STEMonstrations

1
00:00:00,967 --> 00:00:15,548
[MUSIC]

2
00:00:15,548 --> 00:00:16,783
>> HELLO!

3
00:00:16,783 --> 00:00:18,118
MY NAME IS SCOTT TINGLE,

4
00:00:18,118 --> 00:00:19,085
AND I'M LIVING AND WORKING

5
00:00:19,085 --> 00:00:20,353
ONBOARD THE INTERNATIONAL

6
00:00:20,353 --> 00:00:22,055
SPACE STATION.

7
00:00:22,055 --> 00:00:23,456
YOU KNOW, I LOVE MY VIEWS

8
00:00:23,456 --> 00:00:24,691
FROM THE CUPOLA.

9
00:00:24,691 --> 00:00:25,759
IT'S OUR ORBITING ALTITUDE

10
00:00:25,759 --> 00:00:27,127
OF AROUND 400 KILOMETERS

11
00:00:27,127 --> 00:00:28,795
OR 250 MILES ABOVE THE EARTH'S

12
00:00:28,795 --> 00:00:29,863
SURFACE THAT GIVE US

13
00:00:29,863 --> 00:00:31,698

THESE UNIQUE PERSPECTIVES.

14
00:00:31,698 --> 00:00:32,399
LET'S EXPLORE

15
00:00:32,399 --> 00:00:34,100
HOW OUR ISS ORBITS WORK.

16
00:00:34,100 --> 00:00:36,369
COME ON!

17
00:00:36,369 --> 00:00:38,338
FIRST, I SHOULD EXPLAIN--

18
00:00:38,338 --> 00:00:39,472
ORBITS ARE ELLIPTICAL,

19
00:00:39,472 --> 00:00:40,774
OR OVAL, IN SHAPE, WITH SOME

20
00:00:40,774 --> 00:00:42,509
BEING ALMOST CIRCULAR.

21
00:00:42,509 --> 00:00:43,843
PLANETS, COMETS, AND MOONS

22
00:00:43,843 --> 00:00:45,478
HAVE ELLIPTICAL ORBITS.

23
00:00:45,478 --> 00:00:47,247
SPACECRAFT ORBITING EARTH

24
00:00:47,247 --> 00:00:48,615
LIKE THE SPACE STATION ARE

25
00:00:48,615 --> 00:00:50,049
PLACED INTO A NEARLY CIRCULAR

26
00:00:50,049 --> 00:00:51,451
ORBIT TO KEEP A CONSISTENT

27
00:00:51,451 --> 00:00:52,619
ALTITUDE AS THEY TRAVEL

28
00:00:52,619 --> 00:00:54,120
AROUND THE PLANET.

29
00:00:56,322 --> 00:00:57,757
LET'S TAKE A LOOK AT THE EARTH.

30
00:00:57,757 --> 00:00:58,858
IT HAS A RADIUS OF

31
00:00:58,858 --> 00:01:01,961
6,378 KILOMETERS.

32
00:01:01,961 --> 00:01:03,229
AND THE STATION ORBITS

33
00:01:03,229 --> 00:01:04,497
ABOUT 400 KILOMETERS

34
00:01:04,497 --> 00:01:05,432
ABOVE THE SURFACE

35
00:01:05,432 --> 00:01:07,867
AT 8 KILOMETERS PER SECOND.

36
00:01:07,867 --> 00:01:12,272
THAT'S 17,500 MILES PER HOUR.

37
00:01:12,272 --> 00:01:13,640
SEE IF YOU CAN USE THESE VALUES

38
00:01:13,640 --> 00:01:15,275

TO CALCULATE HOW FAR--

39
00:01:15,275 --> 00:01:16,276
HOW LONG WE TRAVEL

40
00:01:16,276 --> 00:01:18,178
IN ONE ORBIT AROUND THE EARTH.

41
00:01:18,178 --> 00:01:19,145
ALL OF THIS INFORMATION

42
00:01:19,145 --> 00:01:20,046
AND MORE ACTIVITIES

43
00:01:20,046 --> 00:01:21,748
RELATED TO ORBITS ARE AVAILABLE

44
00:01:21,748 --> 00:01:23,783
IN THE ACCOMPANYING LESSON PLAN

45
00:01:23,783 --> 00:01:27,821
AT NASA.GOV/STEMONSTATION.

46
00:01:30,423 --> 00:01:32,158
>> ANSWERS COMING IN.

47
00:01:32,158 --> 00:01:36,563
>> FOUR, THREE, TWO, ONE.

48
00:01:36,563 --> 00:01:37,664
>> THE ANSWERS TO THE QUESTIONS,

49
00:01:37,664 --> 00:01:38,798
BY THE WAY, ARE APPROXIMATELY

50
00:01:38,798 --> 00:01:40,834
42,600 KILOMETERS

51
00:01:40,834 --> 00:01:42,068
IN 90 MINUTES.

52
00:01:42,068 --> 00:01:43,236
AND DUE TO OUR ALTITUDE

53
00:01:43,236 --> 00:01:44,270
ON ORBIT, WE HAVE

54
00:01:44,270 --> 00:01:45,705
OUR VERY UNIQUE AND AWESOME

55
00:01:45,705 --> 00:01:46,739
VIEW OF THE EARTH.

56
00:01:46,739 --> 00:01:47,574
THANKS FOR EXPLORING

57
00:01:47,574 --> 00:01:48,508
WITH ME TODAY.

58
00:01:48,508 --> 00:01:49,209
I'M GONNA SEND YOU

59
00:01:49,209 --> 00:01:50,043
BACK TO EARTH NOW

60
00:01:50,043 --> 00:01:50,777
SO YOU CAN START

61
00:01:50,777 --> 00:01:51,978
YOUR CHALLENGE ON ORBITS.