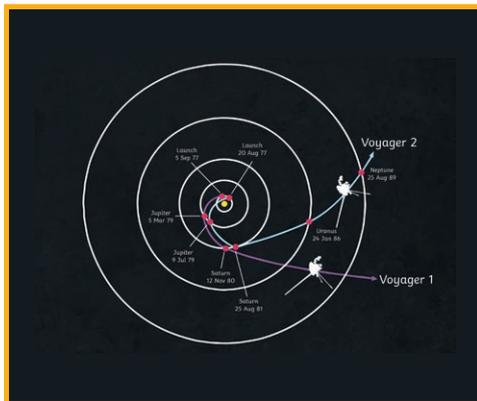


# Voyager and the Golden Record.

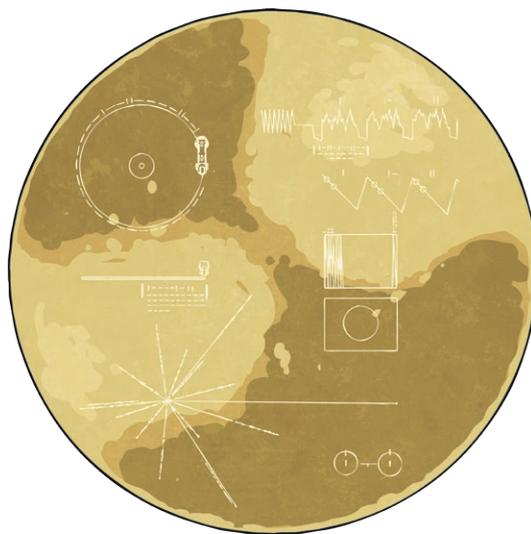
In 1977, NASA launched two space probes (a device used for exploring, testing or measuring). They were called Voyager 1 and Voyager 2. They were designed to explore the outer planets in detail for the first time. Both missions visited the systems of Jupiter and Saturn and Voyager 2 was able to continue onwards to Neptune and Uranus. Both probes are still sending back scientific information today.



## Voyager Missions

The missions were launched in 1977 see Jupiter, Saturn, Neptune and Pluto. The probes have reached some amazing speeds because they used 'gravitational slingshots'. Voyager 1, the fastest, is travelling away from the Solar System at 61 959 km/h!

Each of the Voyager Spacecraft carries a Golden Record. This is a specially prepared vinyl disc containing instructions on how to play the disc and information about the Earth. The records act as a type of time capsule and were placed on the spacecraft in case they should ever be found by alien life forms and contain images, sounds and greetings to represent the Earth.

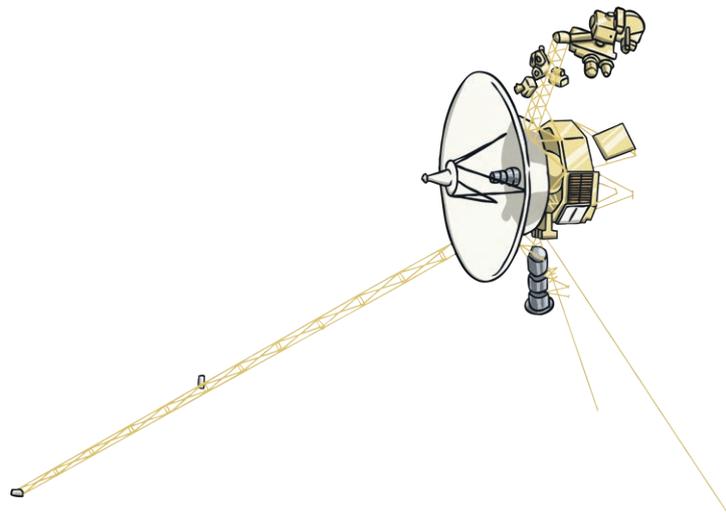


## Voyager and the Golden Record

The Voyager missions have been an incredible triumph and have been responsible for many improvements in our understanding of the Solar System. Among the achievements of the Voyager missions are:

1. photographs which showed the clouds and storms on Jupiter;
2. capturing images of Jupiter, Saturn, Uranus and Neptune;
3. discovering volcanic activity on Jupiter's moon Io;
4. discovering 'spokes' in Saturn's rings;
5. being the first and only probes to visit the 'ice giants' called Neptune and Uranus;
6. discovering 10 new moons orbiting Uranus;
7. discovering the point at which the solar wind dies down.

The Voyager Spacecraft's mad hurtle into the emptiness of space continues every moment of every day. It is estimated that the Voyager space probes may be able to send back information for approximately another seven years. After that, it will be another 10 000 years before they get 'close' to any other known objects in space.



# Questions

1. When were the Voyager spacecraft launched?

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2. What was the method the Voyagers used to increase their speed?

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3. The Golden Record contains information about Earth - true or false?

