WORK-ENERGY/POWER

Unit 10,1 1 **Dr** John P. Cise, Professor of Physics, Austin Com. College,1212 Rio Grande St. Austin Tx, 78701 jpcise@austincc.edu & NYTimes August 5,2011 ,by Douglas Martin. Send Dr Cise an e-mail on how you used this application. Thanks! Dr. Cise

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Arthur Murray, Test Pilot, Is Dead at 92

"I begin to feel weightless, and I'm flying so fast my instruments can't keep up — they show what happened two miles ago. I'm climbing so steeply I can't see the ground, and I feel confused. I have a sense of falling and I want to grab something for support."

X-1A 1954

Dropped from a bomber at 45,000 ft. Went as high as 90,440 ft at 1400 mph. Weight: 7,000 lb (no fuel left)

QUESTION: (a) Find the X-1A's potential Energy at 90,440 ft.? (b)Find it's kinetic energy? (c) It landed at Edwards Air Force Base in California. Find the work due to friction that caused it to stop safely?HINT: 88 ft/s =60 mph

ANSWERS: (a) 6.33 X 10^8 ft lb (b) 4.12 X 10^8 ft lb (c) ~10.64 X 10^8 ftlb,~ 1.1 billion ft lb

X-15 1958-1960

Dropped from a bomber at 45,000 ft. Went as high as 327,880 ft(62.5 mi) at 4000 mph. Weight: 14,600 lb (no fuel left)

QUESTION: (a) Find the X-15's potential Energy at 327,880 ft.? (b)Find it's kinetic energy? (c) It landed at Edwards Air Force Base in California. Find the work due to friction that caused it to stop safely?HINT: 88 ft/s =60 mph

ANSWERS: (a)~ 47.9 X 10^8 ft lb (b) ~78.5 X 10^8 ft lb (c) ~ 126.4 X 10^8 ftlb,~ 12.6 billion ft lb

It was May 28, 1954, and Maj. Arthur Murray, test pilot, would wrestle for the next 15 terrifying seconds with **a rocket plane racing over 1,400 miles an hour** and spinning wildly, supersonically out of control. In the turmoil, he would fly higher than any human being had ever been, **90,440 feet(17.13 mi) over the earth.**

Finally, Major Murray's plane, a Bell X-1A, sank back into heavier air, and he had time to look at the dark blue sky and dazzling sunlight. He became the first human to see the curvature of the earth. At the time, he was called America's first space pilot. Arthur Murray, known as Kit, died on July 25, in a nursing home in the town of West in Texas, his family said. He was 92. He requested that his ashes be scattered over the Mojave Desert, where some of his fellow test pilots crashed and died.

Tom Wolfe marveled at the test pilots of Edwards Air Force Base in his 1979 book "The Right Stuff"

Mr. Yeager started the space race when be broke the sound barrier on Oct. 14, 1947. In 1957, the Soviet Union would put the first satellite in orbit, and in 1961 it sent the first man into space, Yuri Gagarin, who orbited the world. Alan B. Shepard Jr., a test pilot, became the first American in space in 1961. The next year, John Glenn, another test pilot, was the first orbiting American.

Major Murray's many test flights, including 14 in the Bell X-1A, helped build the foundation for America's exploration of the heavens. He further contributed as manager of the Air Force's program to develop the X-15, a more advanced rocket plane, from 1958 to 1960. Two **X-15 flights exceeded 100 kilometers(62.5 mi) in altitude**, meeting the international definition of space flight.