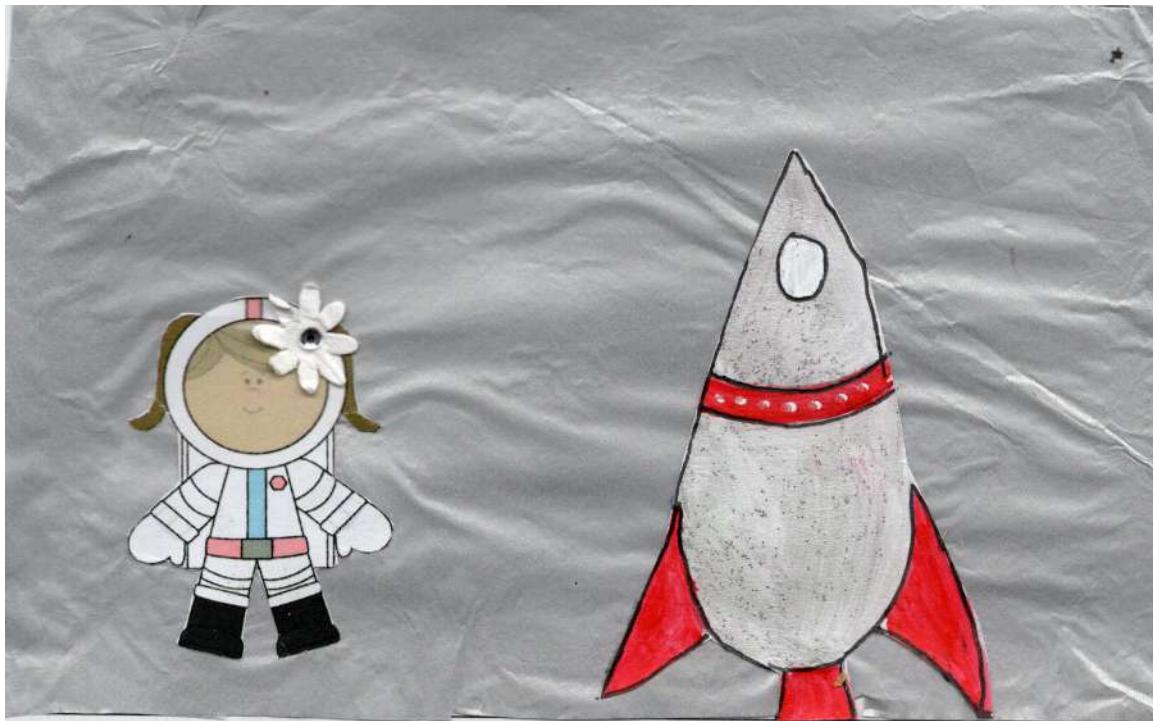


The Martian

census



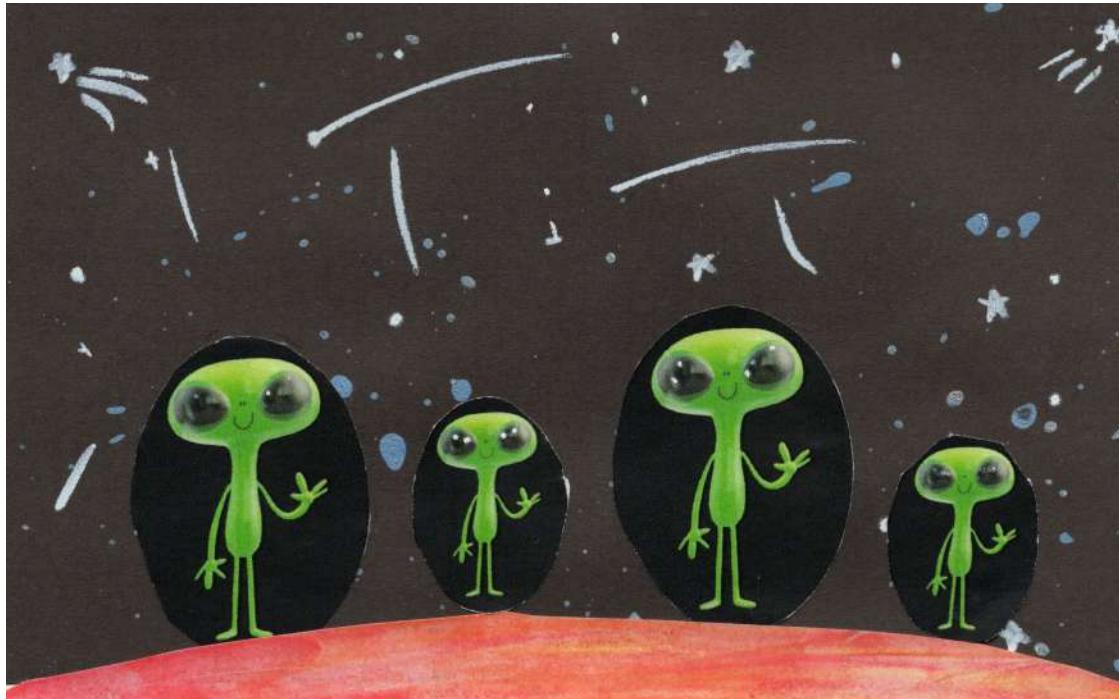
By Hannah B



With the next Martian census coming up, the top mathematicians at NASA need the most intelligent Astronaut for the job. Astronaut Zoe had been at the top of her class at NASA that previous year so therefore, she had recently been approved for the next trip to Mars. She was a strong and smart woman, the perfect leader for NASA's team.



The specialized Martian census occurs every 10 years and is extremely important to keeping an equal society between the solar system. The census keeps order and allows us to see the average age of Martians and the most common age. This helps us to measure life expectancy, population and the planets development and so much more!



To begin the census, Zoe must first go to every Martian house and ask everyone their ages to create a tally. When we create the tally, we will organize them into groups by age in 10's. For example 0-10 years, 11-20 years and so on.

Astronaut Zoe has now created a tally of data here are the results totaled

0-10 Years = 4

11-20 years = 8

21-30 Years = 9

31-40 Years = 12

41-0 Years = 7

51-60 Years = 4

71-80 Years = 2

| Age range | Tally |
|-------------|-------|
| 0-10 Years | |
| 11-20 years | |
| 21-30 Years | |
| 31-40 Years | |
| 41-50 Years | |
| 51-60 Years | |
| 61-70 Years | |



Now to make our data much easier to see and understand we will put it all into one table. We recorded the total of each category as frequency because it is how frequently that age occurred.

| Age Range | Tally | Frequency (Totals) |
