

Pegasys Educational Publishing

A stylized grey silhouette of a Pegasus, a mythical winged horse, standing on a small patch of ground. The Pegasus is facing left and has its wings spread. Behind it are two grey, conical shapes that resemble the roofs of buildings or towers.

CFE Resources National 5 Lifeskills

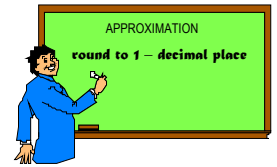
Unit 3

Numeracy

Homework Exercises

- ❖ **Homework exercises covering the Unit 3 topics**
- ❖ **+ Answers**

N5 Lifeskills Homework - Rounding & Calculations (1)



- Round each of the following numbers to the nearest 10.
(a) 26 (b) 854 (c) 1492 (d) 75
- Round each of the following numbers to the nearest whole number.
(a) 28.91 (b) 341.8 (c) 123.0 (d) 9.099
- Round each of the following numbers to 1 decimal place.
(a) 26.91 (b) 103.08 (c) 0.45 (d) 75.96
- Round each of the following numbers to 2 decimal places.
(a) 6.909 (b) 113.089 (c) 0.495 (d) 48.996
- Round each of the following numbers to 3 decimal places.
(a) 7.4114 (b) 15.0845 (c) 1.3805 (d) 0.8904
- Calculate each of the following rounding your answers to 1 decimal place.
(a) 4.7×4.7 (b) 5.23^2 (c) $\frac{16 \times 5 \cdot 3}{1.9}$
- Change each of the following *fractions* to *decimal fractions* rounding your answers to **2 – decimal places**.
(a) $\frac{3}{7}$ (b) $\frac{11}{19}$ (c) $\frac{23}{41}$ (d) $\frac{1}{13}$
- Round each of the following calculations to the nearest £1 .
(a) $£17 \div 4$ (b) $£233 \div 9$ (c) $£45 \div 11$ (d) $£167 \div 13$
- Round each of the calculations in question 8 to the nearest penny.
- A man pays 7 boys £31 for helping him dig his garden. The boys divide the money equally between themselves.
(a) How much money, to the nearest penny, can each boy get ?
(b) How much money is left that can't be divided ?



N5 Lifeskills Homework - Rounding & Calculations (2)

1. Round each of the following numbers to the number of significant figures indicated in the brackets after each number.

(a) 458 (1) (b) 6.671 (2) (c) 102.6 (3) (d) 0.004048 (3)
(e) 9701 (3) (f) 90.4 (1) (g) 0.03006 (3) (h) 1430006 (2)

2. Calculate each of the following and give your answer correct to 2 significant figures.

(a) 5.16×22.7 (b) $27.3 \div 6.84$ (c) 3.14×9^2
(d) $1.14^2 \times 2.92$ (e) $5.2 \times 0.49 \div 30.3$ (f) $234 \div (0.028 \times 33)$

3. Calculate each of the following and give your answer correct to 3 significant figures.

(a) 2.29×58.1 (b) $325.9 \div 68.2$ (c) 3.14×18
(d) $12.7 \times (1.24 + 0.321)$ (e) $0.13 \times 99 \div 0.49$ (f) $0.77 \div (4.2 \times 1.9)$

4. A circle has a **radius** of 6.25 centimetres.

Calculate the **area** of this circle correct to 3 significant figures.

5. A company is selling phone covers on the internet.

For each cover they sell they make a profit of £0.568.

Calculate their approximate profit if they sell 275024 phone covers.

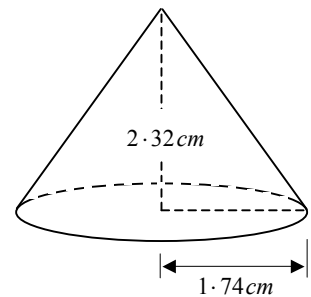
Give your answer correct to 4 significant figures.



6. A solid cone has a base radius of 1.74 cm and a vertical height of 2.32 cm.

Calculate the volume of this cone giving your answer correct to 3 significant figures.

