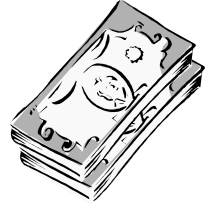


## Appreciation / Depreciation

1. Find the compound interest on a sum of £2500 at a rate of 6% per annum for 3 years.



2. Find the compound interest on a sum of £1400 at a rate of 7.6% p.a. over a period of 7 years.

3. A vinyard produced 250 kilograms of grapes in 2005. It is estimated the vinyard will be able to increase production at a rate of 3% p.a. for the next 5 years. Calculate the weight of grapes that will be produced in 5 years time.



4. The number of bacteria in a test tube is 50 000. The bacteria reproduce at a rate of 35% every 4 hours. Calculate the number of bacteria in the test tube after one day.

5. In the year 2004 it was estimated the Amazon rain forest was home to 60 000 poison arrow frogs. Due to loss of habitat the number of frogs is falling at a rate of 15% per annum. Calculated the estimate number of frogs there will be in 2008.



6. 40 millilitres of a drug are injected into a patient at 12 noon. The amount of drug in the body falls at a rate of 8.5% per hour. Calculate the amount of drug in the body at 5p.m.



7. The area of the Sahara desert is approximately 3 500 000 square miles. If the Sahara desert is increasing in size at a rate of 4% per annum, calculate its size in 5 years time.

8. A car costing £18 500 new depreciates by 15% in its first year and then by 9% for each of the next 4 years. Find the value of the car after 5 years.



9. An antique teddy bear valued at £350 in 2002 has increased in value at a rate of 12.5% per annum. Find the value of the teddy bear in 2006.



10. The supermarket chain Bainbury recorded a profit of £125 million in 2005. Economic forecasts suggest the company can increase their profits at a rate of 6.5% per annum over the next 10 years. Calculate the expected profits in 10 years time.

11. It is estimated a swarm of locusts contains 750 000 individuals. If the swarm increases in size at a rate of 20% every week, calculate the number of individuals in the swarm in 6 weeks time.

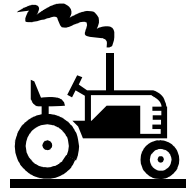


12. A raincloud contains 2500 litres of water. The cloud is increasing in size at a rate of 4.3% per hour. Calculate the volume of water in the cloud in 8 hours time.



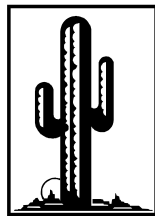
13. Hillside secondary school had a roll of 1400 in 2001. If the roll falls at a rate of 4% per annum, calculate the roll of the school in 2006.

14. A farmer buys a new tractor for £42 000. The tractor depreciates at a rate of 10% in each of its first 2 years, and then at a rate of 8% in each successive year. How long will it take for the tractor to be worth less than £26 000?

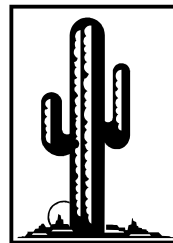


15. In 1999 the city of Venice was visited by 16 million tourists. In 2000 to 2002 the number of tourists fell at a rate of 3.5% per annum and then from 2003 to 2005 the number of tourists rose at a rate of 6.8% per annum. Calculate the number of tourists who visited Venice in 2005.

16. The diagram below shows the height of the same cactus plant a year apart.



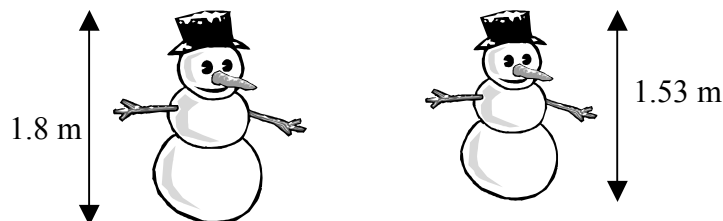
Height 1.6 m  
Year 1



Height 2 m  
Year 2

If the cactus continues to grow at the same percentage rate, calculate its height in Year 6.

17. David builds a snowman. It is 1.8 metres high. When the Sun comes out the snowman begins to melt and after an hour the snowman is 1.53 metres high.



If the snowman continues to melt at the same percentage rate find its height after another 3 hours.

18. In 2004 the cost of the average holiday in Spain was £420. By 2006 this had risen to £483. If the cost of a holiday to Spain continues to increase at this rate find the expected cost in 2010.

19. Brianair budget airline had the following number of passengers in 2004 and 2005.



2004 : 2.2 million passengers



2005 : 3.08 million passengers

If Brianair continue to increase their passenger numbers at the same rate, how many passengers will they have in 2008?

20. Tio Rinto Zinc produce iron ore for the steel industry. In 1960 the company produced 1600 tonnes of iron ore. Over the ten year period to 1970 this had fallen to 1568 tonnes. If the fall in production continues at the same rate, how much iron ore will be produced by the company in the year 2010.

21. The annual sales in 4 branches of the fashion shop Top Store are given below.

Branch	Sales
East Kilbride	£225 000
Braehead	£210 000
Argyle St.	£294 000
Glasgow Fort	£198 000

The company expect each of their branches to increase sales by 11% per annum over the next 4 years. Which of the 4 branches will have sales of at least £330 000 in 4 years time.

22. The population and population change in 5 different cities is given in the table below.

City	Population	Population Change
Ayton	120 000	Up 6% p.a.
Beeton	165 000	Down 1.5% p.a.
Ceeton	108 000	Up 7.5% p.a.
Deeton	180 000	Down 8% p.a.
Eaton	210 000	Down 9% p.a.

Which city will have the largest population in 5 years time?