



ALL EARS!!

THE LITCHFIELD FUND WEEKLY NEWSLETTER

"OUR EARS SPAN ALL FIELDS"



MATH HATE IS REAL! After we learn how to add, subtract, multiply & divide, what more is needed? We can make change or measure the floor for a rug or the door frame to see if a chair (or Uncle Harold) will fit! Children begin to hate math at the first story problem. *"Two cars are travelling toward each other; car A at 45 MPH & car B at 60 MPH. Calculate how many oranges Joey's mom told him to buy at the store."* While no one should ever need a differential equation to balance their check book, it's sad that children today can't even add or subtract. But our civilization's greatness, expansion & scale was built upon math. Don't believe it? *Do the math!*

DO THE MATH: Being a math nerd, we celebrated Pi Day with a deep dish pizza pie! Pi may be the first mathematical constant discovered, appearing around the beginning of the second millennium BC. It is one of the important mathematical elements that has served to advance our human condition. Both the Babylonians & Egyptians identified pi. The Babylonians determined it was 3.125 & the Egyptians 3.16, pretty accurate for an abacus! Our ancient ancestors in the Paleolithic Age counted, keeping track with slash marks on bones, wood or cave walls. Perhaps it was the number of fish caught, deer killed in the hunt, bowls of nuts brought in from the forest or the number of beers consumed by our caveman friend, Thuk, at *Thuk's Place!* Around the 4th millennium BC Sumerians & Egyptians began to use tokens to show debits & credits of basic accounting systems, keeping track of trade & commerce. But Pi was an important discovery. It proved mathematics was not just a reliable & constant tool used to solve problems; math could also be dependable & predictive. Of course, pi is important in geometry, but is also used in engineering, architecture, astronomy, quantum mechanics, wave theory & more. The next important foundational mathematical discovery came in the 6th century BC, when Pythagoras scribbled $A^2 + B^2 = C^2$ in the margin of his *Mead* college ruled spiral notebook. The Pythagorean Theorem served as the basic building block of geometry & may have been the first mathematical proof. As important as pi was to math & engineering, the Pythagorean Theorem advanced architecture, construction, surveying, land measurement & navigation. It had immediate real world application & benefit, as well as being foundational to trigonometry & calculus. The Dark Ages were a quiet time for mathematical discoveries until the 13th century, when in 1202 Fibonacci wrote his *Liber Abaci* (*Book of Abacus* or *Book of Calculations*), introducing the decimal system to the western world. As a young boy, Fibonacci travelled with his father who was assigned to a trading post in Algeria. He became familiar with the Hindu-Arabic numbering system. Until this time, roman numerals were only in use. So if you walked into the local apothecary, you had to ask for two ∇ 's for an \mathbf{X} . Without Fibonacci's introduction of the numeric system, the advance of the European economy, its commerce & accounting practices, & the precision of scientific innovation would have never taken place. But the most important mathematical discoveries that built the modern world came in the 17th & 18th centuries when Newton invented calculus & established his three Laws of Motion & Pascal explored the Theory of Probability. Around 1654, Pascal was presented with a problem on the chances of winning a gambling pot. The theories he developed, later more fully developed by Pierre-Simon LaPlace, serve as the basis for the modern insurance & financial markets, statistical analysis, risk management & even machine learning & artificial intelligence. And while Pascal's discoveries helped to model uncertainty & predictability; Newton's discoveries about 10 years later explained change & motion. Without Newton's calculus & Laws of Motion, we would not understand gravity, space, stars, optics & planetary motion - modern physics would not exist. We wouldn't understand the basics of mechanical engineering & transportation, including aircraft, rockets, missiles (artillery & ballistics), satellites & space travel. We would not understand the stress & flow factors that allow us to build massive bridges & skyscrapers, fly heavier than air machines or operate large naval vessels or submarines. We would not have the ability to model & optimize economics, the social sciences, modern computing & artificial intelligence. From Newton, we arrive at the basics of electromagnetism which James Clerk Maxwell advanced in the 1860s, unifying the concepts of magnetism & electricity. Maxwell's Laws provided for the calculation of electromagnetic waves, heat generation & displacement current, explaining how electricity & magnetism behave in a vacuum. From Maxwell we gained the essentials of electrical engineering, an understanding of the behavior of light, gases & radiation; the foundation of generating power; & the basics of radio, radar & the internet. Every electronic appliance in use today is dependent on Maxwell's Laws. The 20th century gave us two mathematical discoveries that moved our human condition well beyond anything our 19th century ancestors would have believed, even after reading Jules Verne. The first was Einstein advancing Newton's concepts of mass, energy & gravity by adding in the variable of time. Einstein proved the equivalency of mass & energy, $E=mc^2$ Einstein essentially proved that Newton's Laws held true at the speed of light. Because of Einstein, we have nuclear power & nuclear weapons & understand more clearly how energy & matter behave in space. Then in 1936, Alan Turing developed the basics of algorithmic theory, creating what could be called the first working computer. During the mid-20th century, a host of mathematicians, Alonzo Church, Kurt Gödel, Emil Post, Stephen Kleene & others advanced the theories of computability & algorithms. Without these discoveries, & the work of Newton, Pascal & Maxwell, there would be no modern computers, smartphones, internet, satellites or artificial intelligence. Think of what our world would look like without all these mathematical discoveries! Think how our society, cities & businesses operate! Think of everything your daily activities rely upon! None of that would exist. Our modern world is built on these discoveries. If these mathematicians had not existed, we would be an ancient civilization, perhaps similar to the Greek, Roman & Egyptian dynasties. Yes, we would likely have the rudiments of tools for building & agriculture. We would still travel by horse & cart. We might grind grain using a wheel. We would not have a real money or exchange system. We would build, but by trial & error, learning what will or won't stand when there is an earthquake, a tornado or flood. War would be fought by massive forces in manual combat with untold death & misery instead of precisely by satellites, telecommunications & missiles. Yes, we would have an oral & written language, as it would be our only form of communication. But mathematics & physics would simply remain the philosophy of Aristotle, with no Newton to have developed the proofs & mechanics of both. No single scientific discipline fueled the advancement of the human condition more than mathematics. Mathematician Steven Strogatz, author of the *Joy of X*, writes, *"Math is the hidden scaffolding of our modern world, supporting everything from finance to engineering to the internet."* From Jacob Bronowski, Polish British mathematician & writer of the book & documentary *The Ascent of Man*, *"The great advances of civilization, have come not from myth, but from the application of reason [with] mathematics as its most precise expression."* Medieval English philosopher & polymath Roger Bacon takes it a bit farther, *"Mathematics is the gate & key of the sciences. Without mathematics, nothing can be known."* Twentieth century British statistician Lancelot Hogben would agree, *"Mathematics is the hinge of all sciences & the foundation of all human progress."* Personally, I am offended when I hear a politician, administrator or educator claim that math is racist, or that certain people can't or shouldn't have to learn math. I am offended when schools "dumb down" requirements to move forward those children who have not accomplished what is necessary. And I