[Volume of a cone: $V = \frac{1}{3}\pi r^2 h$]



7. A bicycle wheel of diameter 60cm makes 5 revolutions every 2 seconds.

How many **kilometres** will the bicycle have travelled in 1 hour?

Give your answer correct to 2 significant figures.

[Circumference of a circle: $C = \pi d$]



N5 Lifeskills Homework - Whole Numbers and Decimals - Calculations & Problems

1. The Mutley Crew pet company offer a Pet Taxi service.

It charges an £8 pick up fee plus 40p per mile travelled.



- (a) Calculate how much it would cost to have your dog picked up and taken to a destination 50 miles away.
- (b) Sanjay paid £20.80 to have his cat picked up and taken to his girlfriend's house.

How far from Sanjay's house did his girlfriend stay?

2. Susan has a contract for her mobile phone.

She pays a fixed sum of £28 per month.

She has unlimited texts and 3 hours free call time.
Once her free call time has been used up all further calls cost her 18 pence per minute.



- (a) What will Susan's total phone bill be in a month where her **total call time** is 230 minutes?
- (b) One month Susan's bill was £50.50.

What was her total call time, in minutes, for this month?

3. The table below shows different rates of travel insurance.

	Europe		Worldwide	
Up to	Adult	Child	Adult	Child
5 days	12·04	6·02	31·86	15·93
10 days	17·44	8·72	45·51	22·70
17 days	25·00	12·50	55·00	27·50
Annual Cover	Adult	Family	Adult	Family
	63·27	94·90	90·38	135·58

Mr and Mrs Anderson and their three children are planning to spend 2 weeks in Europe and a week in the United States of America.

How much would they save by taking out an annual Worldwide policy instead of two individual policies?

4. The Aitken family own a horse and a pony.

They make use of the specialist help arranged through the stables where they keep their animals.



<u>Specialist Services</u>		
	Horse	Pony
Farrier:		
Shoes (per set)	£60	£50
Hoof Trimming	£25	£25
Dentist:		
Dental Check	£70	£65

During the summer their horse had two sets of shoes and one hoof trimming.

Their pony had a dental check and a hoof trimming.

The pony also had a number of visits from the farrier for new shoes.

The Aitken's total bill for specialist services was £385.

How many sets of new shoes did their pony get over the summer?

5. The loan table below shows the monthly repayments for borrowing different amounts from a finance company with and without loan protection.

Sink Before You Can Swim Loans						
	48 months		36 months		24 months	
	with	without	with	without	with	without
£20 000	492.27	476.66	633.62	601.94	889.81	845.32
£15 000	398.70	387.76	485.20	460.21	682.36	648.24
£10 000	279.14	265.18	346.81	329.47	494.91	470.16
£8 000	223.00	212.50	277.50	263.00	405.50	385.50

- (a) Sharon wishes to put a deposit down on a time-share department in the Algarve. She borrows £15000 over 36 months with loan protection.

By the time the loan is repaid in full, how much more than the £15000 will she have paid?

- (b) Her friend Fiona borrowed £8000 at the same time. When her loan was completed she found that she had paid exactly £1732 extra for the loan.

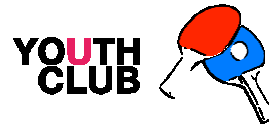
For how many months did Fiona borrow the money and did she take the loan with or without loan protection?

N5 Lifeskills Homework - Fractions, Decimals and Percentages - Calculations & Problems

1. (a) A man invests £4500 in a Building Society at a simple interest rate of 4% per annum. How much will his investment be worth after 8 months?
- (b) In a sale, a shop offers a 12% discount on a table and four chairs normally priced at £1680. How much would you pay for the table and chairs in the sale?
- (c) Susan invests in a piece of antique jewellery. The piece cost her £3400. For the first two years the jewellery increases in value by 8.5% of its worth at the beginning of each year. In the third year it sees a slight loss in value of 2.4%. How much is Susan's jewellery worth at the end of this three year period?
- (d) A woman buys a car for £6700 and sells it for £4891 a year later. Calculate her percentage loss.
- (e) Stephen bought a car and spent a month fixing it up. When he sold it on he made a 32% profit. If he sold the car for £3696, how much did he originally pay for the car?

