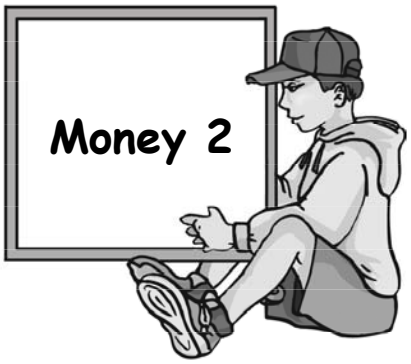
TeeJay Publishers

Mathematics

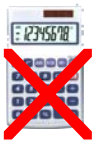
Homework

National N4-1

CHAPTER 15



Exercise 1



1. Write the following percentages as simple fractions :-

a	50%	**b**	25%	**c**	75%	**d**	10%	**e**	20%
f	5%	**g**	$33\frac{1}{3}$%	**h**	70%	**i**	1%	**j**	$66\frac{2}{3}$%.

2. Find the following, **WITHOUT** a calculator :-

a	50% of £120	**b**	25% of £1·60	**c**	$33\frac{1}{3}$% of £210
d	10% of £400	**e**	20% of £130	**f**	5% of £70
g	$33\frac{1}{3}$% of £120	**h**	1% of £9	**i**	30% of 60p
j	90% of £20	**k**	75% of £80	**l**	$66\frac{2}{3}$% of 90 p.

3. A computer is priced at £450.
In a sale, there is a **discount** of $33\frac{1}{3}$%.

a Calculate the discount.

b Calculate the sale price of the computer.

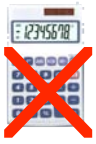
4. 

Last year my work gave me a bonus of £400.
This year my bonus was increased by 20%.

a By how much had my bonus actually grown ?

b What is my new bonus for this year ?

Exercise 2



1. I bought an exercise bike for £175.
I sold it 3 months later for £99.
How much of a **loss** did I make ?

2. 

I bought a new pram in 2010 for £425.
I sold it 3 years later to a friend for £50.
How much of a **loss** did I make ?

3. Mr Thom bought a car new for £10 800.
He sold it 2 years later for £7550.

How much of a loss did he make ?

4. John bought a violin for his daughter for £275.
He sold it 5 years later for £410.

How much of a profit did John make ?

5. 

Billy bought an old motorbike for £75.
He spent £215 doing it up and a further £124 on new tyres.
Billy then advertised the bike and sold it for £850.

How much profit altogether did Billy make ?

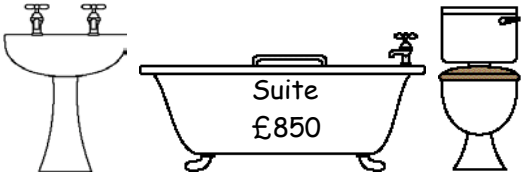
Exercise 3

(Show all your working and set each question down carefully).

1. I bought a new bathroom suite from Turnballs.

I paid a deposit of £90.

This was followed by 12 monthly payments of £75·50 per month.



a Calculate how much I paid in total using the Hire Purchase method. (Show your three lines of working).

b How much cheaper would it have been if I had paid cash ?

2. The hotel bill for my daughter's wedding came to £12 500.

The hotel allowed me to pay it up using a Hire Purchase agreement.

I paid a deposit of £1300 and agreed to pay 36 monthly payments of £320.

a How much did the wedding cost me altogether on H.P. ?

b How much could I have saved if I could have afforded to pay cash ?

3. I bought a new baby grand piano from Biggars.

I took out a Hire Purchase agreement.

The deposit was 15% of the cash price.

I then made 18 monthly payments of £165 each.

Cash Price £3200

a How much did I pay for the piano altogether using H.P. ?

b How much more was this than the cash price ?

4. A new bed from the "BED SHED" costs £475.

I buy the bed using their Hire Purchase plan shown.

deposit - £55
+ 12 payments of £35

a How much EXTRA does this cost me ?

b Explain your answer.

