L1 Numeracy work book

Name_____

This booklet was created to help the busy tutor have a convenient workbook that a learner can either work through from beginning to end or pick out certain elements to focus on curriculum areas.

I have created most of the examples myself but have also used elements from www.skillsworkshop.org and BBC Skillswise http://www.bbc.co.uk/skillswise. Where this has been the case I have indicated it by the insert itself. All images have been taken from Google Images.

This page 1
N1/L1.1 read, write, order and compare numbers, including large numbers 2
N1/L1.2 recognise negative numbers in practical contexts 3
N1/L1.3 Add, subtract, multiply and divide using efficient written methods 4
N1/L1.4 Multiply and divide whole numbers by 10 and 100 6
N1/L1.6 Recognise numerical relationships (e.g. multiples and squares) 7
Checking answers to calculations 8
N2/L1.3 Recognise equivalences between common fractions, percentages and decimals 9
N2/L1.5 Add, subtract, multiply and divide decimals up to two places 10
N1/L1.7 Work out simple ratio and direct proportion 11
N1/L1.11 Solve problems involving algebra 12
N1/L2.4 Evaluate expressions and make substitutions in given formulae in words and symbols 13
MSS1/L1.1 Add, subtract, multiply and divide sums of money and record 14
MSS1/L1.2 Read and measure time accurately and use timetables effectively 15
MSS1/L1.3 Calculate using time 16
MSS1/L1.4 Read, estimate , measure and compare length, weight, capacity and temperature 17
MSS1/L1.8 Add and subtract common units of measure within the same system 18
MSS1/L1.7 Convert units of measure in the same system 19
MSS1/L1.8 Work out the perimeter of simple shapes e.g. rectangle, equilateral triangle 20
MSS1/L1.9 Work out the area of rectangles 21
MSS2/L1.2 Draw 2-D shapes in different orientations using grids e.g. in diagrams or plans 22
HD1/L1.1 Extract and interpret information e.g. in tables, diagrams, charts and simple line graphs .. 23
HD1/L2.1 Extract/interpret discrete & continuous data from table, diagrams, charts & line graphs. . 24
HD1/L1.2 Collect, organise & represent discrete data e.g. in tables, charts, diagrams & line graphs .. 25
HD1/L1.3 Find the arithmetical average (mean) for a set of data 26
HD1/L1.4 Find the range for a set of data 27
HD2/L1.1 Use the vocabulary of probability to discuss the likelihood of events 28
HD2/L1.2 Express the likelihood of an event using fractions, decimals and percentages 29
N1/L1.8 Approximate by rounding 30
N1/L1.9 Use estimation to find appropriate solutions to problems 31
N1/L1.10 Solve problems with and without a calculator involving positive numbers 32

Name_____

1) Sequence these numbers. Write them in order starting with the **smallest first**.

1031, 97, 098, 1301, 10001, 940, 1000

.....

2) Complete the table with the appropriate number or word

Number	Words
901	
	three hundred and one
1010	
	fifteen hundred and ninety six
10450	
	six hundred and seventy six thousand
310030	

3) Sequence the following numbers and words starting with the **smallest first**.

three hundred and three, 985, one thousand and two, 1001, eighteen hundred and four, 1799, one thousand nine hundred and four, 1000

a)
b)
c)
d)
e)
f)
g)
h)

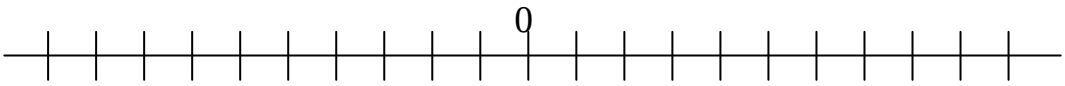
Now go to **Place Value activities** at http://www.bbc.co.uk/skillswise/topic/place-value

Name_____

A negative number is one that has a value below 0. In practical contexts these will occur in the following scenarios.