2. A group of volunteers have been running a youth club for a number of years.

They ask the local council for a grant of £12 150 to help run the club for the coming year.



- (a) The council decide to give the group $\frac{5}{9}$ of the money they have asked for. How much money will they receive?
- (b) Last year the group received a grant of £7200 to help run the club. If this represented $\frac{5}{8}$ of what they actually asked for, how much did they ask for last year?

3. The number of shoppers passing through the door of a large department store during the month of October was 125 000.



In November the number of shoppers increased to 167 500.

If the same percentage increase in shoppers was expected from November to December as occurred from October to November, how many shoppers could the store expect to see through their doors in December?

4. A caravan costing £8600 may be paid for in any of the following ways:

- i) By cash.
- ii) By hire purchase with terms
deposit - 15% of cash price + 36 monthly payments of £240.
- iii) By a leasing agreement with terms
No deposit - 24 monthly instalments of £300 + final payment of £2250.



- (a) Calculate the total cost of each method and find how much is saved between the least and most expensive.
- (b) Express this saving as a percentage of the cash price, correct to the nearest percent.

5. An incinerating recycling plant plans to cut its emission levels of harmful gases over a four year period by using a new particle filtration system on its flue gases.



The plan gives the following details

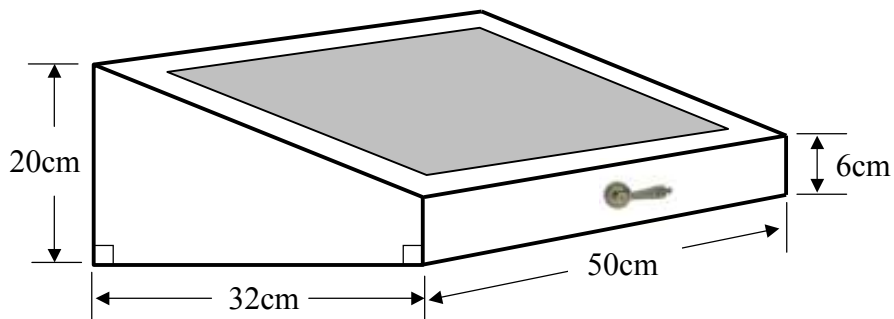
Present emission level 5.3g/GJ (grams per energy content of the incinerated waste).
Plan is at end of year 1 to have a reduction of 18% in the emission level.
Years 2 to 4 a further reduction of 12% on the values at the beginning of each year.

- (a) What emission level is the plant hoping for after the 4 years? Give your answer correct to the nearest whole number.
- (b) **Express the overall drop in emissions** as a percentage of the present emission level.

N5 Lifeskills Homework - Perimeter, Area and Volume - Calculations & Problems

1. A sketch of an antique writing box is shown below.

It is a prism with its end face made up of a rectangle and a right angled triangle.



Calculate the volume of the writing box in cubic centimetres.

2. A glass is **cylindrical** in shape.

The circular top has a **radius** of 3 centimetres.

If the volume of the glass is 340 cubic centimetres, find the height of the glass.

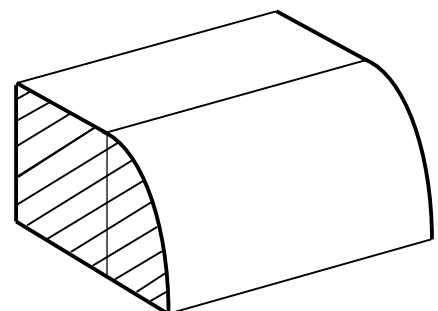
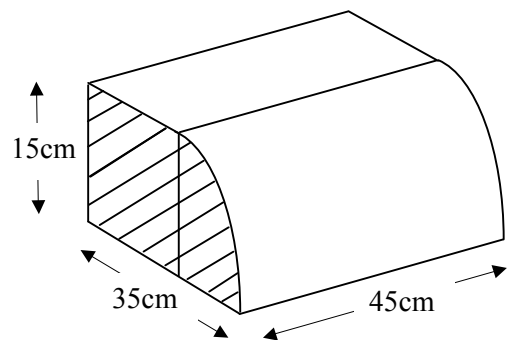


Give your answer to the nearest centimetre.