Exercise 4

(Use the set of insurance rates shown opposite).

COVERALL
Insurance Company

Annual Premium Rates

Building – £3·85 per £1000
Content – £5·75 per £1000

1. Tommy and Rhona's flat is worth £98 000.

How much would it cost each year to insure it with Coverall ?

2. John and Alicia's bungalow is valued at £165 000.

How much would it cost each year to insure it with Coverall ?

3. Brian tallied up the value of the contents of his house and it came to a total of £8000. How much will it cost each year to insure the contents for that value from Coverall ?

4. Malcolm and Lucille are moving abroad for 2 years. They sell their flat and put their furniture, valued at £16 000 into storage. How much will it cost them to insure their furniture with Coverall each year ?

5. Ted and Norma live in a detached villa valued at £180 000.
The entire contents of their house are to be insured for a value of £40 000.

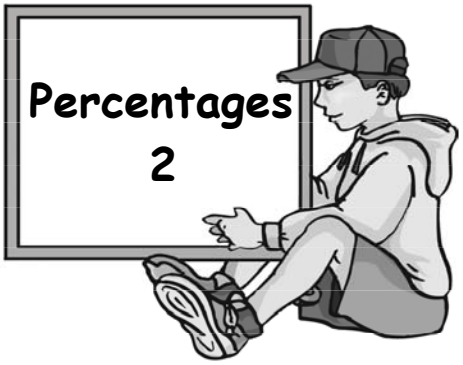
a How much will it cost each year to insure their house with Coverall ?

b How much will it cost each year to insure the contents ?

c They pay the TOTAL insurance premium in 12 monthly payments to Coverall.

How much will they pay each month for their insurance ?

CHAPTER 20



Exercise 1

1. Of the 25 coins in my pocket, 5 of them are silver.

   What fraction of the coins is silver ?

2. Of the 40 points scored by Hunterston's Rugby club, Jimmy Watson scored 10 of them.

   What fraction of the points did Jimmy score ?

3. 16 of the 48 iMac computers in Sailbar Primary School were not working.

   a What fraction was not working ?

   b What fraction of the computers was working ?

4. Change the following fractions into percentages by multiplying by 100 :-

   a $\frac{1}{4}$ (x 100) **b** $\frac{2}{5}$ **c** $\frac{7}{10}$ **d** $\frac{13}{20}$

   e $\frac{3}{5}$ **f** $\frac{9}{25}$ **g** $\frac{17}{50}$ **h** $\frac{5}{8}$.

5. David ate 36 of the 48 sweets in his bag of sweets.
   Lucy ate 32 of the 40 sweets in her bag.

   Who had eaten the greater percentage of sweets, David or Lucy ?

Exercise 2

1. I bought a ruler for 40 p. I sold it to a friend for 30 p.

   a How much of a LOSS did I make ?

   b Express this loss as a percentage of what I paid for the ruler.

2. Calculate the profit (or loss) as a percentage of the cost price in each of these :-

   a Teacher's Pencils. Bought for 6 p each and sold for 9 p each.

   b Packets of crisps. Bought for 20 p each and sold for 26 p.

   c Computer game. Bought for £40 and sold later for £32.

3. I bought a new sports car in 2011 for £18 000. I sold it 2 years later for £12 000.

   a How much money did I lose when I sold it ?

   b Express this as a percentage of the price of the **new** car.

4. I bought 200 pencils for a total of £12·00.

I bundled them into packs of 10 and sold each pack for 80p.

a How many bundles could I make up with the 200 pencils ?

b How much profit did I make when I sold all the packs ?

c Express this profit as a percentage of what I paid for the pencils.

5. A shopkeeper bought a box of 30 chocolate biscuits for £5·90.

He sold each biscuit for 24p.

a How much profit did he make once he had sold all 30 biscuits ?

b Express this profit as a percentage of the total cost price, (*to 1 decimal place*).

