

National 5 Lifeskills Calculator Revision

1.

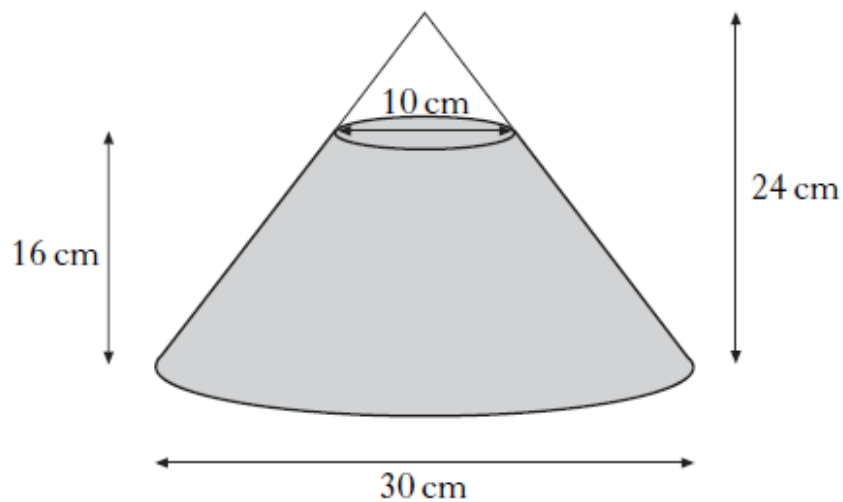
Ian's annual salary is £28 400. His boss tells him that his salary will increase by 2.3% per annum.

What will Ian's annual salary be after 3 years?

Give your answer to the nearest pound.

2.

A glass ornament in the shape of a cone is partly filled with coloured water.



The cone is 24 centimetres high and has a base of diameter 30 centimetres.

The water is 16 centimetres deep and measures 10 centimetres across the top.

What is the volume of the water?

Give your answer correct to 2 significant figures.

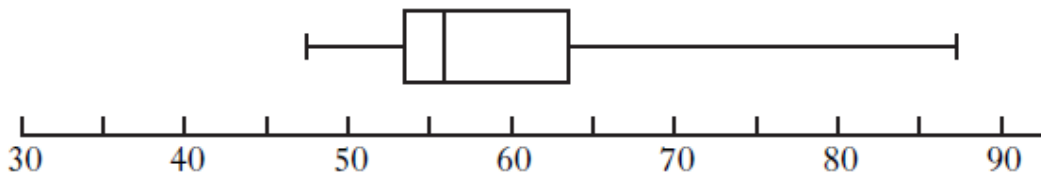
3.

This back-to-back stem and leaf diagram shows the results for a class in a recent mathematics examination.

Girls		Boys
	3	
	4	7 9
8 7 4 3 2 2	5	2 3 4 4 6 6 7 9
	6	3
9 6 3	7	4 8
8 1	8	7
n = 15		n = 14

Key		
3	7	represents 73%
	8	represents 87%

(a) A boxplot is drawn to represent one set of data.



Does the boxplot above represent the girls' data or the boys' data?

Give a reason for your answer.

(b) For the **other** set of data, find:

- (i) the median;
- (ii) the lower quartile;
- (iii) the upper quartile.

(c) Use the answers found in part (b) to construct a second boxplot.

(d) Make an appropriate comment about the distribution of data in the two sets.

4.

Tasnim rolls a standard dice with faces numbered 1 to 6.
The probability that she gets a number less than 7 is

- A 0
- B $\frac{1}{7}$
- C $\frac{1}{6}$
- D 1.

Write down the letter that corresponds to the correct probability.

5.

A job as a sales consultant is advertised.



Matthew telephones for information and finds out that the basic wage is £15 000. In addition to this he will receive 2.5% commission on all his sales.

What value of sales will Matthew have to make in order to earn £22 000 per year?

6.

The table below shows the monthly repayments to be made, with and without payment protection, when money is borrowed from the Good Deal Loan Company.

loan amount	60 months		48 months		36 months		24 months	
	W	WO	W	WO	W	WO	W	WO
£15 000	342.63	288.49	409.43	350.79	510.76	454.86	736.73	663.35
£12 500	285.53	240.41	341.20	292.33	425.63	379.05	613.94	552.79
£10 000	228.42	192.33	272.95	233.86	340.50	303.24	491.15	442.23
£7500	171.31	144.24	204.72	175.40	255.38	227.43	368.37	331.68
£5000	114.21	96.16	136.48	116.93	170.25	151.62	245.58	221.12
W = with payment protection WO = without payment protection								

(a) Joseph decides to borrow £12 500.