3. The diagram shows a bread-bin.
The shaded side is made up from a rectangle and a quarter circle.

- (a) Calculate the shaded area.
(b) Calculate the volume of the bread-bin.
(c) A rubber edging strip is attached around the outside of each end.

Calculate the total length of edging strip used.



4. A child's spinning top is shown opposite.

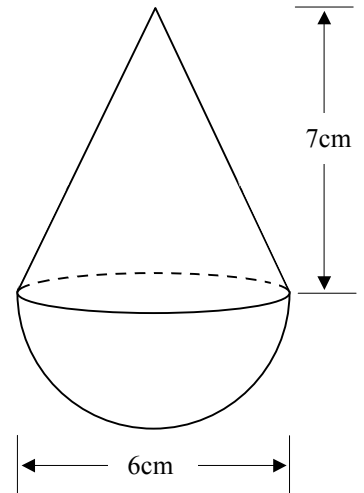
It is made from solid wood.

The shape consists of a hemisphere base with a cone on top.

Calculate the volume of the spinning top if the hemisphere has a diameter of 6 centimetres and the cone has a height of 7 centimetres.

Give your answer correct to 1 decimal place.

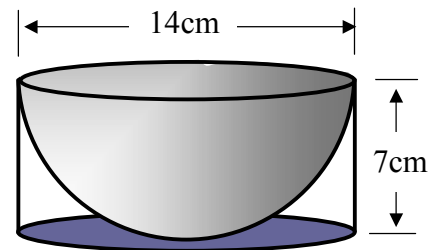
[Volume of a cone = $\frac{1}{3}\pi r^2 h$; Volume of a sphere = $\frac{4}{3}\pi r^3$]



5. A solid hemisphere is pushed into an open topped cylindrical container as shown.

The hemisphere and the cylinder have the same diameter with the height of the cylinder being equal to the radius of the hemisphere.

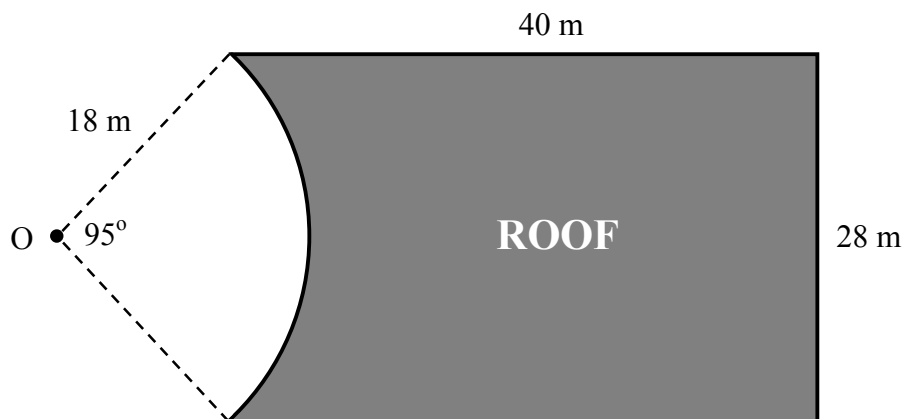
Calculate the volume of free space still remaining between the hemisphere and the cylinder.



6. The roof of a modern building is in the shape of a rectangle with a sector of a circle indented at one side.

The rectangle measures 40 metres by 28 metres.

The sector, centered at O, has a radius of 18 metres and an angle of 95° at the centre.



Calculate the **perimeter** of the roof.

N5 Lifeskills Homework - Proportion and Ratio

1. Carpet is priced relative to its area.



A rectangular carpet measuring 5m by 4m costs £264.

- (a) Calculate the cost for 1 square metre of this carpet. (the cost per sq.m)
(b) How much would a carpet measuring 8m by 6m cost?