Exercise 3

1. Daniel was paid £8 per hour as an apprentice.

When he qualified, his pay went up to £12 per hour.

a Calculate the increase in his hourly rate.

b Calculate the percentage increase in the hourly rate.

2. By 2007, Mrs Gravesy had 4 children.

By 2013, her number of children had risen to 7.

Express the increase in her family as a percentage of the 2007 total.

3. My house was worth £82 000 in 2008. This year, it was valued at £114 800.

Express the increase in value as a percentage of the 2008 figure.

4. My weight dropped from 60 kilograms to 55 kilograms during a diet.

Express the drop in my weight as a percentage of my original weight.
(*Give your answer to 1 decimal place*).

5. During a storm, the height of a plane fell from 30 000 feet to 17 000 feet.

Express the fall in height as a percentage of the plane's original height, (*to 1 decimal place*).

CHAPTER 24

Exercise 1

1. Carla receives birthday money from her aunts and her cousins.

Her six aunts gave her :- £12, £16, £8, £24, £20, £10.

Her four cousins gave her :- £8, £16, £20, £20.

Compare both sets of data using the mean and the range.

2. Calculate the **mean**, **median**, **mode** and **range** of these lengths :-

6·3 km 7·1 km 8·8 km 9·0 km 9·1 km 15·1 km 11·2 km 1·7 km 8·8 km 18·0 km.

3. The contents of seven boxes of Goose Vesta matches are counted.

The boxes contain the following number of sweets :-

30, 33, 30, 34, 31, 32, 34.

mean number per box = 34

a The manufacturer claims that the mean number of matches per box is 34.

Is this sample of matchboxes in agreement with the manufacturer's claim ?

b What should the manufacturer's claim really be ?

c If a eighth box is examined, how many matches would it need to contain to make the manufacturer's claim correct ?

4. A data set is given as :- 3, 40, 40, 50, 40, 50, 40, 50, 40, 50, 40, 50, 50, 120.

a Explain why the range is **not** a suitable method of showing the spread.

b What would be the best method here - mean, mode or median ?

c Explain why you think this is the best **average** to use.

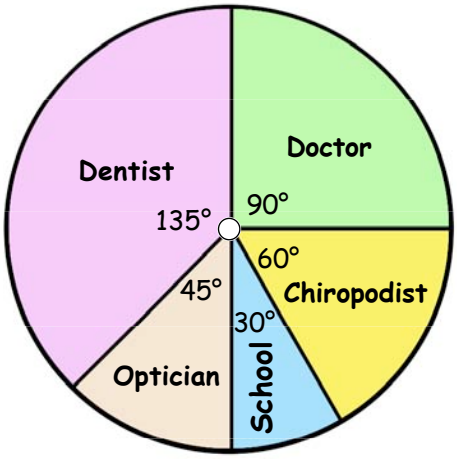
5. The mean price of my 4 flights to Portugal was £85.

On the first 3 occasions, I paid £90·75 each time.

What did my fourth flight cost me ?

Exercise 2

1. 48 fourteen year olds were asked to name where they least looked forward to visiting.



   a What fraction of them said the Doctor's ?

   b What fraction of them said :-

   (i) Optician (ii) Chiropodist

   (iii) School (iv) Dentist ?

   c Of the 48 children, how many said :-

   (i) Doctor (ii) Dentist

   (iii) Chiropodist (iv) Optician ?

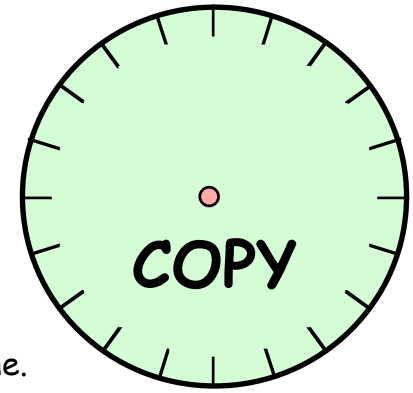
   d How many did that leave saying School ?