If he repays it over 48 months, **without** payment protection, calculate the cost of the loan.

(b) Brian thinks it would be cheaper to take a loan of £12 500 over 36 months **with** payment protection.

Is he correct?

Explain your answer.

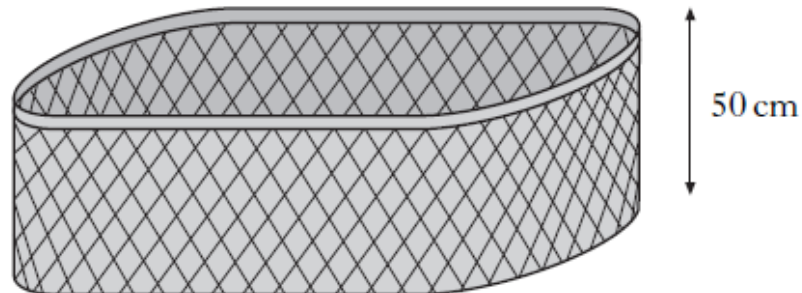
7.

Calculate the **compound interest** earned when £50 000 is invested for 4 years at 4.5% per annum.

Give your answer to the nearest penny.

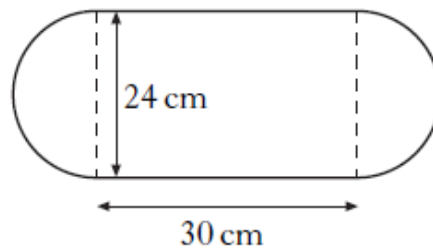
8.

Jim Reid keeps his washing in a basket. The basket is in the shape of a prism.



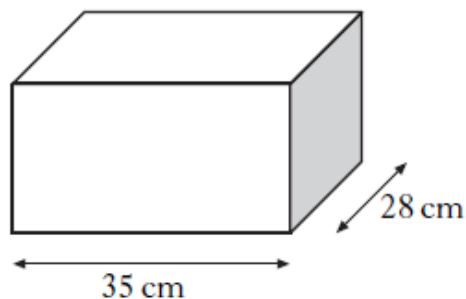
The height of the basket is 50 centimetres.

The cross section of the basket consists of a rectangle and two semi-circles with measurements as shown.



- (a) Find the volume of the basket in cubic centimetres.
Give your answer correct to three significant figures.

Jim keeps his ironing in a storage box which has a volume **half** that of the basket.



The storage box is in the shape of a cuboid, 35 centimetres long and 28 centimetres broad.

- (b) Find the height of the storage box.

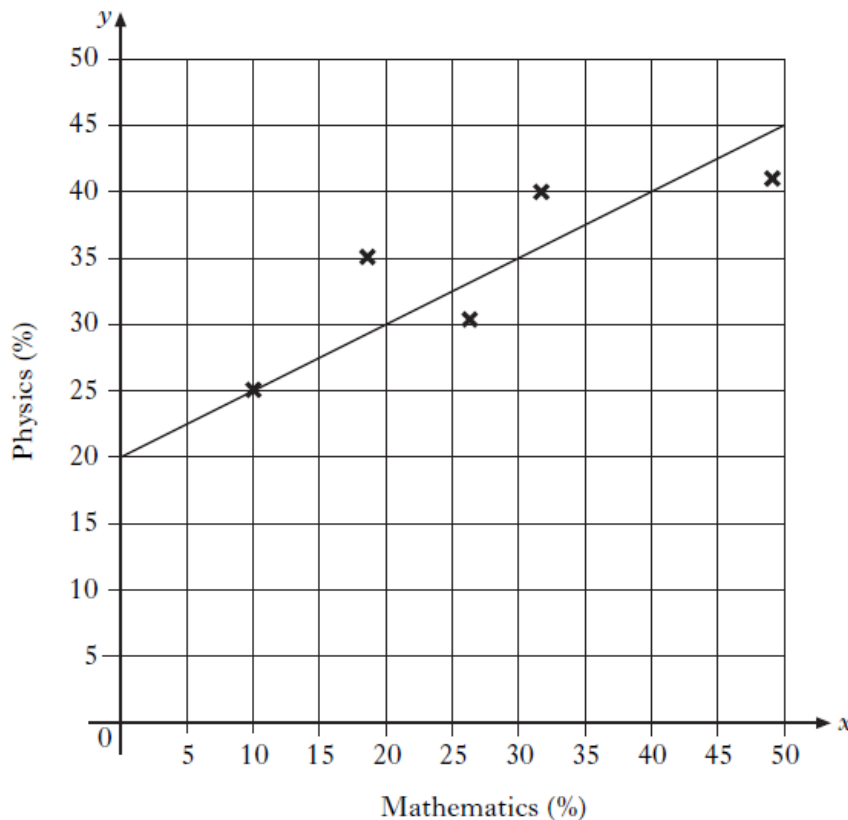
9.

