

The Martian - Lesson 3 - Calculation

TIM

ah incoming

VINCENT

are you receiving me?

yes no [chuckles] okay...

Point the camera for yes

TIM

Thirty-two minutes round trip communications time. He can only ask yes/no questions, and all we can do is point the camera. This won't exactly be an Algonquin round table¹ of snappy repartee.

VINCENT

Are you kidding me?

BRUCE

Tim....

VINCENT

Just point the camera!

TIM

Roger that, pointing the camera

MARK

Wow! Yes! Yes!!!

MARK (voice over)

So here's the rub...

Somehow we need to have complex astrophysical engineering conversations using nothing but a still-frame camera. From 1996.

Luckily, the camera does spin so i can make an alphabet. It can't be our alphabet. 26 characters plus a question card and the 360 gives us 13 degrees of arc. That's way too narrow.

We never know what the camera was pointing at.

Hexadecimals. Hexadecimals to do it.

I figured one of you guys kept an ASCII table lying around... I was right.

Ladies and gentlemen, I give you supernerd Beth Johanssen, who also had copies of *Zork 2* and *Leather Goddesses Of Phobos* on her personal laptop.

Seriously, Johanssen... it looks like the smithsonian of loneliness on there...

Not that i'm complaining

Yes !

TIM

I know where he's going with this!

BRUCE

Vincent, Vincent. Wake up.

MARK

Now that we can have more complicated conversations, the smart people at NASA have sent me instructions on how to hack the rover so that it can talk to Pathfinder.

If I hack a tiny bit of code, just 20 instructions, in the rover's operating system, NASA can link the rover to pathfinder's broadcasting frequency... and we're in business.

<https://www.youtube.com/watch?v=k-GH3mbvUro>

¹ The **Algonquin Round Table** was a group of New York City writers, critics, actors, and wits. Gathering initially as part of a practical joke, members of *The Vicious Circle*, as they dubbed themselves, met for lunch each day at the Algonquin Hotel from 1919 until roughly 1929. At these luncheons they engaged in wisecracks, wordplay, and witticisms that, through the newspaper columns of Round Table members, were disseminated across the country.

1. Find in a dictionary the vocabulary you don't understand.
2. Can you explain the underlined sentence?
3. Calculate the distance between Mars and the Earth (light speed $c=3 \times 10^8$ m/s).
4. Choose another planet / star and explain how long it will take for a message to come to Earth.