2. The information given below shows the percentage answers to the question :-

   "If you were given £10 to spend on a night out, where would you go ?".

   - 45% said Cinema
   - 35% said Bowling
   - 15% said Crazy Golf
   - the rest said a Club.

   Draw a pie chart to illustrate this, using a "pie" like this one.



Exercise 3

1. a Copy and complete the table showing the favourite soup eaten by customers of The Fancy Soup Kitchen in Kirkcaldy.

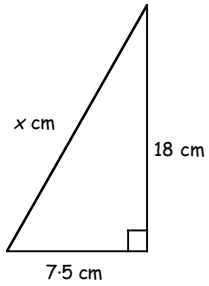
Soup	Number	Fraction	Angle
Minestrone & Dill	14	$\frac{14}{60}$	$\frac{14}{60}$ x 360 = ...°
Carrot & Coriander	8		x 360 = ...°
Cucumber & Cress	12		x 360 = ...°
Asparagus & Thyme	26		x 360 = ...°
TOTAL	**60**		**360°**

   b Construct an accurate pie chart showing this information.

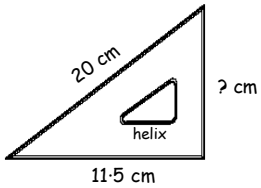
2. One of the following two answers is known to be the correct value for x.

$x = 19{\cdot}5$ cm or $x = 16{\cdot}4$ cm

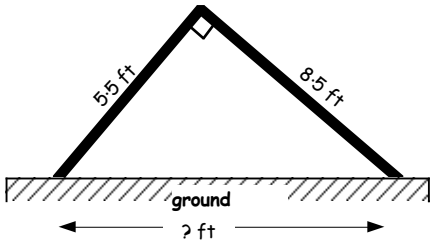
Without actually doing the calculation, say which one it must be and why the other is obviously wrong.



3. Calculate the length of the missing side in this plastic set square.



4.



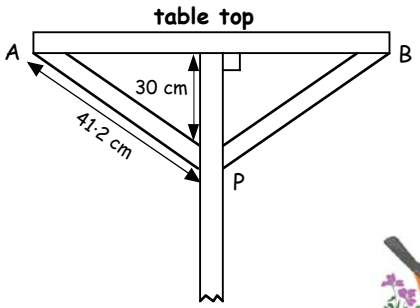
This metal frame, in the shape of a right angled triangle, is placed on the ground ready for a tent canvas to be spread over it.

Calculate the distance, along the ground, between the ends of the 2 metal poles.

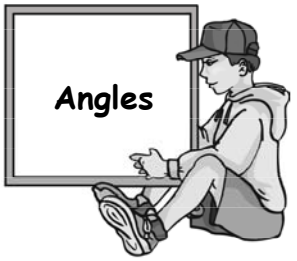
5. A bird table top is supported by two sloping strips of wood.

DAPB is isosceles.

Calculate the length of the table top (AB). Careful !!



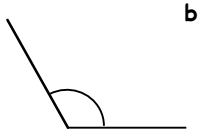
CHAPTER 2



Exercise 1

1. Use a word from {*acute, right, obtuse, straight, reflex*} to describe each of the angles shown below :-

a



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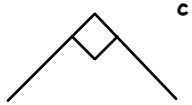
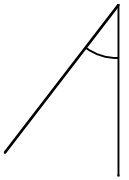


c

d



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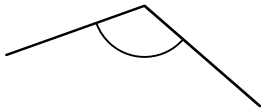

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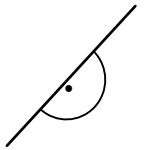

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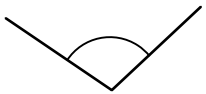