The results for a group of students who sat tests in mathematics and physics are shown below.

<i>Mathematics (%)</i>	10	18	26	32	49
<i>Physics (%)</i>	25	35	30	40	41

- (a) Calculate the standard deviation for the mathematics test.
- (b) The standard deviation for physics was 6.8.
Make an appropriate comment on the distribution of marks in the two tests.

These marks are shown on the scattergraph below.
A line of best fit has been drawn.



- (c) Find the equation of the line of best fit.
- (d) Another pupil scored 76% in the mathematics test but was absent from the physics test.
Use your answer to part (c) to predict his physics mark.

10.

Below is a copy of part of David Leblanc's credit card statement.

<i>Southern Star Credit</i>		
Name: David Leblanc		12 May, 2008
Card Number: 4517 6767 2368 9001		Credit Limit £3600
12 April 2008	Balance brought forward	£125.00
2 May 2008	Payment received	<u>-50.00</u>
	Balance	A
	Interest at 1.6%	B
5 May 2008	Bon Cave Wines	62.99
5 May 2008	Jacques Delicatessen	15.88
	Balance owed	C
Minimum payment: 3% of Balance owed or £5, whichever is greater.		

(a) Calculate the amounts which would appear at **A**, **B** and **C**.

(b) David makes the minimum payment.

How much does he pay?

11.

Luljeta Dumani sells carpets. Her gross annual salary for the last year was £15 425.

The table below shows the rates of tax applicable for last year.

Taxable Income	Rate
On the first £22 300	10%
On the next £32 370	22%
On any income over £34 600	40%

Luljeta's total tax allowance is £5225.

Calculate her annual tax bill for last year.

12.

Irene works in the local chemist's shop.

One week she works 40 hours at her basic rate of pay and 3 hours overtime at double time.

Her gross pay for that week was £239.20.

Calculate Irene's basic hourly rate of pay.

13.

A new book "Intermediate 2 Maths is Fun" was published in 2006.

There were 3000 sales of the book during that year.

Sales rose by 11% in 2007 then fell by 10% in 2008.

Were the sales in 2008 more or less than the sales in 2006?

You must give a reason for your answer.

14.

The heights, in centimetres, of seven netball players are given below.

173 176 168 166 170 180 171

For this sample, calculate:

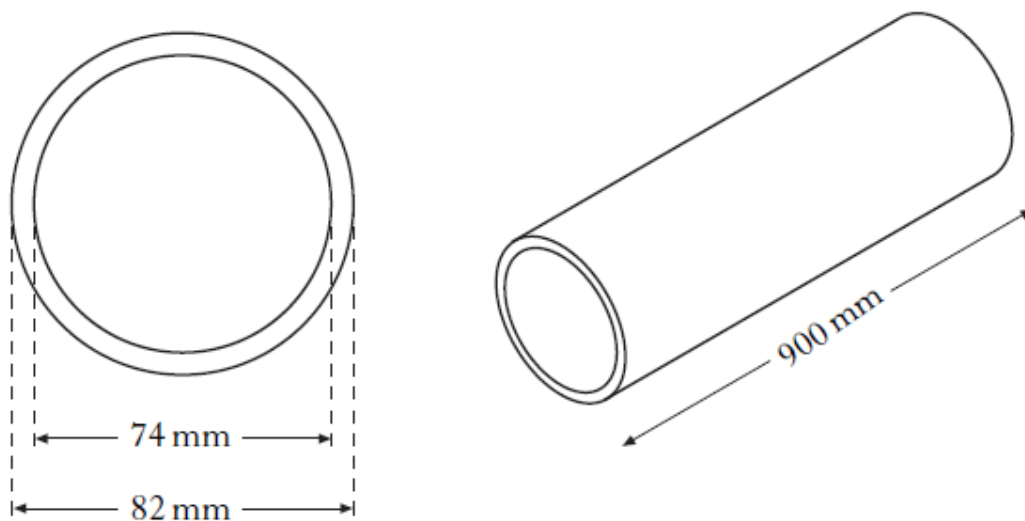
- (a) the mean;
- (b) the standard deviation.