Negative numbers are the opposite of positive numbers. For example, -6 is a smaller number than -2. Complete this number line.

negative positive



Now go to **Negative Numbers** at
http://www.bbc.co.uk/skillswise/topic/negative-numbers

Name_____

1) 234 + 785 2) 391 + 478 3) 5009 + 7296

4) 87- 65 5) 586-278 6) 7850- 6161

7) 52 x 9 8) 23 x 35 9) 762 x 55

10) 88 / 2 11) 686 / 4 12) 565 / 15

Now try some more practice at:
http://www.bbc.co.uk/skillswise/topic-group/calculation

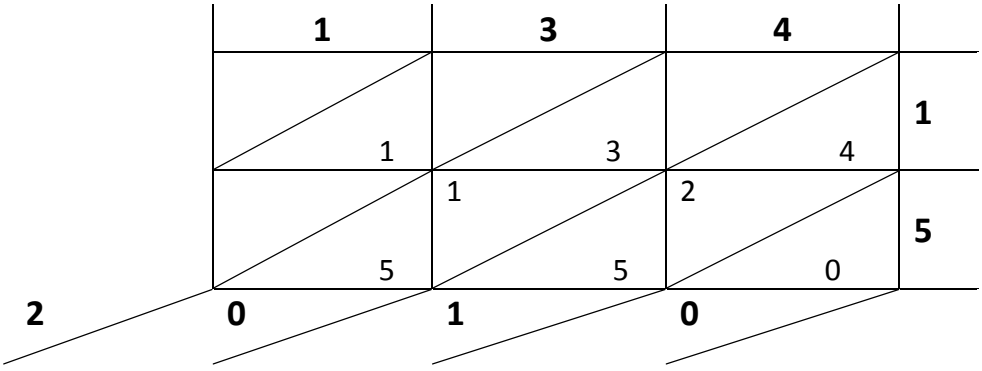
Name_____

134 x 15 = 2010

Grid method

x	**100**	**30**	**4**	
10	1000	300	40	1340
5	500	150	20	670
				2010

Lattice Method



Standard Method

134
x 15
———
670
1340
———
2010

Name_____

1) 11 x 10

2) 702 x 10

3) 4592 x 10

4) 3.9 x 10

5) 37.4 x 10

6) 0.73 x 10

6) 12 ÷ 10

7) 446 / 10

8) 823 ÷ 100

9) 3.4 / 10

10) 45.5 ÷ 100

11) 8.79 / 100

Now try some more practice at:
http://www.bbc.co.uk/skillswise/topic/multiplication/resources/l1

Name_____

A number is a **prime number** if it has only two factors (1 and itself). The first few prime numbers are 2, 3, 5... Note that 1 is not a prime number. **Multiples** of a number are all the numbers that it will go into exactly. For example, the multiples of 6 are 6, 12, 18, 24, 30, … . The **factors** of a whole number are the numbers that divide into it exactly. For example, the factors of 18 are 1, 2, 3, 6, 9, and 18.

1	Underline the numbers that are odd. 45 , 73 , 64 , 5 , 27 , 19 , 26
2	Underline the numbers that are even. 37 , 35 , 1 , 88 , 6 , 99 , 28
3	Underline the numbers that are prime. 33 , 18 , 33 , 63 , 85 , 93 , 45
4	Underline the numbers that are multiples of 3. 27 , 50 , 68 , 97 , 48 , 92 , 61
5	Underline the numbers that are multiples of 5. 66 , 95 , 6 , 71 , 58 , 96 , 25
6	Underline the numbers that are multiples of 7. 29 , 63 , 16 , 21 , 16 , 36 , 4
7	Underline the numbers that are multiples of 9. 7 , 59 , 97 , 9 , 96 , 48 , 5
8	Underline the numbers that are multiples of 2. 9 , 92 , 54 , 92 , 34 , 54 , 91
9	Underline the numbers that are multiples of 4. 38 , 45 , 47 , 25 , 61 , 34 , 71
10	Underline the numbers that are multiples of 6. 84 , 95 , 27 , 30 , 47 , 58 , 4
11	Underline the numbers that are multiples of 8. 85 , 33 , 31 , 63 , 93 , 44 , 69
12	Underline the numbers that are factors of 96. 9 , 18 , 1 , 30 , 29 , 32 , 17
13	Underline the numbers that are factors of 60. 2 , 2 , 15 , 18 , 18 , 15 , 16
14	Underline the numbers that are factors of 84. 39 , 28 , 34 , 23 , 26 , 41 , 7

Name_____

(Taken from www.skillsworkshop.org)

Checking your answers
There are two main methods:

1) Inverse calculation (doing the opposite calculation)
23 x 7= 161. To check: 161 ÷ 7 should lead you back to your first number of 23.