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4. Underline three words in this sentence which tells us that the Voyager missions have been a success:

*The Voyager missions have been an incredible triumph and have been responsible for many improvements in our understanding of the Solar System.*

5. Can you name one of the Voyager's achievements?

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6. In the last paragraph, which of the following do you think the phrase 'mad hurtle' means? Slow, medium speed, quite fast or very fast?

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7. How long will the Voyager space probes be able to continue sending information back to Earth?

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8. Has any other manmade object travelled further than Voyager? Yes/no?

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# Answers

1. When were the Voyager spacecraft launched?

**1977.**

2. What was the method the Voyagers used to increase their speed?

**Gravitational slingshot.**

3. The Golden Record contains information about Earth - true or false?

**True.**

4. Underline one word in this sentence which tells us that the Voyager missions have been a success:

*The Voyager missions have been an incredible **triumph** and have been responsible for many **improvements** in our understanding of the Solar System.*

5. Can you name one of the Voyager's achievements?

**Own answer quoting one of the seven achievements stated in the text with justification.**

6. In the last paragraph, which of the following do you think the phrase 'mad hurtle' means? Slow, medium speed, quite fast or very fast?

**Very fast.**

7. How long will the Voyager space probes be able to continue sending information back to Earth?

**Approximately 7 years.**

8. Has any other manmade object travelled further than Voyager? Yes/no?

**No.**

# Voyager and the Golden Record.

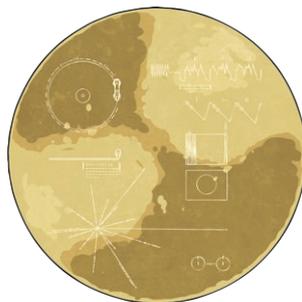
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## Voyager Missions

The missions were launched in 1977 to take advantage of a rare (unusual) alignment (lining up) of the planets of Jupiter, Saturn, Neptune and Pluto. The Voyager flight paths were designed to make use of 'gravitational slingshots' a method of flying close enough to a planet to gain a boost in momentum (movement) from the speed at which that planet is orbiting (circling round) the Sun. As a consequence, the probes have reached some amazing speeds. Voyager 1, the fastest, is travelling away from the Solar System at 61 959 km/h!

Each of the Voyager Spacecraft carries a Golden Record, which is a specially prepared vinyl disc containing instructions on how to play the disc and information about the Earth. The records act as a type of time capsule and were placed on the spacecraft in case they should ever be found by alien life forms and contain images, sounds and greetings to represent the Earth.

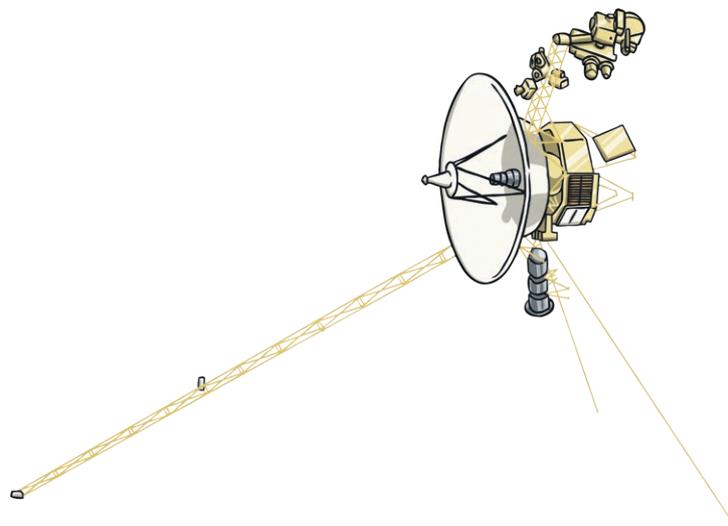


## Voyager and the Golden Record

The Voyager missions have been an incredible triumph and have been responsible for many improvements in our understanding of the Solar System. Among the achievements of the Voyager missions are:

1. photographs which revealed the nature of clouds and storms on Jupiter;
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3. discovering volcanic activity on Jupiter's moon Io;
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7. Discovering the point at which the Solar Wind dies down.

The Voyager Spacecraft's mad hurtle into the emptiness of space continues every moment of every day; there are trackers on the Internet which allow you to follow their progress. Voyager 1 has already become the furthest travelled manmade object in history. It is estimated that the Voyager space probes may be able to send back information for approximately another seven years. After that it will be another 10 000 years before they get 'close' to any other known objects in space.



# Questions

1. Why were the Voyager Spacecraft launched in 1977?

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2. How do 'gravitational sling shots' work?

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3. Why were the Golden Records placed on the spacecraft?

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4. Underline two words in this sentence which tells us that the Voyager missions have been a success:

*The Voyager missions have been an incredible triumph and have been responsible for many improvements in our understanding of the Solar System.*

5. Which do you think is the most important of Voyager's achievements?

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6. What do you think the phrase 'mad hurtle' means?

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7. In the final paragraph, which word tells us that we don't know exactly how long the Voyager space craft will be able to continue sending messages back to Earth?

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8. What does the fact that it will be another 10 000 years before Voyager is close to anything else tell us about space?

