

Fearless Felix's Fast Fall

Felix Baumgartner dreamed of being the first skydiver to break the speed of sound!

You might say that Austria's Felix Baumgartner is a little bit "jumpy"! The 41-year-old daredevil started skydiving at age 16. He has made more than 2,300 jumps, including spectacular leaps off two of the world's tallest buildings.

This year, "Fearless Felix" plans a fantastic feat to break three world records—highest parachute jump, longest *freefall* (before opening the parachute), and fastest freefall. "This has been my dream since I was a small boy," Felix told *MATH*.

For the jump, Felix puts on a pressurized suit that can withstand temperatures as low as -90° Fahrenheit. He then climbs into a capsule under a helium-filled balloon. After floating 120,000

feet—almost 23 miles!—above the Earth, he takes a deep breath and makes the plunge.

Scientists monitoring the jump (who are designing the next generation of astronaut safety gear) pay great attention to Felix's *rate of speed*. A rate compares two measurements. For speed, those measures are distance and time. After 35 seconds, Felix should be traveling 1,012 feet per second, making him the first skydiver to break the speed of sound! That means his body is moving through the air faster than sound waves.

After 5 more minutes in freefall, Felix's parachute opens at about 5,000 feet above the ground. Then he slowly drifts down and lands. So if you ever look up in the sky and wonder: Is it a bird? Is it a plane? It just might be...Fearless Felix!

—by Melissa Stewart



A test jump from 27,000 feet

WHAT TO DO: In our questions, we'll examine Felix Baumgartner's rate of speed. When needed, use the formula for speed: **Rate (r) = distance (d) \div time (t)**. If allowed, use a calculator.

1 When Felix is 100,000 feet above Earth, he will be traveling about 1,012 feet per second. If he remained at that speed for the rest of his freefall (95,000 more feet), let's see how long it would take before the parachute opened.

a. We can work with our speed formula to see that **Time (t) = distance (d) \div rate (r)**. You know the rate and distance for the rest of the freefall, so what equation can you write to find the time?

b. Solve the equation to find the time. (Round to the nearest second.)

2 But Felix will *not* be falling at a constant speed! The air will actually slow him down some. Scientists think it will take Felix about 300 seconds to cover those 95,000 feet. We can use that information to find his average speed:

a. Using the speed formula, what equation would you write to find the average rate?

b. Solve the equation to find the rate. (Round to the nearest foot per second.)

3 Scientists expect Felix to be traveling 220 feet per second at the moment his parachute opens at 5,000 feet above the Earth. If Felix continued to fall at that constant rate, how long would it take him to reach the ground? (Once again use the $t = d \div r$ formula, and round your answer to the nearest second.)

4 In reality, Felix's parachute will slow him down so much that it will take 900 seconds to fall those last 5,000 feet. Use the speed formula to find his average speed for that section. (Round to nearest foot per second.)

BONUS:

Let's see what Felix Baumgartner's record-breaking



Felix Baumgartner

speed (1,012 feet per second) approximately equals in miles per hour!

a. One mile equals 5,280 feet. So divide 1,012 by 5,280, and round to the nearest thousandth:

b. There are 3,600 seconds in an hour (60 seconds in a minute, and 60 minutes in an hour, so $60 \times 60 = 3,600$). So to find how many hours equal 1 second, divide 1 by 3,600, and round the quotient to the nearest hundred thousandth!

c. Use the speed formula and your answers to parts **a** and **b** to find the speed in miles per hour. (Round to the nearest whole number.)



WEB WISE: Teachers and students: Visit our Web site, www.scholastic.com/math, for more information and activities about Fearless Felix!