Show clearly all your working.

15.

A company manufactures aluminium tubes.

The cross-section of one of the tubes is shown in the diagram below.



The inner diameter is 74 millimetres.

The outer diameter is 82 millimetres.

The tube is 900 millimetres long.

Calculate the volume of aluminium used to make the tube.

Give your answer correct to three significant figures.

16.

The table shown below is used to calculate loan repayments.

		60 months	48 months	24 months
		Monthly repayment (£)	Monthly repayment (£)	Monthly repayment (£)
With payment protection	£20 000	463.85	551.43	994.23
	£15 000	347.89	413.57	745.67
	£7500	173.94	206.79	372.84
Without payment protection	£20 000	384.65	467.72	884.47
	£15 000	288.49	350.79	663.35
	£7500	144.24	175.40	331.68

Samir wishes to borrow £15 000.

How much will the loan cost him if he repays it over 48 months, with payment protection?

17.

Jamie works as a potter for a company which makes china ornaments.

He earns a basic salary of £218 per week plus 80 pence for every ornament he makes.

Jamie saves $\frac{2}{5}$ of his gross pay every week.

One week he makes 40 ornaments.

Calculate how much Jamie saves that week.

18.

Anna earns £42 000 per year. She has tax allowances of £5425.

The rates of tax applicable for the year are given in the table below.

Taxable income (£)	Rate
On the first £34 600	20%
On any income over £34 600	40%

How much is Anna's **monthly** tax bill?

19.

An industrial machine costs £176 500.

Its value depreciates by 4.25% each year.

How much is it worth after 3 years?

Give your answer correct to **three** significant figures.

20.

Paul conducts a survey to find the most popular school lunch.

- 30 pupils vote for Pasta
- 40 pupils vote for Baked Potato
- 2 pupils vote for Salad

Paul wishes to draw a pie chart to illustrate his data. How many degrees must he use for each sector in his pie chart?

Do not draw the pie chart.

21.

A rugby team scored the following points in a series of matches.

13 7 0 9 7 8 5

(a) For this sample, calculate:

- (i) the mean;
- (ii) the standard deviation.

Show clearly all your working.

The following season, the team appoints a new coach.

A similar series of matches produces a mean of 27 and a standard deviation of 3.25.

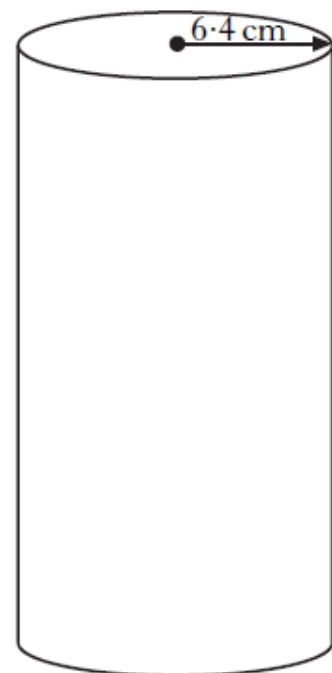
(b) Make two valid comparisons about the performance of the team under the new coach.

22.

A cylindrical container has a volume of 3260 cubic centimetres.

The radius of the cross section is 6.4 centimetres.

Calculate the height of the cylinder.



23.

Shaheen works in a call centre. Her basic rate of pay is £6.40 per hour.

She is paid time and a half for working overtime in the evening and double time for working overtime at the weekend.

One week she works 35 hours at the basic rate and 6 hours overtime in the evening. She also works overtime at the weekend.

Shaheen's gross pay for the week is £320.

How many hours does she work at the weekend?

24.

It is estimated that house prices will increase at the rate of 3.15% per annum.

A house is valued at £134 750. If its value increases at the predicted rate, calculate its value after 3 years.

Give your answer correct to **four** significant figures.

25.

The Battle of Largs in 1263 is commemorated by a monument known as The Pencil.

This monument is in the shape of a cylinder with a cone on top.



The cylinder part has diameter 3 metres and height 15 metres.

(a) Calculate the volume of the **cylinder** part of The Pencil.

