

Mathematics

Growth and Decay. Downloadable Resource - Repeated percentage change

Mr. Thomas



Try this

Compare Binh and Zaki's working. Who do you agree with?

A vintage watch bought for £80 increases in value by 50% every year. What its value after 2 years?

50% of 80 is 40.

$$80 + 40 + 40 = 160$$



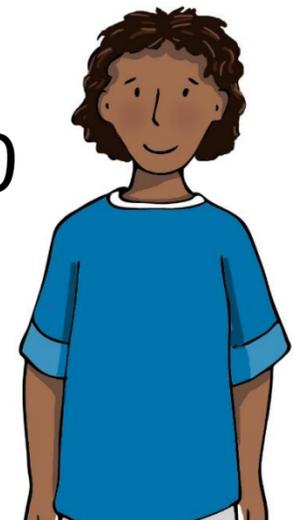
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50% of 80 is 40.

$$\text{After Year 1: } 80 + 40 = 120$$

50% of 120 = 60

$$\text{After Year 2: } 120 + 60 = 180$$



Connect

If 1000 increased by 10 percent each year, then...

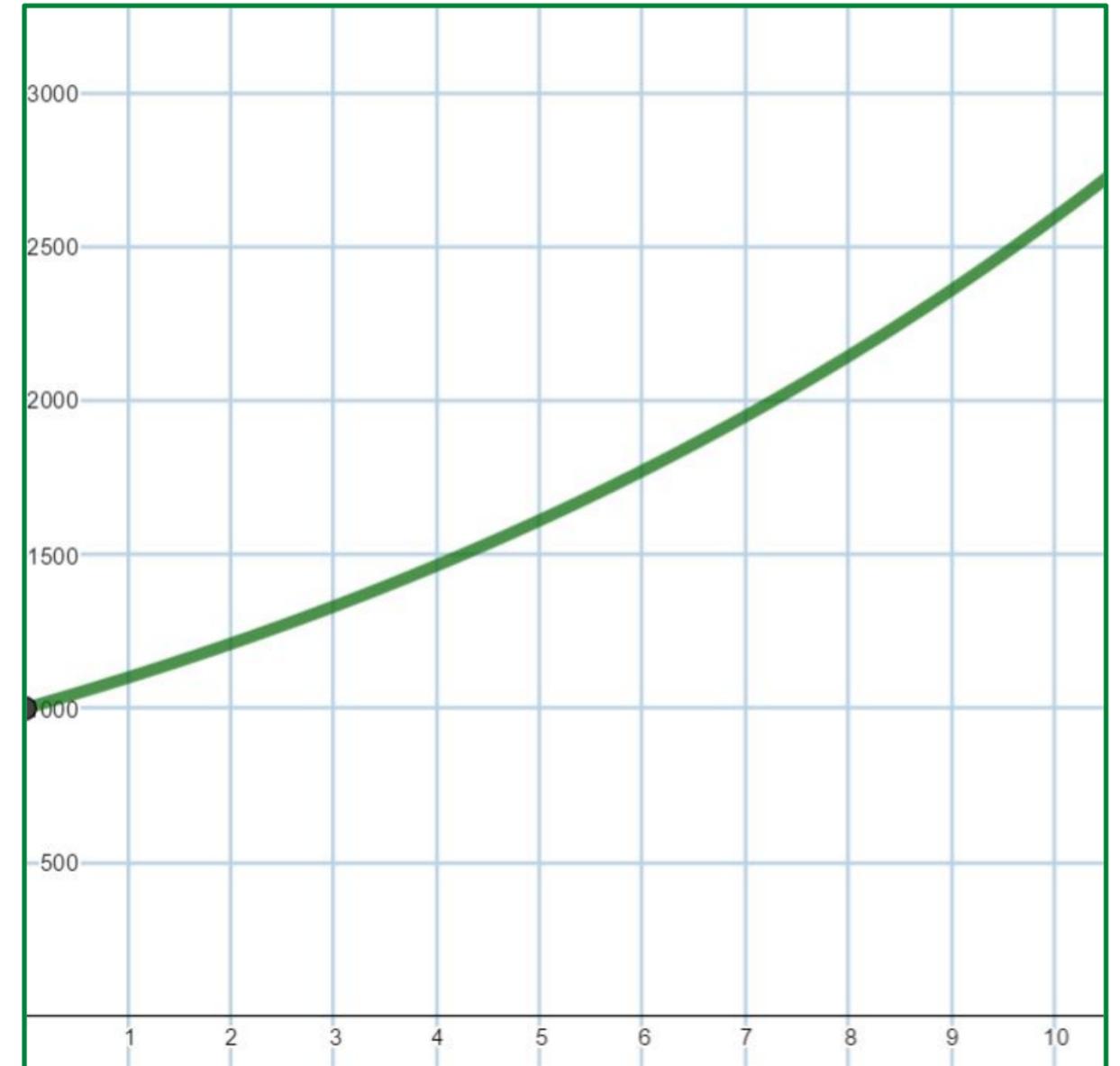
$$1000 \times 1.1^n$$

How much would £1,000 be worth in years time if it grew by 10% per year?

$$1000 \times 1.1^{10} = \text{£}2,593.74$$

How much would £3,500 be worth in 4 years time if it grew by 7.8% compound interest per year?

$$3500 \times 1.078^4 = \text{£}4,726.54$$



Independent Task

- 1) If £150,000 is invested in a bond that returns 12% compound interest per year, how much will be earned after 6 years?
- 2) £9,200 is deposited in a bank that provides 1.4% per year. How much will be earned after 2 years?
- 3) A vintage wine is purchased for £2,345. It is predicted to appreciate by 3% per year thereafter. How much will it be worth after 19 years?
- 4) A painting is bought at an auction house for £1,100,000. It decreases by 10% per years for 3 years. How much is it worth after 3 years?



Explore

A famous mathematician has 1000 followers on social media. How many followers do you think they will have in a year if that number increases by a mean of 1% each day?

How many followers might they have if it increased by a mean of 2% a day?

What % would they need to have 100000 after 1 year?