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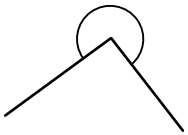
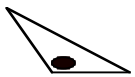


2. In each of the following triangles, state what kind of angle the one marked ● is :-

a



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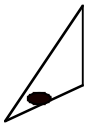

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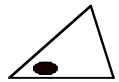
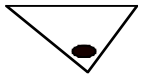


d

e



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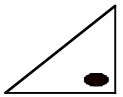

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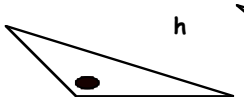

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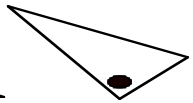


3. Look at the angle sizes listed below :-

60°, 78°, 103°, 180°, 19°, 205°, 177°, 181°, 90°, 320°, 11°, 91°.

a Which of the angles are acute ?

b Which of the angles are obtuse ?

c Which of the angles are right ?

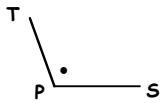
d Which of the angles are reflex ?

e Which of the angles are straight ?

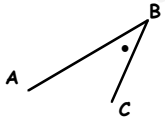
Exercise 2

1. Use 3 LETTERS to name each of the following angles :-
(remember the "– " sign)

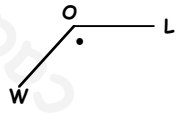
a



b



c



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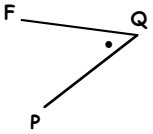
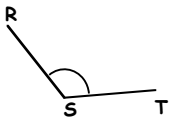


2. Name each angle, using 3 letters, and say what **TYPE** of angle it is :-

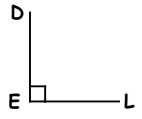
Example – "– AOB is an **acute** angle".

a

b



c



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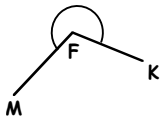
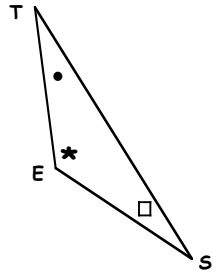


3. In this triangle, there are three angles.



a Name, using 3 letters, the angle marked •.

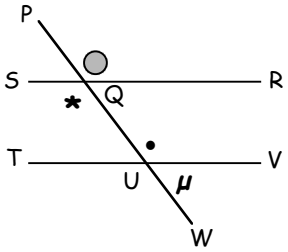
b Name, using 3 letters, the angle marked □.

c Name, using 3 letters, the angle marked ✱.

4. There are eight angles in this figure.

Name, using 3 letters, the angle marked :-

a • **b** ✱ **c** μ **d** ◯.



5. In your jotter, neatly draw and label :-

a an **ACUTE** angle, –ABC.

b a **RIGHT** angle, –DEF.

c an **OBTUSE** angle, –GHJ.

c a **REFLEX** angle, –PQR.

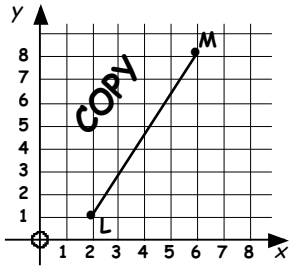
Exercise 2

1. **a** Write down the coordinates of the points L and M.

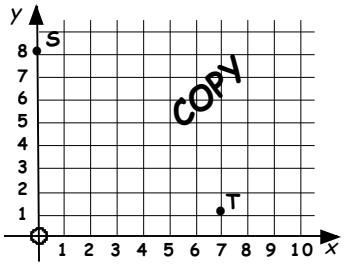
b **COPY** the diagram accurately showing the 2 points.

c Join L to M and make a right angled triangle.

d Use Pythagoras' Theorem to calculate the length of the line LM.



2.



a Write down the coordinates of the points S and T.

b Copy the diagram accurately showing the 2 points, S and T.

c Join S to T, complete the right angled triangle and calculate the length of the line ST.