Try the following	Inverse	Check
565 + 301		
457- 21		
£4.50 ÷ 50		
45mm x 38mm		

2) Estimation
This is a "rough" check that ensures that you have not made any place value errors or pressed the wrong key on a calculator.
To do this, use rounding.
For example: £22.75 +£19.78 = ? Estimate £20+£20= £40

Try the following	Round	Check
4.79 m x 5m		
£19.51 / £4.79		
607mg + 487mg		
987 –5340		

Name_____

½ = 50% = 0.5

Although expressed differently, these values are all the same. So, if you had ½ a cake or 50% of a cake or 0.5 of a cake they all represent the same amount.

Try the following:

Fraction	Percentage	Decimal
½	50%	0.5
¼	……..	……..
……..	10%	……..
……..	……..	0.75
2/5	……..	……..
……..	33.3%	……..
……..	……..	0.6

1) 200 people attended a school concert. Three quarters of the audience were female. What percentage were male?

2) 0.9 of £10 is in pound coins, the rest is in 20p and 10p coins. What fraction of the £10 is in 20p and 10p coins?

3) 30% of people read the Daily Rag, half of people read the Express and Shame, and the rest read The Radar. What proportion of people read Radar? Give your answer as a decimal.

Name_____

2.45 + 3.67	10.29 - 6.36	7.7 x 4	8.84 ÷ 2

Now try these practical problems

1) A rail is needed in a room with a perimeter of 10.6 m. The door, which measures 1.2m across will not need a rail. How much rail will be needed?

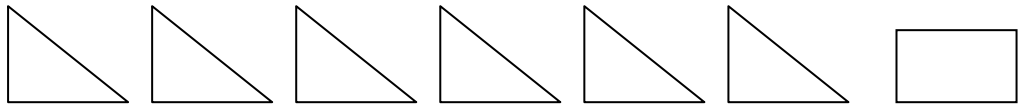
2) Susan buys a 175g yoghurt and adds 12.5g honey and 11.3g of walnuts. How much does this weigh altogether?

3) A customer wishes to buy 20 toilet rolls that retail at £0.45 per roll. How much will this cost?

4) Jean wins a small amount of money on the lottery: £ 456.00. She decides to share this with her family of 3 brothers, her mother and grandmother. How much will they each receive?

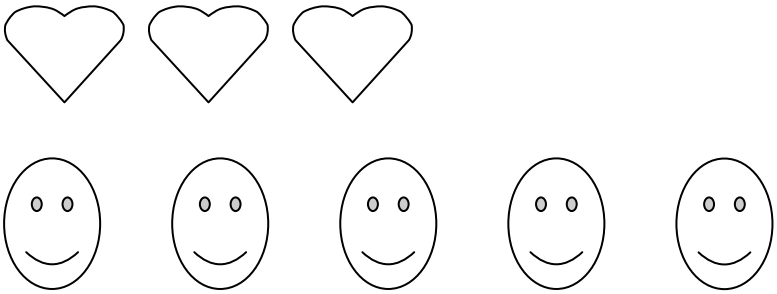
Name_____

1) You have seven shapes but you need 21. Keeping the same ratio of rectangles to triangles, how many of each shape will you need to make them up to 21?



Rectangles: **Triangles:**

2) If you have nine hearts and keep the same proportion of smiley faces, how many faces will there be?