2. A car uses 15 litres of petrol to travel 210 miles. How much petrol would the car use for a journey of 378 miles at the same rate of consumption?

3. Six bottles of wine is the exact amount you need to give 21 people one glass each.

- (a) How many bottles would you need to give 56 people one glass each?
(b) How many people could you give a glass of wine to if you had 32 bottles?



4. A town, with a population of 144, is under seige. It has enough food to last the people 24 days. If they take in an extra 48 people how long will the food supply now last?

5. Graeme and Fred invest £3400 in a new company.

- (a) If the money each of them put in was in the ratio 3 : 7 , how much did Fred invest in the new company?
(b) They decide to split the profits in the same ratio as their investment. If they made £6200 profit, how much of the profit will Graeme get?



6. Three friends, Xena, Gabrielle and Joxar, have found a treasure chest full of gold coins. They decide to split the coins in the ratio 5 : 3 : 1.

- (a) If Gabrielle is to receive 24 coins, how many coins are there altogether ?
(b) Before they can share out the coins, Calisto arrives, and persuades the three friends to divide the coins in the ratio (X : G : J : C) 9 : 8 : 3 : 4.



Does Gabrielle win or lose with this new deal?

7. Merlin is making up one of his favourite potions.

It has three powdered ingredients called *misill*, *canthor* and *ruari*.

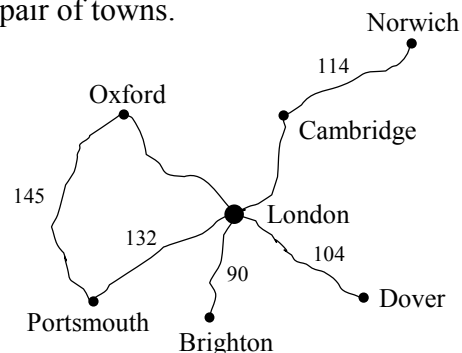
For the potion the ratio of *misill* to *canthor* to *ruari* **must** be 2 : 3 : 12 .

- (a) If he wishes to use 21 grammes of *canthor* in the potion, how many grammes of *ruari* will he need?
(b) He decides, in the end, to make up a potion using exactly 66 grammes of *ruari*. What will be the total weight, in grammes, of the completed potion?



N5 Lifeskills Homework - Time, Distance and Speed

1. The map shows several towns with the main roads joining them.
The numbers indicate the **distances in kilometres** between each pair of towns.



- How far is it from London to Cambridge if the journey takes 2 hours at an average speed of 48 km/h?
- A vintage car completed the London to Brighton run in 12 hours. What was its average speed?
- How long would it take a cyclist to travel from Oxford to Portsmouth if his average speed was 20km/h?
- A van driver left London at 0950 to travel to Norwich via Cambridge. He arrived in Norwich at 1335. Calculate his average speed for the journey.
- A bus travelled from Oxford to Dover (via London) in 3hours 24 minutes. If its average speed for the journey was 60km/h, calculate the distance from Oxford to London.

2. The rail distance from Manchester to Glasgow is 357km.

If a high speed train averages 140 km/h, find the time taken in hours and minutes.



3. A yacht leaves Largs and sails a distance of 74km.

If the yacht averages a speed of 14km/h, calculate the time taken for the journey correct to the nearest minute.



4. A car leaves Dumfries at 1.25pm and reaches Edinburgh at 2.53pm.

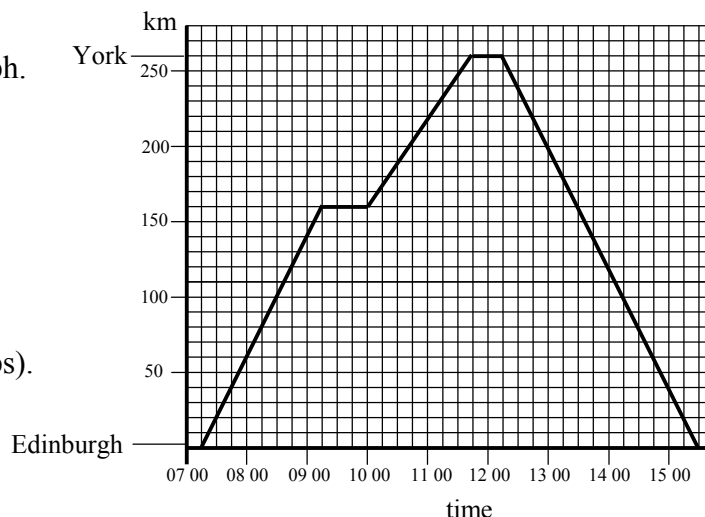
- How long did the journey take?
- If the distance travelled was 84 miles, calculate the average speed of the car.