3. **a** Draw your own coordinate diagram measuring 8 boxes across by 8 boxes upwards.

b Mark on it the *x*-axis, the *y*-axis and the origin.

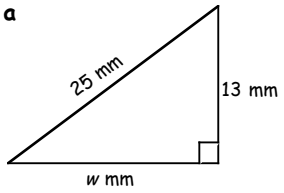
c Plot the 2 points, J(1, 3) and K(7, 7).

d Create a right angled triangle and calculate the length of the line JK.

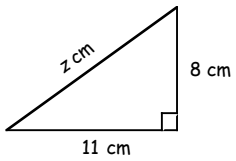
Exercise 3

1. Decide whether to use $c^2 = a^2 + b^2$ or $a^2 = c^2 - b^2$ in each of these :-

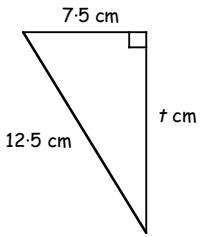
a



b



c



Exercise 3

1. Change from grams to kilograms :-

   a 3000 g **b** 270 g **c** 95 g.

2. Change from kilograms to grams :-

   a 16 kg **b** 0·7 kg **c** 0·065 kg.

3. Change from tonnes to kilograms :-

   a 6 tonnes **b** 2·3 tonnes **c** 0·8 tonnes.

4. Change from milligrams to grams :-

   a 7000 mg **b** 600 mg **c** 225 mg.

5. An empty bus weighs 4800 kg.

   When 10 passengers are seated on the bus the total weight is 5350 kg.

   What is the **AVERAGE** weight of one passenger ?

6. 

   A box of "**EAZIEWASH**" washing powder contains 2·4 kilograms of soap powder.

   It is reckoned that an average family wash needs 80 grams of powder.

   How many family washes should a housewife be able to do with the box of "EAZIEWASH" ?

7. A packet of crisps weighs 36 grams. A box holds 48 packets of crisps.

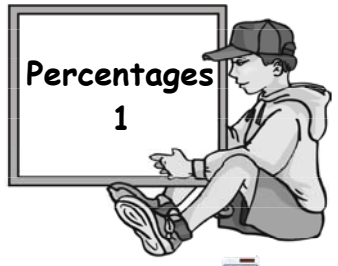
   The empty box weighs 0·5 kilograms.

   A load of 50 boxes of crisps is loaded onto a lorry.

   Calculate the total weight of the 50 boxes of packets of crisps,

   a in grams **b** in kilograms.

CHAPTER 4



Exercise 1

1. Write each of the following as a fraction **AND** as a decimal :-

   a 28% **b** 57% **c** 4% **d** 13·5%.

2. Write these percentages as fractions and SIMPLIFY where possible :-

   a $45\% = \frac{45}{100} = \frac{?}{20}$ **b** $20\% = \frac{20}{100} =$

   c 35% **d** 70% **e** 40% **f** 15% **g** 75%

   h 30% **i** 4% **j** 28% **k** 64% **l** 97%.

3. Change each of these test scores to percentages :-

   a Hal scored 15 out of 30 ($= \frac{15}{30} = 15 \div 30 = 0\cdot$ ..... = ... %)

   b Charlene scored 35 out of 50

   c Zoheb scored 28 out of 40

   d Gregor scored 8 out of 10

   e Deborah scored 16 out of 25.

4. Cheryl sat 3 separate language tests. Listed below are her marks.

   French – 14 out of 20 German – 35 out of 70

   Spanish – 34 out of 40

   Change each score to a percentage and then write her subjects in order, starting with the subject she did BEST in.

Exercise 2

1. Use your calculator to find the following :-

   a 12% of £30 = (12 ÷ 100) x 30 = £.....

   b 15% of £80 **c** 24% of £12 **d** 44% of £320

   e 35% of £8·40 **f** 9% of £20 **g** $12\frac{1}{2}$% of £40.