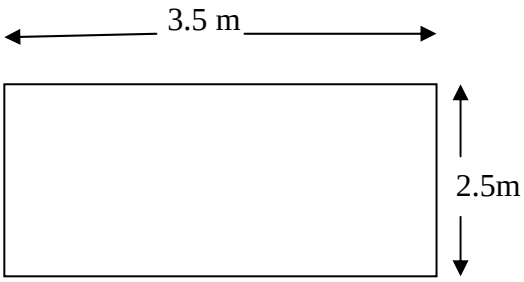
3) 60 balls are shared between 3 friends, Ellie, Adam and James in the ratio 3:1:2
How many balls does Ellie get?
How many balls does James get?

4) 3 people win £180.90 in a syndicate at work. They share the win in the ratio 4:3:2
Cheryl won the biggest share. How much did she win?

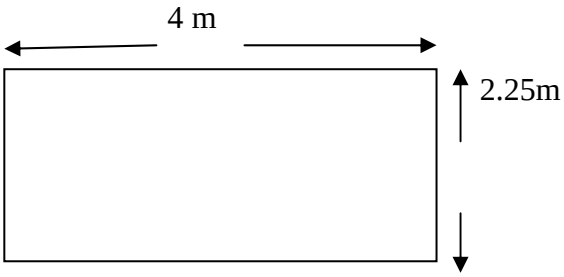
Name_____

(Taken from www.skillsworkshop.org)

1) Substitute the value given in each problem then work out the answer:
a) W=Width, L=Length
Calculate the perimeter
Perimeter = (Wx2) + (Lx2)



b) Use the equation to calculate the area:
Area = W x L



2) **Gross profit = sales - food cost**

a) Sales = £25 food cost = £15 gross profit =

b) Sales = £ 57 food cost = £ 31 gross profit =

3) My monthly mobile phone charges are calculated using the following formula:

Cost = £15 + £0.20 x minutes used
How much will it cost for:

i) 30 minutes used
ii) 70 minutes used
iii) 140 minutes used

Name_____

(Taken from www.skillsworkshop.org)

You work for a company that wishes to promote a new product and you wish to produce some leaflets to give out to the public. The printer has given you the cost of printing based on this formula.

Calculating printing costs

$C = 27 + 0.4 \times n$

C= cost in £ and

N= number of leaflets

1) What is the cost of producing 50 leaflets?

2) What is the cost of producing 1000 leaflets?

3) If you had £8.50, how many leaflets can you get printed?

Name_____

Remember, when you are dividing or multiplying using money you only go to 2 decimal places. After that it will have to rounded up or down.

1) Mel goes to the department store and buys a pair of shoes costing £29.95, a coat at £19.99 and a hat at £2.50.
How much has she spent all together?

2) Jake buys a Manchester United top and a scarf which all cost £30.99. He doesn't like the scarf which cost £6.49 and asks for a refund under the shops "no quibble" returns policy.
How much has he spent after he's got his money back?

3) Mrs Jones decides to share the cost of her summer party between the 15 people who have said they will come. The cost of everything (food, drink and the marquee) is £75.50.
How much will she charge for each entrance ticket?

4) Mr Jones is having to do some DIY to cover a section of the back garden with gravel. The gravel costs £14.27 for a 20 kg bag. He estimates that he will need 9 of these.
How much will he need to spend to do this job?

Name_____

1) Order these units of time starting from the shortest to the longest:

decade month year second millennium minute hour century

… … … , … … … , … … … , … … … , … … … , … … … , … … … , … … …

2) Order these following times in order, earliest first:

15:45 midday 4:00 pm 07:30 midnight 12:01 9:00 am 13:50

… … … , … … … , … … … , … … … , … … … , … … … , … … … , … … …

3) Here is the bus timetable from Wolverhampton to Birmingham
(http://www.networkwestmidlands.com/Bus/BusTimetable.aspx)