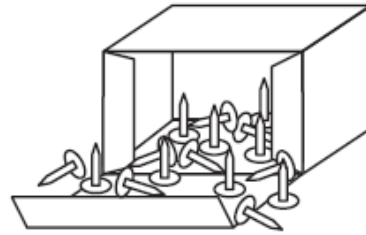
The volume of the **cone** part of The Pencil is 5.7 cubic metres.

(b) Calculate the **total** height of The Pencil.

26.

A sample of six boxes contains the following numbers of pins per box.

43 39 41 40 39 44



(a) For the above data, calculate:

- (i) the mean;
- (ii) the standard deviation.

The company which produces the pins claims that “the mean number of pins per box is 40 ± 2 and the standard deviation is less than 3”.

(b) Does the data in part (a) support the claim made by the company?

Give reasons for your answer.

27.

The table below gives the **monthly** repayments from three different banks on a £10 000 loan repaid over **five years**.

Name of Bank	Monthly Repayments	
	With payment protection	Without payment protection
Savewell	£245.39	£214.39
Finesave	£260.58	£205.65
Wisepend	£263.17	£214.70

Emily borrowed £10 000 and paid it back over five years. The cost of the loan was £2339. Which bank was the loan from and did she take it with or without payment protection?

28.

Jack works a basic week of 35 hours.

Any overtime is paid at time and a half.

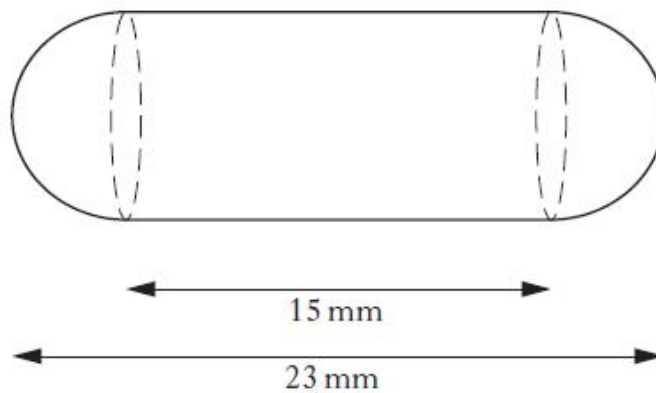
One week he works for 39 hours and is paid £255.84.

How much is he paid for each hour of **overtime** that he works?

29.

A health food shop produces cod liver oil capsules for its customers.

Each capsule is in the shape of a cylinder with hemispherical ends as shown in the diagram below.



The total length of the capsule is 23 millimetres and the length of the cylinder is 15 millimetres.

Calculate the volume of one cod liver oil capsule.

30.

A ten-pin bowling team recorded the following six scores in a match.

134 102 127 98 104 131

(a) For this sample calculate:

- (i) the mean;
- (ii) the standard deviation.

Show clearly all your working.

In their second match their six scores have a mean of 116 and a standard deviation of 12.2.

(b) Consider the 5 statements written below.

- 1 The total of the scores is the same in both matches.
- 2 The total of the scores is greater in the first match.
- 3 The total of the scores is greater in the second match.
- 4 In the first match the scores are more spread out.
- 5 In the second match the scores are more spread out.

Which of these statements is/are true?

31.

The Bank of Salamander offers loans to its customers.

The table shown below can be used to calculate loan repayments.

		60 months	48 months	24 months
		Monthly repayment (£)	Monthly repayment (£)	Monthly repayment (£)
With payment protection	£20 000	467.85	555.43	998.23
	£15 000	351.89	417.57	749.67
	£7500	177.94	210.79	376.84
Without payment protection	£20 000	388.65	471.72	888.47
	£15 000	292.49	354.79	667.35
	£7500	148.29	179.40	335.68

Amy requires to borrow £15 000 to buy a car.

How much will the loan cost her if she repays it over 24 months, **without payment protection**?

32.

Due to the threat of global warming, scientists recommended in 2010 that the emissions of greenhouse gases should be reduced by 50% by the year 2050.

The government decided to reduce the emissions of greenhouse gases by 15% **every ten years**, starting in the year 2010.



Will the scientists' recommendations have been achieved by 2050?

You must give a reason for your answer.

33.

A company buys machinery worth £750 000.

The value of the machinery depreciates by 20% per annum.

The machinery will be replaced at the end of the year in which its value falls below half of its original value.

