

What to do today

IMPORTANT Parent or Carer – Read this page with your child and check that you are happy with what they have to do and any weblinks or use of internet.

1. Read a restricted word explanation

- Read the captions on Up Goer Five:
<https://xkcd.com/1133/>
- The author challenged himself to write an explanation using only the thousand most common words in English. How well does it work as an explanation? Which sentence do you think is cleverest? Which do you think sounds the strangest?

2. Explore two more explanations

- Watch [How the Apollo Spacecraft Works: Part 1](https://www.youtube.com/watch?v=8dpkmUj8xU)
<https://www.youtube.com/watch?v=8dpkmUj8xU>
What three things stand out to you most?
- Explore this explanatory diagram. You have to zoom in a LOT!
<http://www.robotspacebrain.com/wp-content/uploads/2015/11/Saturn-V-cutaway.jpg>
Use it to find out how the Command module worked – in the top right hand corner of the diagram.

3. Answer questions from an explanation

- Read [Saturn V Stages](#) and answer [Questions 1 and 2](#).

Well done. Explain what you have learnt to a grown-up. You can check your answers at the end of this pack.

Try the Fun-Time Extra

Make your own diagram and explanation of the Saturn V rocket. You can use any of the information that you have read today. You can try to include [Explanation Features](#) in your writing.

SATURN V Stages

FIRST STAGE

The gigantic first stage was the height of a 10-story building, and when filled with propellant, it made up half the weight of the rocket. Six moving vans would fit easily inside its cavernous tanks. These tanks fed fuel and oxidizer to five rocket engines, the most powerful ever built. They lifted the vast launcher to a height of 38 miles (61 km) in just 2.5 minutes.

1. The first stage separated after 30 seconds, when explosives blasted off the interstage ring. Although it was the height of a house, and traveling at 6,000 mph, the ring had to slip past the second stage engines without touching them.
2. The motors of the first stage used paraffin fuel. When mixed with pure oxygen, paraffin explodes, producing enough power to lift the 3,048-ton launch vehicle high into the air. The intensity of the heat given off is enough to set fire to a carpet 2 miles away.

SECOND STAGE

When fuel ran out in the first stage, explosives detached it, and the five second-stage engines ignited. They lifted the Saturn V launcher and its payload – the Apollo spacecraft – to an altitude of 114 miles (184 km).

1. The fuel and oxidizer in the second-stage tanks weighed as much as three blue whales, yet the tanks had no supporting structure inside. They were built like an egg; in proportion to their diameter, the immensely strong walls were as thin as eggshell.
2. The huge pipe that refuelled the second stage pumped 166 gallons a second - fast enough to fill the fuel tank of a car in just a tenth of a second.

THIRD STAGE

The third and smallest stage of the Saturn V launcher was the only one to reach Earth orbit. After circling the Earth once or twice, the astronauts fired its engine for the last time to blast their craft toward the Moon. Its work complete, the discarded third stage became just another piece of space junk.



Text by Richard Platt from Stephen Biesty's Incredible Everything

Saturn V Stages – Questions 1

1. What height was the first stage?
2. What adjective did the writer use to describe its size?
3. What other adjectives could he have used?
4. How heavy was the first stage when it was filled with propellant?
5. What do you think propellant is?
6. How many vans could fit inside the first stage's tanks?
7. How long did the first stage stay with the rocket?
8. What sort of fuel did the first stage use?
9. How hot was the explosion of fuel in the first stage?

Saturn V Stages – Questions 2

1. Read **Saturn V Stages**.
2. What organisational devices has the writer used? Why have these been used?
3. Make a list of the most powerful verbs used in this writing. What overall mood do they create?
4. Make a table like this to show how the writer uses adjectives, comparisons and measurements.

<u>Adjectives</u>	<u>Comparisons</u>	<u>Measurements</u>
<i>gigantic</i>	<i>Height of a 10-story building</i>	<i>38 miles in just 2.5 minutes</i>

5. Why do you think the writer uses adjectives, comparisons and measurements?
Choose two of these. Explain why each one is important and particularly effective.
6. Look at **Explanation Features**. Which of these features can you find in this text? Annotate the text to show these features.