|-------------|-------|--------------------|
| 0-10 Years | | 4 |
| 11-20 years | | 8 |
| 21-30 Years | | 9 |
| 31-40 Years | | 12 |
| 41-50 Years | | 7 |
| 51-60 Years | | 4 |
| 61-70 Years | | 2 |
| Total = | | 46 |

| Age Range | Tally | Frequency (Totals) | Midpoint (X) |
|-------------|-------|--------------------|--------------|
| 0-10 Years | | 4 | 5 |
| 11-20 years | | 8 | 15.5 |
| 21-30 Years | | 9 | 25.5 |
| 31-40 Years | | 12 | 35.5 |
| 41-50 Years | | 7 | 45.5 |
| 51-60 Years | | 4 | 55.5 |
| 61-70 Years | | 2 | 65.5 |
| Total = 46 | | | |

Next to give an average age for each group, we need to find the median (middle of the age range). We will call this the midpoint and X to shorten it for our equations and will add this to our table. One way of doing this is to add the two numbers in our range and divide by two. For example:

$11 + 20 = 31$ $31/2 = 15.5$

Our next step is to find our fx , now this only means that we are timesing our frequency (f) and our midpoint (x)

For example:

For our 0-10 range we will do. $4 \times 5 = 20$

| Age Range | Tally | Frequency (Totals) | Midpoint (X) | fx |
|-------------|-------|--------------------|--------------|-------|
| 0-10 Years | | 4 | 5 | 20 |
| 11-20 years | | 8 | 15.5 | 124 |
| 21-30 Years | | 9 | 25.5 | 229.5 |
| 31-40 Years | | 12 | 35.5 | 426 |
| 41-50 Years | | 7 | 45.5 | 318.5 |
| 51-60 Years | | 4 | 55.5 | 222 |
| 61-70 Years | | 2 | 65.5 | 131 |
| Total = 46 | | | Total = 1471 | |

Now we have all the data that we need to find our averages:

-Mean, to find our mean we do the total of the fx (1471) divided by the total of the frequency (46)