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# Answers

1. Why were the Voyager Spacecraft launched in 1977?  
**To take advantage of a rare alignment of the planets Jupiter, Saturn, Uranus and Neptune.**
2. How do 'gravitational sling shots' work?  
**As the spacecraft enters the orbit of the planet it is given a boost by the speed at which the planet is orbiting the sun.**
3. Why were the Golden Records placed on the spacecraft?  
**As a time capsule and to greet aliens and give them information about Earth.**
4. Underline two words in this sentence which tells us that the Voyager missions have been a success:  
*The Voyager missions have been an incredible **triumph** and have been responsible for many **improvements** in our understanding of the Solar System.*
5. Which do you think is the most important of Voyager's achievements?  
**Own answer that needs to refer to one of the seven achievements listed in the text.**
6. What do you think the phrase 'mad hurtle' means?  
**Travel really quickly.**
7. In the final paragraph, which word tells us that we don't know exactly how long the Voyager space craft will be able to continue sending messages back to Earth?  
**Approximately.**
8. What does the fact that it will be another 10 000 years before Voyager is close to anything else tell us about space?  
**That it is huge and planets/stars are a really long way apart.**

# Voyager and the Golden Record.

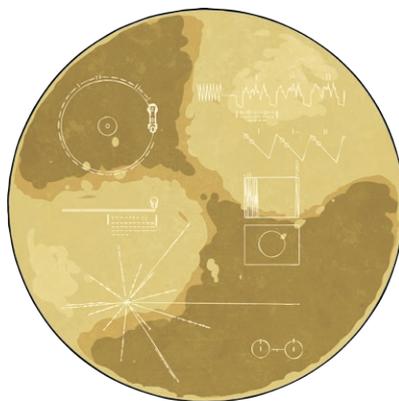
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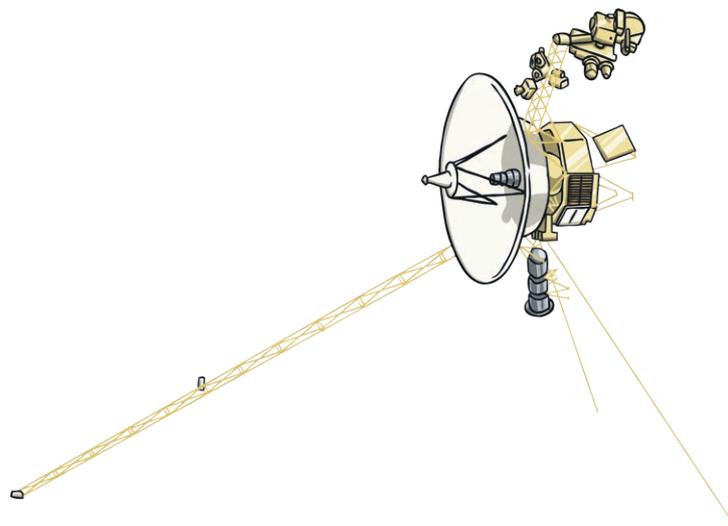


## Voyager and the Golden Record

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# Questions

1. What do you think the phrase 'rare alignment' means?

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2. Why is an exclamation mark used after Voyager's quoted speed of 61 959 km/h?

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3. How are the Golden Records a type of time capsule?

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4. Underline two words in this sentence which tells us that the Voyager missions have been a success:

*The Voyager missions have been an incredible triumph and have been responsible for many improvements in our understanding of the Solar System.*

5. Which do you think is the most important of Voyager's achievements?

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6. Why do you think the author refers to the Voyager's spacecraft journeys continuing 'every minute of the day'?

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7. Why does the text specify that the Voyager Spacecraft would be the furthest travelled 'manmade' object?

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8. Why is the word 'close' placed in inverted commas in the last paragraph?

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# Answers

1. What do you think the phrase 'rare alignment' means?  
**A lining up of the planets which doesn't happen often.**
2. Why is an exclamation mark used after Voyager's quoted speed of 61 959 km/h?  
**To emphasise the incredible speed.**
3. How are the Golden Records a type of time capsule?  
**Because the images and information contained on them will all date to 1977 and cannot be altered.**
4. Underline two words in this sentence which tells us that the Voyager missions have been a success:  
*The Voyager missions have been an incredible **triumph** and have been responsible for many **improvements** in our understanding of the Solar System.*
5. Which do you think is the most important of Voyager's achievements?  
**Own answer quoting one of the seven achievements stated in the text with justification.**
6. Why do you think the author refers to the Voyager's spacecraft journeys continuing 'every minute of the day'?  
**To help the reader picture the space craft moving through space even while they are reading.**
7. Why does the text specify that the Voyager Spacecraft would be the furthest travelled 'manmade' object?  
**Because other natural objects, stars, planets, asteroids and comets will have travelled further.**
8. Why is the word 'close' placed in inverted commas in the last paragraph?  
**To indicate that because of the huge distances involved in space 'close' may not necessarily be very close at all.**