5. Mr Munro drove his car from Edinburgh to York and back.

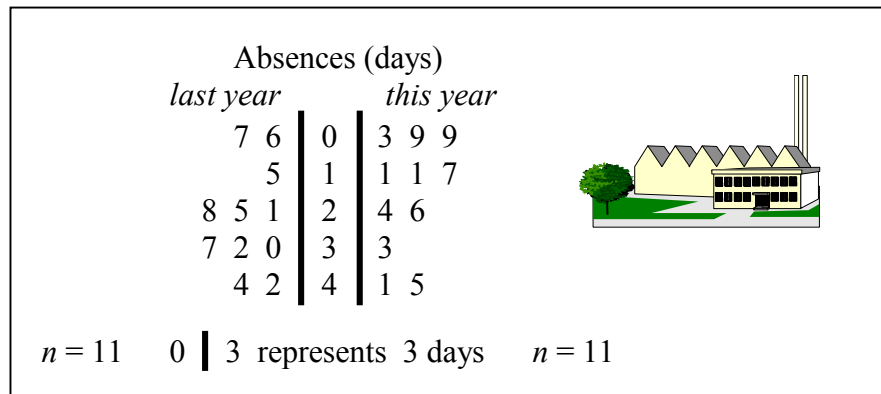
The record of his journey is shown in the graph.

- He rested on his way to York. For how long did he rest?
- Calculate his average speed from York back to Edinburgh.
- Calculate his average speed for the whole journey (do not include the stops).
Give your answer correct to 1 d.p.

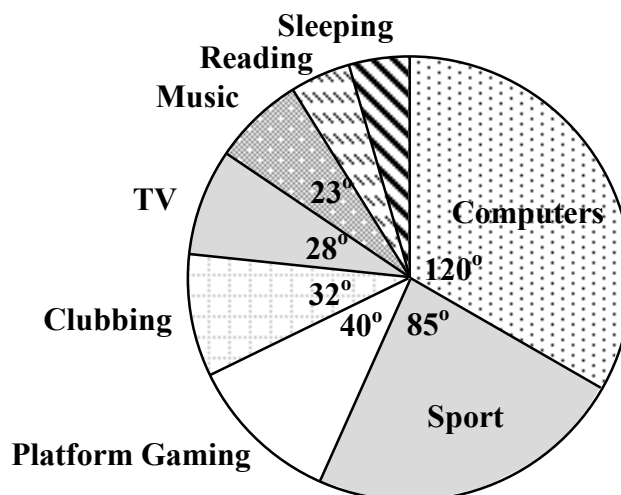


N5 Lifeskills Homework - Interpreting Data from Statistical Diagrams , Graphs and Charts

1. A factory has a small workforce of eleven people. The owner decides to compare absence rates (in days) over the last two years. The results are shown in the back-to-back stem-and-leaf diagram below.