	126	126	126	126	126	126	
QUEEN STREET.....	0845	0905	0925	0945	1005	1025	1045
W'ton, Cleveland St..	0849	0909	0929	0949	1009	1029	1049
Parkfield Road.....	0856	0916	0936	0956	1016	1036	1056
Roseville, Bank St...	0905	0925	0945	1005	1025	1045	1105
Swan Vill, B.New Rd..	0909	0929	0949	1009	1029	1049	1109
King Arthur.....	0910	0930	0950	1010	1030	1050	1110
DUDLEY, Bus Station..	0917	0937	0957	1017	1037	1057	1117
Newbury Lane.....	0928	0948	1008	1028	1048	1108	1128
W'ton Rd, Causeway Gr	0932	0952	1012	1032	1052	1112	1132
Hagley Road, Bearwood	0941	1001	1021	1041	1101	1121	1141
Hagley Rd, Francis Rd	0951	1011	1031	1051	1111	1131	1151
COLMORE ROW AA-AF...	1000	1020	1040	1100	1120	1140	1200
	126	126	126	126	126	126	126

3a) How long is the journey from start to finish?

3b) I have an interview in Birmingham city centre (Colmore Row) at 11.30am. What is the latest bus I can catch from Queen Street?

3c) If I arrive in Birmingham at twenty to twelve, what time have I caught the bus from the King Arthur?

4) Put the following times into 24hr time format:

nine am ……. twenty to three in the afternoon …….

eleven ten in the morning ……. quarter to ten at night …….

Name_____

1) Convert the following into minutes.

two and half hours …… three quarters of an hour ……

one hour and forty minutes ……

2) I spend 2 hours in the centre of the city shopping, 25 minutes in the library reading and 15 minutes in the bank. How long have I spent altogether in Birmingham?

3) A rough scrap of paper contains a valuable recipe including the instructions.
The instructions state a quarter of an hour marinating the meat, 10 minutes light frying and an hour and a half roasting the meat to complete the cooking.
How long does it take to prepare and cook the meat in total?

4) It takes two and half days sailing to reach the Greek Islands from Gibraltar. How many hours will it take?

5) A Formula 1 driver qualifies in a lap at 52 seconds. The race circuit is 73 laps. How long does the race last if he drives at the same speed as in qualifiers?

Name_____

1) Put the following in order , starting with the smallest:

cm, km, m , mm ……..

kg, mg, g ……..

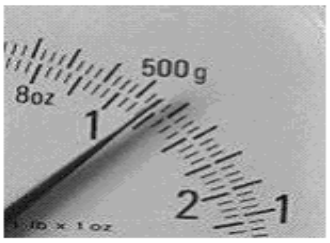
Which ones measure length? ……

Which ones measure weight? ……..

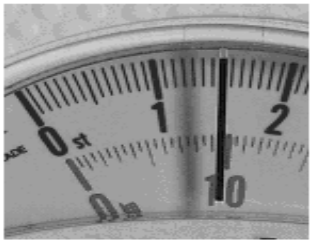
Skillswise MSS1/L1.4

Length, Weight, Capacity: Worksheet 2

What are the readings on these scales?

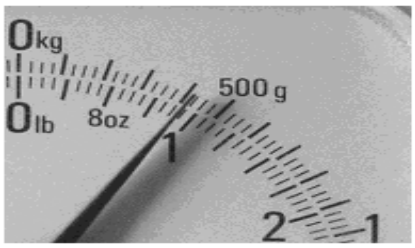


_____ g



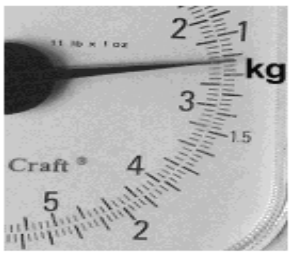
_____ st

_____ kg _____ g



_____ g

_____ kg



_____ kg _____ g

_____ kg _____ g

_____ g

Now check your answers with those on the answer sheet.

BBC http://www.bbc.co.uk/skillswise © BBC 2004

Name_____

1) How many

mm in a cm? ..... cm in a m? ..... m in a km? .....

mg in a g? ..... g in a kg? ..... ml in a l(litre)? .....

2) A carpenter has to build a table 2 m in length. Now a customer wants to shorten it by 50 cm. How long will the table be now?