am most offended when a student graduates without knowing math or must take a remedial course to enter college. I am offended because I wonder who will build safe & sturdy buildings & bridges? Who will ensure the safety of our transportation, be it cars, trains, planes or rockets? Who will ensure our computers get faster & better, & more importantly, who will ensure that the machines don't rise? Who will ensure we are safe from attacks, physical & cyber, & ensure that the weapons we will need to employ hit their targets & don't cause secondary damage or death? And who will take us to Mars & beyond? Children need to do the math, & more than just addition, subtraction, multiplication & division, because math teaches children how to think, rationalize, reason, investigate, create, problem solve & apply logic. And math is the foundation on which everything in our civilization & everything in science & technology rests. From 19th century astronomer & mathematician Carl Friedrich Gauss, "*Mathematics is the queen of the sciences.*" And math explains everything, for as Galileo wrote, "*Mathematics is the language in which God has written the universe.*"

INDUSTRY NEWS: Venture studio *Founders Row* made a strategic investment in *Yough*, Greek yogurt pizza dough. Hummus brand *Habiza* raised \$2.5M from *Foodbeast Ventures* & other angels. *Living Things*, a better-for-you soda brand, secured an undisclosed amount from *The Source Ventures*. In Singapore, *Virdalis*, protein from duckweed, raised \$700K in pre-seed funding led by *Wavemaker Impact*. In Austria, *Neoh*, a sugar replacement solution (*Zero+*) made from plant-based functional fibers, raised an undisclosed amount from German retail giant *Rewe Group*, *Zintinus* & *Teseo Capital*. *Local Bounty* secured \$15M through a convertible note with an existing strategic investor. In Germany, *eternal.ag*, autonomous greenhouse harvesting, raised €8M from *Simon Capital*, *Oyster Bay Venture Capital*, *EquityPitcher Ventures* & *Backbone Ventures*. *Wikifarmer*, an AI B2B marketplace connecting food businesses with producers, raised \$7.7M co-led by *Brighteye Ventures* & *Piraeus Bank*, with participation from *Point Nine Capital* & *Metavallon VC*. *Solugen*, certified organic liquid ammoniacal nitrogen fertilizer derived from hog manure, raised \$50M led by *Idealist Capital* with *Canada Growth Fund* involved. *AgZen*, a smart spraying system enabling farmers to make 30-50% cuts in chemical inputs, raised \$10M led by *DCVC Bio*, with participation from *Material Impact* & *Astanor*. *Choice*, a Czech SaaS & QR ordering platform for restaurants, raised \$7.1M led by *Alea Capital Partners* *Reflex Capital*, *Smartlink* & *J&T Ventures* involved. *General Mills* will sell its food business in Brazil to coffee manufacturer *Grupo 3Corações*; terms not disclosed. *Ferrero* will acquire *Bold Snacks*, a Brazilian maker of premium protein snacks. Arkansas-based *Harps Food Stores* will acquire 18 stores from *Dyer Foods* to expand into multiple locations across western Tennessee & Kentucky. *Sazerac* will acquire *Dirty Shirley* for an undisclosed sum. From Ireland, *Valeo Foods Group* will acquire *Prestige 96 AD*, Bulgarian manufacturer of biscuits, wafers & sweet baked treats. *Grimmway Produce Group* expanded into Minnesota with the acquisition of the *Fresha* facility in Morris, MN. Industrial machinery manufacturer *ITT* acquired dairy process technology equipment maker *SPX FLOW* for \$4.8B. *Bloomberg* reported that *Unilever* is considering separating from its food businesses & is reportedly in talks with *McCormick*. *Uncle Nearest* has filed for Chapter 11 bankruptcy & has filed a lawsuit against lender *Farm Credit Mid-America*, alleging the financial firm engaged in a smear campaign against the brand.

Comparables were higher in 4th QTR for *Weis Markets*, driving revenue 5% higher, though net income fell 5.1%. *Dollar Tree's* stock price jumped as the retailer reported better than expected earnings with revenues in line. *HelloFresh* saw its stock price drop as its end of year performance & 2026 forecast disappointed investors. *General Mills* says the worst is behind them as sales dropped 8% & net income plunged 52% in 3rd QTR. *Lifeway* posted 18% sales growth & 27.8% profit increase in 4th QTR to finish a record breaking sales year. *National Beverage Corp. (La Croix)* reported across the board increases in 3rd QTR while honoring its patriotic pledge to not pass tariffs along to consumers. *Beyond Meat* has delayed 4th QTR & fiscal year reporting due to internal control issues.