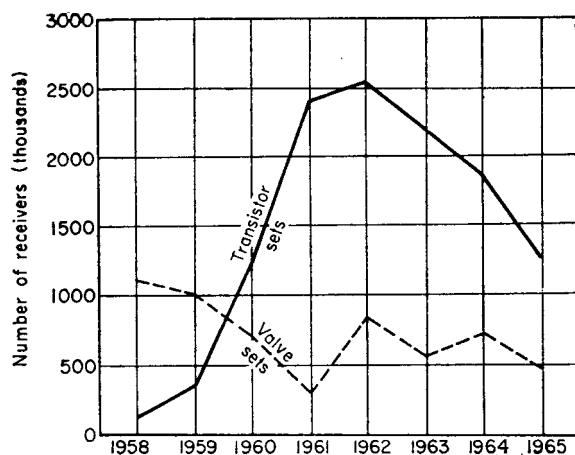


- (a) What is the largest number of absences recorded?
- (b) State the median of the absences for "*last year*" and "*this year*".
- (c) Compare the absences and comment.
2. The pie chart shows the eight most popular pastimes voted for by a group of students.

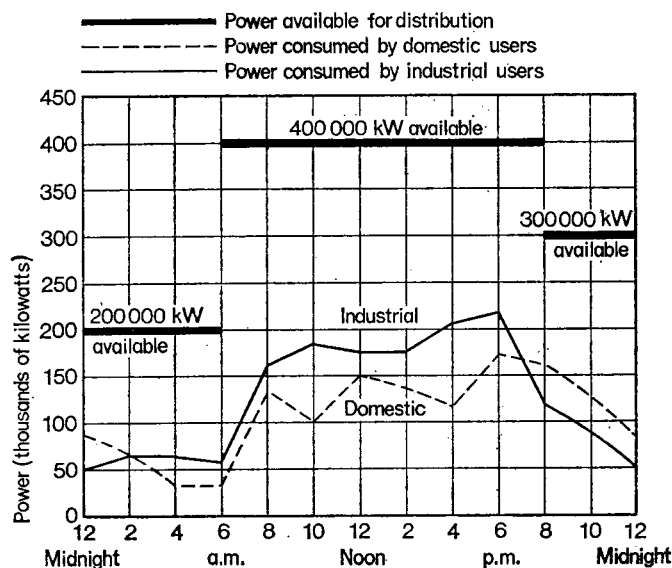


- (a) Reading and sleeping gained the same number of votes. What size is the angle for each of them?
- (b) The total number of votes was 846 . How many votes did Platform Gaming get?

3. The graph below is from a survey carried out between 1958 and 1965 to compare the numbers of transistor radio sets to valve radio sets produced.



- (a) In which year was the smallest number of valve sets produced?
- (b) Estimate how many more transistor sets over valve sets were produced in 1965.
- (c) What was the general trend of valve set production between the years shown?
4. The graph below shows the availability and consumption of power during a 24 hour period.



- (a) What were the peak times for domestic consumption?
Explain why domestic consumption demand is usually high at these times.
- (b) Comment on the **pattern** of industrial consumption over this 24 hours and give an explanation to this pattern.
- (c) What was the **total consumption** of power (industrial and domestic) at 12 noon?
- (d) When was the **total consumption** at its highest and what amount of the **available power** was unused at this time?

N5 Lifeskills Homework - Probability

1. A survey was carried out amongst 400 adults who booked a holiday on-line to find out what type of holiday they had chosen.

The results of the survey are shown in the table below.

Age	Package	Activity	Fly drive	Cruise
40 and under	92	86	18	14
Over 40	45	38	21	86

- (a) What is the probability that any adult, chosen at random, would have booked a cruise? **Give your answer in its simplest terms.**
- (b) What is the probability that any adult **over 40**, chosen at random, **would not** have booked a package holiday?

2. The probability of a cat having a litter of more than eight kittens is 0.24 .



- (a) What is the probability of a cat having a litter of eight or less kittens?
- (b) Out of 75 female cats, how many would you expect to have a litter of more than eight kittens?

3. In a bag there are three different coloured beads, red, black and white.

There are 8 red beads, 12 black beads and the rest are white beads.



- (a) If the probability of picking a white bead at random from the bag is $\frac{1}{2}$, how many white beads are in the bag?
- (b) If all the beads start in the bag each time you pick a bead, from probability, how many red beads would you expect to get from 100 picks?

4. A teacher noted the times which a selection of pupils had spent, in minutes, doing homework one evening.

The results are shown in the stem and leaf diagram opposite.