Explanation Features

Purpose – tells why or how something happens

Range – Non-fiction book or article, encyclopaedia entry, write-up of a science experiment, technical manual.

- **Title** telling what needs to be explained
- **Introduction** (often making a link to the reader)
- **Clear layout** e.g. sections or paragraphs
- **Bullet points** or **sub-headings**
- **Diagrams** and **illustrations**
- **Technical vocabulary** (often with definitions)
- Present-tense **verbs**
- **Causal language** (e.g. because; ‘if...then...’; the reason that; when; so; this results in; this causes; therefore)
- **Passive verbs**
- **Formal connectives** (e.g. however, therefore, consequently)
- Usually **formal register**
- **Comparisons** (similes, metaphors and analogies)
- **Stories** (to capture the reader’s interest)
- **Closing sentence** to round off the explanation

Saturn V Stages – Possible Answers

1. What height was the first stage?

The first stage was the height of a ten-storey building.

2. What adjective did the writer use to describe its size?

The adjective 'gigantic' is used.

3. What other adjectives could he have used?

huge, massive, enormous, colossal (and others)

4. How heavy was the first stage when it was filled with propellant?

It was half the weight of the rocket.

5. What do you think propellant is?

Propellant is the fuel that propels the rocket.

6. How many vans could fit inside the first stage's tanks?

Six vans could fit in the first stage's tanks.

7. How long did the first stage stay with the rocket?

The first stage stayed with the rocket for 30 seconds of flight.

8. What sort of fuel did the first stage use?

The motors used paraffin fuel.

9. How hot was the explosion of fuel in the first stage?

The explosion was hot enough to set fire to a carpet two miles away.

What organisational devices has the writer used? Why have these been used?

Title, headings, paragraphs, numbered points, illustration alongside the explanation.

These help arrange or lay out the explanation so it is easier to follow. It is not all one big text: it is broken up into pieces.

Make a list of the most powerful verbs used in this writing. What overall mood do they create?

slip past / ran out / explodes / lifts high / set fire to / ignited / fired / discarded
the verbs create an impression of action, power and fast pace.

<u>Adjectives</u>	<u>Comparisons</u>	<u>Measurements</u>
<i>Gigantic</i> <i>Cavernous</i> <i>Most powerful ever built</i> <i>Vast</i> <i>Immensely strong</i>	<i>Height of a 10-story building</i> <i>Six moving vans would fit inside ...</i> <i>Weighed as much as three blue whales ...</i> <i>Walls as thin as eggshell</i>	<i>38 miles in just 2.5 minutes</i> <i>Separated after 30 seconds</i> <i>Enough to set fire to a carpet 2 miles away...</i> <i>Travelling at 6000 mph</i> <i>3048 tons</i> <i>An altitude of 114 miles</i> <i>166 gallons a second</i> <i>Fill a car tank in 1/10 sec.</i>

Why do you think the writer uses adjectives, comparisons and measurements? He knows that these help us to build an accurate picture in our minds. We can imagine the size of the Saturn V and also what it was capable of doing.

Look at **Explanation Features**. Which of these features can you find in this text? See annotated text.

SATURN V Stages Title

FIRST STAGE sub heading

Introduction

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Paragraphs

1. The first stage separated after 30 seconds, when explosives blasted off the interstage ring. Although it was the height of a house, and traveling at 6,000 mph, the ring had to slip past the second stage engines without touching them.
2. The motors of the first stage used paraffin fuel. When mixed with pure oxygen, paraffin explodes, producing enough power to lift the 3,048-ton launch vehicle high into the air. The intensity of the heat given off is enough to set fire to a carpet 2 miles away.

Numbered points

SECOND STAGE

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Closing
sentence

Yellow – technical vocabulary and causal language

There are many comparisons – see table above.

There are no formal connectives, nor passive verbs.

The tone is practical, factual and technical – making this a formal register.