Whole Foods opened a new store in Los Gatos, CA. *Meijer's* has three stores opening in early May in Ohio, Indiana & Michigan. *Winn-Dixie* will rebrand seven *Harveys* supermarket locations in Florida & South Georgia as the retailer consolidates its stores under the company banner. *The Fresh Market* opened its second location in Pittsburgh. *Vallarta* will begin a new store concept with an in-house seafood restaurant. *Walmart* is testing a faster remodel process. *HEB* plans a Texas location on a former landfill. *Dollar General* will introduce a new store format designed to encourage browsing & treasure hunting by customers, as well as a subscription loyalty program. *Winn-Dixie* & *Amazon* expanded their grocery delivery partnership to additional communities across Florida, including the greater Tampa Bay area. *Amazon*, to compete with *Walmart*, launched 1-hour & 3-hour delivery options in certain cities featuring a superstore of 90K products. Also, *Amazon* will move the *Prime Days* event from July to late June. To compete with *Amazon*, China's *JD.com* launched its European online shopping platform called *Joybuy*, offering same-day delivery & international brands. *Costco* will use *Moloco's* deep learning technology for its in-store ads. *Erewhon* & health-testing platform *Function* launched the self-purported *The World's Healthiest Smoothie*. *Sprouts Farmers Market* will add two new collections to its store brand including RTE *Wellness Bowls* prepared fresh in-store & a LTO *Sweet Heat* line of snacks & beverages. *Associated Wholesale Grocers* is adding more than 60 items to its *AWG Brands* private label portfolio. *Organic Valley* debuted *Protein Plus* milk. *True Story Foods* will add new charcuterie products at *Whole Foods*. *Kraft Heinz* introduced high protein *Power Mac*. *Bolthouse Fresh Foods* will offer *Carrot Fries* in three flavors. *Saffron Road* is launching *Crossroads*, a line of five frozen meals with 24 grams of protein per serving. *Campbell* will launch a line of sauces to build on the growth of its soups as more consumers cook at home. *General Mills* will relaunch the *La Tiara* taco brand. *Joseph's Bakery* has made an investment to revitalize the *Tomato's* tortilla brand. *Smucker* will launch *Jif Simply* peanut butter spread made with three ingredients, peanuts, salt & palm oil, & 8 grams of plant-based protein in each serving. In a what might be a sad commentary on the individual's isolation from society, *Earthbound Farm* launched convenient *Organic Salad Kits for One*. *Jimmy Dean* expanded its frozen offerings with new protein-forward bowls, sandwiches & waffles. *UNFI* will shut down its warehouse & distribution facility in Sturtevant, WI, impacting 443 people. *Mars* has completed \$131M in investments to strengthen its manufacturing & innovation in workplaces across Ontario, Canada. The South Carolina Department of Corrections, in partnership with *AmplifiedAg*, will launch the first vertical farm inside a USA prison. *Hershey* will combine its sweet & salty snacks businesses. *Afresh* has expanded its AI platform to every department in grocery to manage replenishment, demand forecasting, inventory management & distribution center buying. A fantastic new law is designed to remove immigrant CDL operators from our highways to improve the safety of our highways & food supply. A judge dismissed a class-action lawsuit alleging the *Publix's* point-of-sale system inaccurately weighed on-sale item. Allison Schuman will be the new CEO at family owned *Schuman Cheese*. Gregory Yep has been appointed interim CEO of *CJ Schwan's*.

A study published in *Microbiome* highlighted the benefit of Extra Virgin Olive Oil in reducing cognitive decline. January pork exports continued to rise. Beef exports were lower than a year ago but sales reached a nine-month high. Soft red winter wheat production is down 7%. Warmer weather is closing the strawberry season in Florida & Texas as volume shifts to California. Prices of baked foods rose just 0.1% in February.

MARKET NEWS: Markets were lower for that week on hotter than expected inflation indicators & the Fed's position on interest rates.

SEEDS, SPROUTS, GROW, HARVEST!

THE LITCHFIELD FUND – *Tom Malenka*

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