After how many years should the machinery be replaced?

You must explain your answer.

34.

Erica works as a masseuse at a health club.

Her March payslip, shown below, is only partly completed.



Name E. Roe	Employee No. 666	Tax Code 710L	Month March
Basic Pay £1350	Overtime Pay –	Bonus	Gross Pay
Nat. Insurance £187.42	Income Tax £297.59	Pension	Deductions
			Net Pay

Erica is paid a bonus of £7.25 for each massage she does.

During March she does 88 massages.

Erica pays 6% of her Gross Pay into her Pension.

Calculate Erica's Net Pay for March.

35.

Monthly repayments for £10 000 loan		
	With Protection	Without Protection
Safeloan	£226.72	£191.26
Moneyback	£228.41	£196.41
Quickloan	£229.74	£200.71

The table above shows the monthly repayments charged by three companies for a loan of £10 000 repaid over 5 years.

Jennifer takes a £10 000 loan, over 5 years, with protection, from Moneyback.

Calculate the cost of her loan.

36.

Part of Wendy's credit card statement is shown below.

Credit Limit = £1000	
Balance from previous statement	£25.78
Interest	£2.24
Cliff Petrol Station	£36.45
Save More Supermarket	£64.17
H R Brown	£13.25
Total Balance	£A
Minimum repayment	£B
Minimum repayment = 2.5% of balance or £5, whichever is greater	

Calculate the values of A and B.

37.

Harry often plays golf and the scores for some of his games are recorded below.

84 78 87 80 81

(a) For this sample calculate:

- (i) the mean;
- (ii) the standard deviation.

Show clearly all your working.



(b) His partner for these games is Tony, whose scores are listed below.

104 98 107 100 101

Write down the mean and standard deviation of Tony's scores.

38.

A lead **cube**, of side 10 centimetres, is melted down.

During this process 8% of the metal is lost.

The remaining metal is then made into a **cone**, with radius 8 centimetres.

Calculate the height of this cone.

Give your answer correct to 2 significant figures.

39.

There are 964 pupils on the roll of Aberleven High School.

It is forecast that the roll will decrease by 15% per year.

What will be the expected roll after 3 years?

Give your answer to the nearest ten.

40.

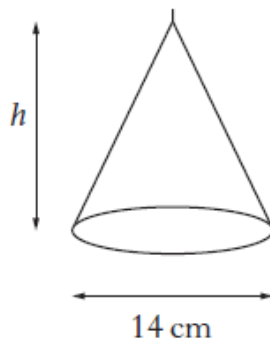
- (a) A candle is in the shape of a cylinder with diameter 10 centimetres and height 15 centimetres.



Calculate the volume of the candle.

Give your answer correct to 3 significant figures.

- (b) A second candle is in the shape of a cone with a circular base of diameter 14 centimetres and height h centimetres.



It has the same volume as the first candle.

Calculate h .

41.

A runner has recorded her times, in seconds, for six different laps of the running track.

53 57 58 60 55 56

(a) Calculate:

- (i) the mean;
 - (ii) the standard deviation;
- of these lap times.

Show clearly all your working.

(b) She changes her training routine hoping to improve her consistency. After this change, she records her times for another six laps.

The mean is 55 seconds and the standard deviation 3.2 seconds.

Has the new training routine improved her consistency?

Explain clearly your answer.

42.

Gerry saves 2 pence, 5 pence and 10 pence coins in a jar.

He thinks the probability of picking a 5 pence coin at random from the jar is $\frac{25}{20}$.

Why is he wrong?

43.

Thomas has borrowed £5000 from one of these banks to buy a car.

Amount borrowed = £5000 borrowed over 5 years	
BANK	Monthly repayment
Regular Bank	£109.45
Central Bank	£111.71
V.I.P. Bank	£113.99
South-Western Bank	£116.29

This loan will cost him £1702.60 over 5 years. From which bank did Thomas receive the loan?

44.

Joan Simmons sells cosmetics. She earns a Basic Pay plus Commission of 3% on all her sales.

Her payslip for a week in February is only partially complete.

Name	Employee No.	Tax Code	Week Ending
J. Simmons	551	720L	15/02/2013
Basic Pay	Bonus	Commission	Gross Pay
£191.50	£0.00		
Nat. Insurance	Income Tax	Pension	Deductions
£27.86	£64.59	£27.53	
			Net Pay
			£352.02

Calculate Joan's sales for that week.