The method: Growth and decay

Doubling: multiply by 2 for each doubling time. Half-life: halve for each half-life. Interest: multiply by (1 + rate) each year.

$1000 is invested at 50% interest, compounded once a year. How many dollars is it worth after 2 years?

$1000 \times 1.5^2 = 2250$ each year multiplies by 1 + 0.5

Answer: 2250

A sample of 200 grams has a half-life of 10 days: every 10 days, half of it is left. How many grams are left after 20 days?

20 days is 2 half-lives $20 \div 10 = 2$

$200 \div 2^2 = 50$

Answer: 50

A town of 250 people doubles in size every 4 years. How many people live there after 8 years?

8 years is 2 doublings $8 \div 4 = 2$

$250 \times 2^2 = 1000$

Answer: 1000

Problems 1 and 2 worked out · Version 0A

$5000 is invested at 50% interest, compounded once a year. How many dollars is it worth after 2 years?

$5000 \times 1.5^2 = 11250$ each year multiplies by 1 + 0.5

Answer: 11250

A town of 300 people doubles in size every 5 years. How many people live there after 15 years?

15 years is 3 doublings $15 \div 5 = 3$

$300 \times 2^3 = 2400$

Answer: 2400

Growth and decay · Version 0A

1) 11250 2) 2400 3) 2420 4) 20 5) 3375
6) 6655 7) 50 8) 10 9) 10 10) 10 11) 2000
12) 10 13) 8640 14) 1687.5 15) 600 16) 1728

Answer key

17) 800 18) 30 19) 4500 20) 2400