

## Class 7

### Moon Race, 1960s

#### **Eisenhower administration not convinced that government should pursue a rocket program**

- April 2, 1958, NACA becomes NASA (National Aeronautics and Space)

#### **The Race to the Moon - the Race beings**

- January 31, 1958, Jupiter-C launches Explorer 1 satellite
- May 15, 1958, Russia, Sputnik 3
- USSR, launched Lunas missions
  - October 7, 1959, Lunas 3 took photos from dark side of the moon
  - 20 August, 1960, Sputnik 5 returned a live dog from space
- 1961
  - January 31, US launched a chimp on a suborbital flight
  - March, US planned, human suborbital flight, Alan Shepard
  - early May, Shepard launch
  - 12 April, Yuri Gagarin, had travelled 1 1/2 orbits
  - April, 1961 was also the Bay of Pigs fiasco
  - May 25, 1961, Kennedy gives his famous challenge to land a human on the moon by the end of the decade:

*[the US] should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to earth. No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space; and none will be so difficult or expensive to accomplish.*

*New objectives and new money cannot solve the [many] problems [involved]. They could, in fact, aggravate them further unless every scientist, every engineer, every technician, contractor, and civil servant gives his personal pledge that this nation will move forward, with the full speed of freedom, in the exciting adventure of space.*

### **Mercury Program - put one human in space**

- July 21, 1961, Virgil (Gus) Grissom, second suborbital flight
- August 6, 1961, Herman Titov spent a day in space
- February 20, 1962, John Glenn, three orbit flight
- August 11, 1962, Andrian Micolaev in space for four days
- August 12, 1962, Pavel Popovich also in space
- October 2, 1962, Walt Schirra, makes a 9 hour flight
- May, 15, 1963, Gordon Cooper, 34 hour trip
- June 16, 1963, Valentina Tereshkova, first woman in space

### **. Gemini Program - Voskhod in USSR -- the multiple person flights**

- October 12, 1964, Voskhod 1 launched
- March 18, 1965, Voskhod 2 launched
- 23 March, 1965, first human Gemini flight (Gemini 3)
- November 1966, Gemini 12 last Gemini
- end of Gemini, were we rapidly catching up to USSR and our technology was proving to be much more sophisticated

### **Apollo begins with a tragedy**

- January 27, 1967, first major accident in US program
- 23 April, 1967, Vladimir Komarov

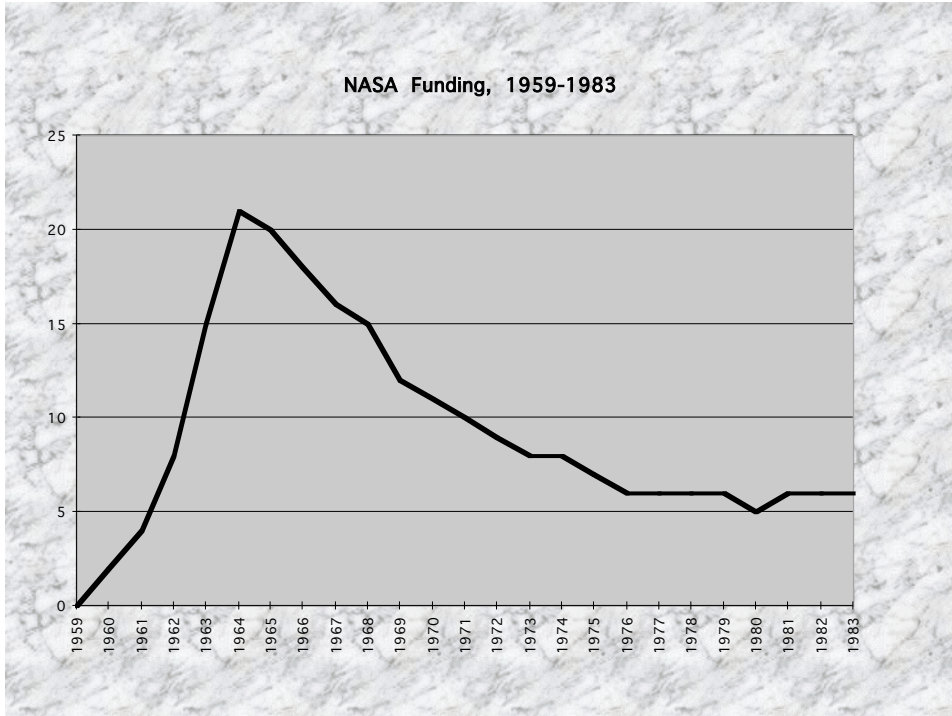
### **Apollo technology**

- the Saturn booster
- three-person capsule
- the LEM (Lunar Excursion Module)

### **Apollo series**

- October 11, 1968, first human flight of Apollo - 7
- December 21, 1968, Apollo 8, first flight to the moon
- February, 1969, Apollo 9, earth orbit, tested LEM
- April, 1969, Apollo 10, flew to moon, got in LEM, tested, and returned
- July 16, 1969, Apollo 11, moon flight
  - land on moon, work for 24 hours, return with rocks

*"One small step for man. One giant leap for mankind"*



**NASA'S BUDGET & APOLLO**

Year	(94\$B)	(94\$B)	%
• 1962	\$0.78	\$5.89	13.31%
• 1963	\$2.91	\$10.52	27.66%
• 1964	\$10.33	\$20.62	50.08%
• 1965	\$11.47	\$28.20	40.67%
• 1966	\$12.57	\$28.20	44.58%
• 1967	\$11.95	\$27.15	44.04%
• 1968	\$10.14	\$24.41	41.55%
• 1969	\$7.76	\$21.04	36.87%
• 1970	\$6.24	\$17.26	36.19%
• 1971	\$3.25	\$15.36	21.14%
• 1972	\$2.05	\$11.99	17.10%
• 1973	\$0.25	\$11.99	2.05%
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<b>Total</b>	<b>\$79.7</b>	<b>\$222.6</b>	<b>35.80%</b>

### Moon Race:

- **Project Mercury:** \$ 1.5B
- **Gemini Project:** \$ 5.4B
- **Lunar Probes:** \$ 3.0B
- **Launchers:** \$39.0B
- **Apollo Spacecraft:** \$17.0B
- **Apollo LM** \$11.0B
- **Apollo Missions** \$14.6B
- **Total** \$91.5B

### Changes in Federal Spending for R&D

