1
00:00:03,510 --> 00:00:02,389
and good morning discovery center good

2
00:00:05,829 --> 00:00:03,520
afternoon

3
00:00:06,950 --> 00:00:05,839
we're happy to be here with you this is

4
00:00:08,629 --> 00:00:06,960
al drew

5
00:00:11,190 --> 00:00:08,639
clay anderson

6
00:00:12,870 --> 00:00:11,200
dave williams and i'm barb morgan and we

7
00:00:15,030 --> 00:00:12,880
are ready for your first question

8
00:00:20,790 --> 00:00:15,040
welcome aboard the international space

9
00:00:20,800 --> 00:00:33,270
we have a quick message from idaho

10
00:00:39,510 --> 00:00:35,270
hi i'm sarah avery if you threw a

11
00:00:43,830 --> 00:00:42,069
that's a great question and

12
00:00:46,150 --> 00:00:43,840
we have a question for you that that

13
00:00:48,229 --> 00:00:46,160

made us think of is just if you have a

14
00:00:50,470 --> 00:00:48,239
if you could throw a baseball in space

15
00:00:52,470 --> 00:00:50,480
just how slow could you throw it we've

16
00:00:54,869 --> 00:00:52,480
got a lot of astronauts up here who love

17
00:00:55,910 --> 00:00:54,879
baseball and who are good at it so here

18
00:00:58,470 --> 00:00:55,920
we go

19
00:01:07,990 --> 00:00:58,480
clay anderson can you show us just how

20
00:01:11,350 --> 00:01:09,910
looks like clay could even play catch

21
00:01:12,789 --> 00:01:11,360
with himself

22
00:01:14,630 --> 00:01:12,799
of course you probably still want to

23
00:01:17,429 --> 00:01:14,640
know just how fast we can throw it so

24
00:01:18,950 --> 00:01:17,439
chloe what do you think

25
00:01:21,109 --> 00:01:18,960
i don't know he probably shouldn't throw

26
00:01:22,550 --> 00:01:21,119
it because if you threw it as fast as he

27
00:01:38,230 --> 00:01:22,560
could it would probably break something

28
00:01:50,550 --> 00:01:39,590
roberts when you were a kid did you ever

29
00:01:53,270 --> 00:01:52,310
and actually while we're waiting for

30
00:01:55,510 --> 00:01:53,280
clay to

31
00:02:06,310 --> 00:01:55,520
find the ping-pong balls to juggle let's

32
00:02:09,190 --> 00:02:07,830
hi i'm koset roberts when you're a kid

33
00:02:11,990 --> 00:02:09,200
did you ever think about becoming an

34
00:02:12,000 --> 00:02:15,190
how would you like to answer that

35
00:02:18,550 --> 00:02:16,949
only every day it's been an obsession of

36
00:02:19,990 --> 00:02:18,560
mine since i was about five and a half

37
00:02:31,030 --> 00:02:20,000
years old so

38
00:02:40,150 --> 00:02:33,270

hi i'm jordan hill what is it like when

39
00:02:44,390 --> 00:02:42,150
that's a great question as soon as you

40
00:02:46,710 --> 00:02:44,400
arrive in space after the main engines

41
00:02:48,710 --> 00:02:46,720
of the space shuttle stop you float

42
00:02:50,869 --> 00:02:48,720
forward in your feet your arms start

43
00:02:52,550 --> 00:02:50,879
rising up and it's this incredible sense

44
00:02:54,949 --> 00:02:52,560
of freedom as you're floating around in

45
00:02:56,550 --> 00:02:54,959
microgravity it's absolutely fantastic

46
00:02:58,309 --> 00:02:56,560
the first thing we'd like to do is go to

47
00:03:06,470 --> 00:02:58,319
the window and look outside at the earth

48
00:03:11,589 --> 00:03:08,149
and here you can see clay trying to

49
00:03:11,599 --> 00:03:17,430
next question

50
00:03:21,670 --> 00:03:19,670
i'm brooke thomas what types of exercise

51
00:03:25,990 --> 00:03:21,680
equipment and regimen are you using to

52
00:03:28,710 --> 00:03:27,430
okay clay why don't you tell us about

53
00:03:49,589 --> 00:03:28,720
that while you demonstrate what you're

54
00:03:53,429 --> 00:03:51,830