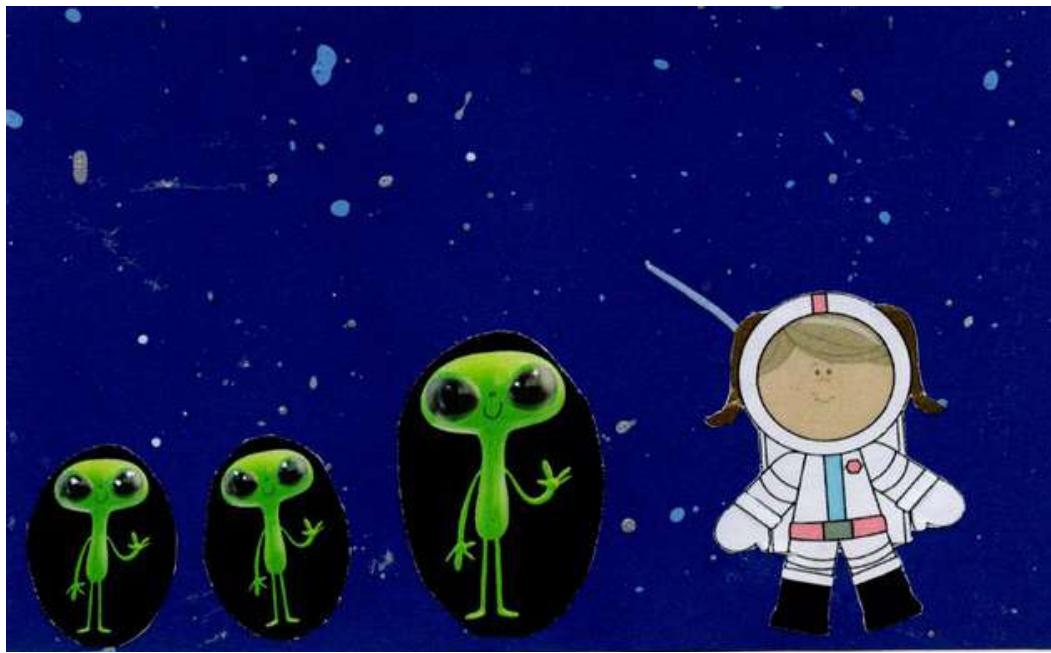
$$1471/46 = 32$$

-Mode, find the age with the highest frequency

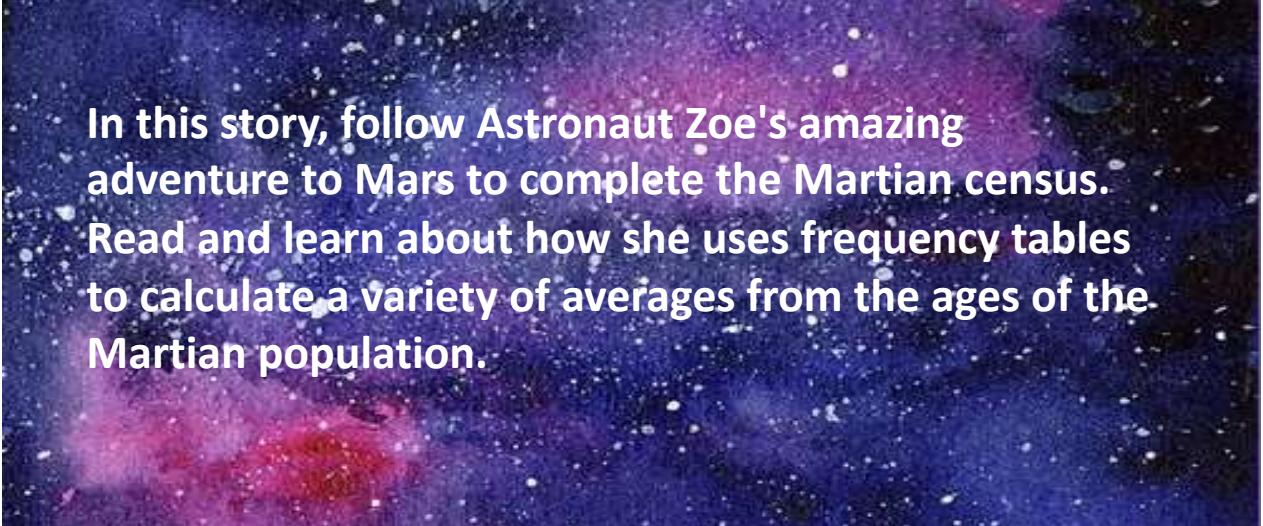
31-40 years

-Medium, half the oldest age

$$70/2 = 35$$



Now that astronaut Zoe has all the information that she needs from the census she can safely return to earth.



In this story, follow Astronaut Zoe's amazing adventure to Mars to complete the Martian census. Read and learn about how she uses frequency tables to calculate a variety of averages from the ages of the Martian population.

My name is Hannah and I am 13 years old and I am from Townley Grammar School, England. I was inspired to write this story after trying to teach this concept to my sister.