
00:23:13,909 --> 00:23:11,039  
their mission to the international space

561  
00:23:16,070 --> 00:23:13,919  
station you probably can see that and so

562  
00:23:18,390 --> 00:23:16,080  
it simulates what it's like outside the

563  
00:23:20,549 --> 00:23:18,400

space station so that's the closest

564

00:23:26,470 --> 00:23:20,559

thing we have near here to

565

00:23:28,870 --> 00:23:27,990

all right we're coming up on a minute

566

00:23:30,470 --> 00:23:28,880

left

567

00:23:32,310 --> 00:23:30,480

if we'd like to go ahead and say our

568

00:23:34,870 --> 00:23:32,320

goodbyes now i'd really appreciate that

569

00:23:37,270 --> 00:23:34,880

we had some awesome questions today so

570

00:23:46,230 --> 00:23:37,280

clark creek stem academy would you like

571

00:23:50,390 --> 00:23:48,149

i don't know if they can still hear us

572

00:23:52,870 --> 00:23:50,400

michael but we've had a great time and

573

00:23:55,350 --> 00:23:52,880

and those are uh some really great

574

00:23:57,830 --> 00:23:55,360

thought out questions tough questions

575

00:23:59,510 --> 00:23:57,840

so we uh we really appreciate you all

576

00:24:01,510 --> 00:23:59,520

coming and joining us here in mission

577

00:24:04,070 --> 00:24:01,520

control and letting us come and join you

578

00:24:05,750 --> 00:24:04,080

and uh there in georgia you guys have a

579

00:24:08,310 --> 00:24:05,760

great day

580

00:24:10,070 --> 00:24:08,320

great question thank you so much

581

00:24:11,110 --> 00:24:10,080

we love nasa

582

00:24:13,590 --> 00:24:11,120

thank you