we have an exercise bicycle here

55
00:03:55,030 --> 00:03:53,439
among other things like a weight machine

56
00:03:56,710 --> 00:03:55,040
and a treadmill uh clay here is

57
00:04:09,750 --> 00:03:56,720
demonstrating how to use the bicycle to

58
00:04:14,869 --> 00:04:11,670
i want to know how a shuttle person

59
00:04:18,390 --> 00:04:14,879
exercises in space

60
00:04:20,949 --> 00:04:18,400
okay here's how i exercise al and dave

61
00:04:28,310 --> 00:04:20,959
you're my weight so let me let me let me

62
00:04:32,710 --> 00:04:29,909
there's lots of groaning going on here

63
00:04:44,310 --> 00:04:32,720

as barbara morgan lifts these uh two

64
00:04:44,320 --> 00:04:50,790
next question

65
00:04:57,909 --> 00:04:52,870
hi i'm andrew donalick if you had an

66
00:05:01,749 --> 00:05:00,150
what i would love to do is spend time

67
00:05:03,430 --> 00:05:01,759
with the growth chamber that we brought

68
00:05:05,430 --> 00:05:03,440
up for clay he's going to be growing

69
00:05:12,390 --> 00:05:05,440
some basil seeds clay where is that

70
00:05:15,590 --> 00:05:14,150
this is a growth chamber that barbara's

71
00:05:17,029 --> 00:05:15,600
talking about and what we're going to do

72
00:05:18,469 --> 00:05:17,039
is grow some basil seeds and some

73
00:05:20,790 --> 00:05:18,479
lettuce seeds and see how they do in

74
00:05:22,629 --> 00:05:20,800
space in zero gravity and hopefully i'm

75
00:05:26,629 --> 00:05:22,639
going to have a little bit of salad

76
00:05:31,189 --> 00:05:28,550
and we're really excited to show this to

77
00:05:32,950 --> 00:05:31,199
you because we need your help with this

78
00:05:36,710 --> 00:05:32,960
we need to figure out how we're going to

79
00:05:39,270 --> 00:05:36,720
feed our long-term explorers

80
00:05:41,270 --> 00:05:39,280
on the moon and on mars and so nasa

81
00:05:43,029 --> 00:05:41,280
actually has a design challenge for you

82
00:05:44,550 --> 00:05:43,039
because we would love for you to help us

83
00:05:46,629 --> 00:05:44,560
figure this out

84
00:05:48,870 --> 00:05:46,639
please ask your teachers about this and

85
00:05:51,350 --> 00:05:48,880
ask them to ask nasa so you can get

86
00:05:58,230 --> 00:05:51,360
involved

87
00:06:02,230 --> 00:06:00,790
hi my name is ashleena benson what do

88
00:06:07,110 --> 00:06:02,240

you have to do to prepare for a

89
00:06:11,110 --> 00:06:09,510
actually that's a great question a lot

90
00:06:13,270 --> 00:06:11,120
of the space walk depends on our

91
00:06:15,350 --> 00:06:13,280
strength so we do a lot of exercises and

92
00:06:16,870 --> 00:06:15,360
of course we train for all the tasks

93
00:06:18,790 --> 00:06:16,880
that we're going to be doing

94
00:06:20,710 --> 00:06:18,800
outside on the space walk and to do that

95
00:06:22,870 --> 00:06:20,720
on earth we actually have to go below

96
00:06:24,790 --> 00:06:22,880
the surface of the water at a training

97
00:06:27,029 --> 00:06:24,800
facility called the nbl a big swimming

98
00:06:28,150 --> 00:06:27,039
pool we rehearse all the various tasks

99
00:06:30,070 --> 00:06:28,160
that we're going to be doing outside of

100
00:06:40,550 --> 00:06:30,080
the space station it takes a lot of work

101
00:06:49,909 --> 00:06:43,189
hi i'm madison escarzika how does the

102
00:06:53,510 --> 00:06:51,670
of course as you understand that all the

103
00:06:55,189 --> 00:06:53,520
air we bring up with us is all the other

104
00:06:57,189 --> 00:06:55,199
we have there's no opening up a window

105
00:06:58,790 --> 00:06:57,199
to clean out the place if it gets smokey

106
