

Examples





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Workout


Question 1:  Paul leaves £4000 in the bank for two years.  
It earns compound interest of 5% per year.  
Calculate the total amount Paul has in the bank at the end of the two years.


Question 2:  The population of birds on an island is estimated to increase by 10% every year.  
The population of birds on the island is 20000.  
Calculate an estimate for the population of birds in three years time.


Question 3:  The value of a car decreases by 5% each year.  
Sophie bought a car two years ago for £10000  
Work out the value now.


Question 4:  Sam invests £1800 in the bank for four years.  
It earns compound interest of 4% each year.  
Calculate the total amount Sam has in the bank at the end of four years.



Question 5:  A full water tank holds 500 litres.  
The tank begins to leak water and is losing 14% of its contents every hour.  
Find how much water is left in the tank after 8 hours.

Question 6:  The height of a tree increases by 60% each year.  
When planted the tree was 40cm tall.  
How tall will the tree be in 5 years time.


Question 7:  Carrie invests £800 for 4 years at 3% interest per year.  
How much interest does she earn?


Question 8:  A house was bought for £100,000  
Its value appreciates by 7.5% each year for the first three years.  
What was its value at the end of the three years?






## Compound Interest


Video 236 on [www.corbettmaths.com](http://www.corbettmaths.com)



Question 9:  The number of people living on a remote island decreases by 9% every 10 years. In 1950 there were 18000 living on the island. Calculate how many less people will be living on the island in 2020.


Question 10:  A car was bought for £20,000. Its value depreciates by 31% each year for the first four years. What is its values at the end of the four years?


Question 11:  A tree is 80cm when planted. Each year the height of the tree increases by 22%. After how many complete years will the height of tree be at least 3m? 

Question 12:  The number of polar bears in a region is decreasing by 5% per year. There are 3000 polar bears in the region in 2017. What year will be the first year with less than 1000 polar bears in the region?


Question 13:  Michael has started working for a company on a salary of £15000. Each year he will be given a 6% pay rise. How many years will it take for Michael's salary to exceed £30000?


Question 14:  The value of a car decreases by 7.2% each year. When bought the car cost £6200. How many years will it take the car to have a value less than £1000? 


Question 15:  A full water tank has sprung a leak. 4% of the water is lost every minute. What percentage of water is left in the tank after twenty minutes?

Question 16:  A fish tank, that is full of water, has sprung a leak. 12% of the water is lost every hour. What percentage of the water is lost after three hours?

### Apply

Question 1:  Florence invests £200 for two years at 5% compound interest, paid yearly. Liam says that the interest that Florence will receive will be £20. Is Liam right?


Question 2:  The value of a motorcycle was £14000 on 1<sup>st</sup> April 2014.  
Every three months the value of the motorcycle decreases by 2% of its value at the start of that three months.  
What was the value of the motorcycle on 1<sup>st</sup> April 2016?


Question 3:  When a ball is dropped, it bounces and then rises.  
The ball rises to 90% of the height from which it is dropped.  
The ball is dropped from a height of 4m.




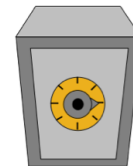
- (a) Calculate the height of the rise after the first bounce.
- (b) Calculate the height of the rise after the second bounce.


The ball carries on bouncing, each time rising to 90% of the last rise.  
(c) For how many bounces does it rise to height greater than 1m?

Question 4:  The population of a country is increasing by 5% a year.  
How many years will it take the population of the country to double?

Question 5:  Raheem and Ben invest money in 2010.  
Raheem invests £1000 at Banks'R'us, who pay 3% interest per year.  
Ben invests £1400 at Bank World, who pay 1% interest per year  
In which year will Raheem's investment be worth more than Ben's?

Question 6:  The population of a country increases by  $x\%$  each year.  
In 2014 the population of the country was 24,000,000.  
Three years later, the population was 26,996,736.  
Find  $x$ .



Question 7:  Charlotte invests £5000.  
The bank pays 10% interest for the first year and then  $y\%$  every year after that.  
After three years, Charlotte has £5610.55  
Calculate  $y$ .

Answers



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