1	3 5 6 8
2	3 4 5 5 7 9
3	5 5 6 8 8 9 9
4	2 3 6 7
5	2 4 8

- (a) State the median of the given data.
- (b) Calculate the probability that if a pupil is chosen at random from this group he/she will have spent more than 42 minutes doing homework that evening?

$$n = 24 \quad 1 \mid 3 = 13 \text{ minutes}$$

N5 Lifeskills Homework – Rounding and Calculations (1)

1. (a) 30 (b) 850 (c) 1490 (d) 80
2. (a) 29 (b) 342 (c) 123 (d) 9
3. (a) 26.9 (b) 103.1 (c) 0.5 (d) 76.0
4. (a) 6.91 (b) 113.09 (c) 0.50 (d) 49.00
5. (a) 7.411 (b) 15.085 (c) 1.381 (d) 0.890
6. (a) 22.1 (b) 27.4 (c) 44.6
7. (a) 0.43 (b) 0.58 (c) 0.56 (d) 0.08
8. (a) £4 (b) £26 (c) £4 (d) £13
9. (a) £4.25 (b) £25.89 (c) £4.09 (d) £12.85
10. (a) £4.42 (b) 6p

N5 Lifeskills Homework – Rounding and Calculations (2)

1. (a) 500 (b) 6.7 (c) 103 (d) 0.00405
(e) 9700 (f) 90 (g) 0.0301 (h) 1400000
2. (a) 110 (b) 4.0 (c) 250 (d) 3.8
(e) 0.084 (f) 250
3. (a) 133 (b) 4.78 (c) 56.5 (d) 19.8
(e) 26.3 (f) 0.0965
4. 123cm²
5. £1562.00
6. 7.35cm³
7. 17km

N5 Lifeskills Homework – Whole Numbers and Decimals – Calculations and Problems

1. (a) £28 (b) 32 miles
2. (a) £37 (b) 305 miles
3. £111.62
4. 3 sets of shoes
5. (a) £2467.20 (b) with loan protection over 24 months

N5 Lifeskills Homework – Fractions, Decimals and Percentages – Calculations and Problems

1. (a) £4620 (b) £1478.40 (c) £3906.50
(d) 27% (e) £2800
2. (a) £6750 (b) £11520
3. 224450 shoppers in December
4. (a) H.P. = £9930; Leasing = £9450; £1330 (b) 15%
5. (a) 3g/GJ (b) 43.4%

N5 Lifeskills Homework – Perimeter, Area and Volume – Calculations and Problems

1. 20800cm³
2. 12cm
3. (a) 476.625cm² (b) 21448.125cm³ (c) 187.1cm
4. 122.5cm³
5. 359cm³
6. 137.83m

N5 Lifeskills Homework – Proportion and Ratio

1. (a) £13.20 (b) £633.60
2. 27 litres
3. (a) 16 bottles (b) 112 people
4. 18 days
5. (a) £2380 (b) £1860
6. (a) 72 coins (b) deal remains the same for Gabrielle
7. (a) 84g (b) 93.5g

N5 Lifeskills Homework – Time, Distance and Speed

1. (a) 96km (b) 7 hours 30 minutes (c) 7 hours 15 minutes
(d) 56km/h (e) 100km
2. 2 hours 33 minutes
3. 5 hours 17 minutes
4. (a) 1 hour 28 minutes (b) 57.3km/h
5. (a) 45 minutes (b) 80km/h (c) 74.3km/h

N5 Lifeskills Homework – Interpreting Data from Statistical Diagrams, Graphs and Charts

1. (a) 45 (b) last year 28; next year 17 (c) any relevant comparison
2. (a) 16° (b) 94 votes
3. (a) 1961 (b) 750 (c) downward trend
4. (a) 8am, 12noon, 6pm – meal times (b) consumption up during daily working hours
(c) 325000kW (d) 20000kW remains

N5 Lifeskills Homework – Probability

1. (a) 1/4 (b) 71/80
2. (a) 0.76 (b) 57 cats
3. (a) 20 white beads (b) 20 red beads
4. (a) 35.5 minutes (b) 1/4