00:07:00,870 --> 00:06:58,800
uh so we actually have to clean that

107
00:07:02,469 --> 00:07:00,880
cleans the air as we go along of course

108
00:07:04,230 --> 00:07:02,479
we breathe every day we put all kinds of

109
00:07:06,629 --> 00:07:04,240
carbon dioxide out into the atmosphere

110
00:07:08,390 --> 00:07:06,639
here so we use a scrubbing cans to bring

111
00:07:10,710 --> 00:07:08,400
it out something called lithium

112
00:07:12,230 --> 00:07:10,720
hydroxide uh very close to what we use

113
00:07:14,070 --> 00:07:12,240

to clean the drains on earth you can use

114
00:07:15,430 --> 00:07:14,080
that to take carbon dioxide out of the

115
00:07:16,870 --> 00:07:15,440
air

116
00:07:22,710 --> 00:07:16,880
and barbaria is going to bring out a

117
00:07:25,749 --> 00:07:24,230
we take a fan and we blow it through

118
00:07:26,870 --> 00:07:25,759
these different holes in this mesh here

119
00:07:29,589 --> 00:07:26,880
and it goes through the lithium

120
00:07:31,350 --> 00:07:29,599
hydroxide powder and lithium hydroxide

121
00:07:33,749 --> 00:07:31,360
binds with the carbon dioxide and lets

122
00:07:35,749 --> 00:07:33,759
the pure nitrogen and oxygen emerge so

123
00:07:38,230 --> 00:07:35,759
we don't poison our atmosphere

124
00:07:40,469 --> 00:07:38,240
of course we do carry a supply of oxygen

125
00:07:42,309 --> 00:07:40,479
frozen of liquid oxygen and tanks to

126
00:07:44,150 --> 00:07:42,319
replenish the atmosphere because even

127
00:07:45,749 --> 00:07:44,160
then even though our shuttle is airtight

128
00:07:46,869 --> 00:07:45,759
a small amount does leak overboard all

129
00:07:48,150 --> 00:07:46,879
the time so we want to maintain a

130
00:07:59,830 --> 00:07:48,160
certain amount of pressure so that we're

131
00:08:04,230 --> 00:08:02,230
hi i'm sarah bloom how does being a

132
00:08:13,350 --> 00:08:04,240
teacher relate with being an astronaut

133
00:08:18,869 --> 00:08:15,670
well astronauts and teachers actually do

134
00:08:20,790 --> 00:08:18,879
the same thing we discuss we explore we

135
00:08:22,070 --> 00:08:20,800
discover and we share

136
00:08:23,670 --> 00:08:22,080
and the great thing about being a

137
00:08:25,589 --> 00:08:23,680
teacher is you get to do that with

138
00:08:27,270 --> 00:08:25,599

students and the great thing about being

139
00:08:29,909 --> 00:08:27,280
an astronaut is you get to do it in

140
00:08:40,389 --> 00:08:29,919
space and both are absolutely wonderful

141
00:08:46,870 --> 00:08:42,230
hi i'm fallon henry could you

142
00:08:46,880 --> 00:08:50,870
we'd love to demonstrate that

143
00:08:53,910 --> 00:08:52,470
there's another way of doing things

144
00:09:16,310 --> 00:08:53,920
first there's a fun way of going about

145
00:09:19,509 --> 00:09:18,070
space of course there's no gravity so

146
00:09:21,590 --> 00:09:19,519
the water when it any drink when it

147
00:09:24,230 --> 00:09:21,600
comes out forms as a kind of a big blob

148
00:09:25,750 --> 00:09:24,240
that floats around amongst itself

149
00:09:46,630 --> 00:09:25,760
holds together under its own surface

150
00:09:55,350 --> 00:09:48,070
it will attach itself to things like

151
00:10:02,389 --> 00:09:57,590
hi my name is hunter frye what are your

152
00:10:06,470 --> 00:10:04,790
well we all we all answer that with

153
00:10:08,710 --> 00:10:06,480
short answers because we all have a

154
00:10:11,910 --> 00:10:08,720
variety of responsibilities

155
00:10:14,870 --> 00:10:11,920
my responsibilities are to uh for the

156
00:10:18,550 --> 00:10:14,880
robotic arm and a lot of the transfer we