

Houston, we have a problem

SPACE SCIENTISTS: PAST AND PRESENT



Margaret Hamilton

When 28-year-old Margaret Hamilton joined the Apollo Project in 1964, ¹computers were so ²big that they filled a whole room! Despite being so huge, the machines had very little memory, and there was no keyboard or screen to write or see instructions.

Margaret's job was to develop the computer systems to send the Apollo 11 spaceship to the moon. There were two computers: one on the main ³spaceship, and one on the vehicle that would land on the moon.

Luckily, Margaret had some experience because she wrote a ⁴program for predicting weather in her previous job. Her new job was more challenging, because the computers with her software had to fit on the spaceship. At first, she was completely alone, as she was the only programmer and the only woman in her department.

Despite the difficulties, the computers were programmed successfully, and Apollo 11 reached the moon. Sadly, only the three astronauts are remembered for this, and not people like Margaret Hamilton, who made their achievement possible.



Amber Yang

Amber Yang knew she had to do something about space junk when she saw the ⁵film Gravity. Space ⁶junk is mainly rubbish that astronauts have left in space, such as broken pieces of equipment. It travels very fast. In the movie, spaceships are hit by this rubbish,

and the International Space Station is destroyed.

Amber spent three years developing a computer system to follow and predict the movements of space junk as it moves through space. In 2017, while she was in her final year of secondary school, her program won a big competition. She used the \$50,000 prize money to start her own ⁷business, Seer Tracking. Through her company, she hopes to sell her system to organisations with ⁸equipment in space. The idea is that they can move their devices out of the way of the space junk.

Now Amber is studying physics at university, as well as managing her company. She's happy that there are more women science students today, but she'd like to see more women professors too. Hopefully, this situation will change in the future.

- 1 Work in pairs. What kind of problems do astronauts have to deal with on a space mission? Make a list.

- 2 7.12 Read the biographies. Which problem in space did each scientist try to solve?

STRATEGY Recognising and understanding paraphrasing

Paraphrasing means using different words to express the same idea. Writers use it to avoid repetition. While you're reading, look out for synonyms to help you understand the text better.

- 3 Read the **strategy**. Look at the underlined words in the article. For each one, find a word or words with a similar meaning in the same paragraph.

- 4 **VOCABULARY** Match the **highlighted** adverbs in the article to the definitions.

- 1 in a way that achieves the results wanted _____
- 2 in a good way, fortunately _____
- 3 in a way that makes you unhappy _____
- 4 more than anything else, mostly _____
- 5 in a way you would like things to happen _____
- 6 in every way, fully _____

- 5 Read the biographies again. Are the sentences true (T) or false (F)? Correct the false ones.

- 1 Margaret's work was to design a new spaceship. ____
- 2 Margaret was the only woman in a team of male programmers. ____
- 3 Few people know the name Margaret Hamilton. ____
- 4 Amber Yang learned about space junk in a science lesson. ____
- 5 Amber was still at school when she developed her computer program. ____
- 6 Amber's software isn't for sale. ____

- 6 **MEDIATION** Imagine that an English friend has heard the names of the scientists in the article but does not know who they are. Use the information from the text to make a short presentation about one of the scientists. Student A: prepare to talk about Margaret Hamilton. Student B: prepare to talk about Amber Yang. Think about ...

- the scientist's main achievement.
- her previous experience.
- when she is / was active.
- the challenges she faced.
- how she overcame these challenges.

- 7 Student A: give your presentation to Student B. Then swap. Whose presentation was better? Why?

- 8 **THINK & SHARE** Answer the questions.

- 1 How has technology changed since the 1960s? How do you think it will change in the future?
- 2 How has the role of women in science changed since the 1960s? How do you think it will change in the future?