3) A pedestrian route in the city travels 250 m past the main shops and another 800 m past the university and the public library. How far does it stretch altogether?

4) Add up the following quantities and measures:

1.2 m + 45 cm + 350mm

599 g + 1.4 kg + 1000 mg

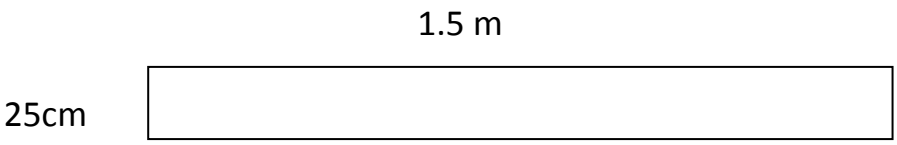
5890 ml + 2.1 l

Name_____

1) A patient has a ½ litre bottle of medicine. She has to take 25 ml of it 4 times a day. How many days will the medicine last?

2) A mother buys half kg of fresh strawberries for her two grown up daughters. How much will each daughter have in grams?

3) A woman wants to buy some very expensive lace to cover the top of a mantelpiece. What sized piece of lace will be needed to cover the surface? Give dimensions in mm.

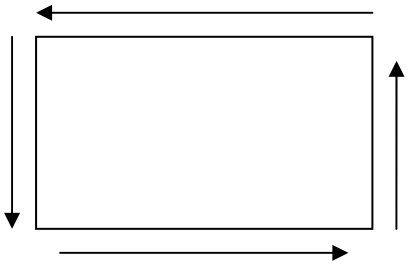


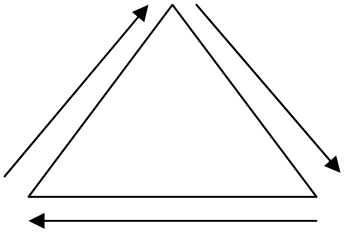
4) 5m of cloth needs to be cut into 10 equally sized pieces. How long is each piece?

5) Sally and John are selling their gold to raise a little bit of cash. Sally has a ring weighing 1750 mg and a bracelet weighing 7 and a half grams. John has an ingot gold ring weighing 3.25g. In the Merry Hill Centre they are paying £10.00 per gram of gold. How much will they raise?

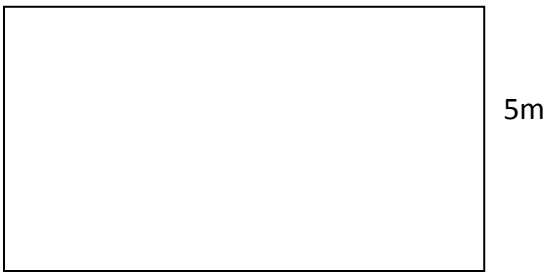
Name_____

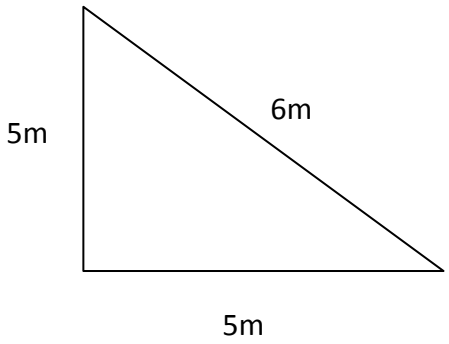
The perimeter is the distance around a shape.



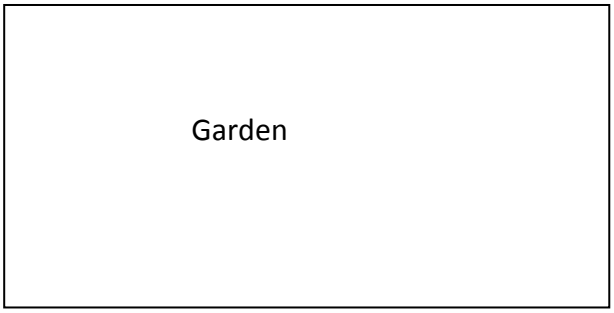


1) What are the perimeters of the following shapes:





2) The perimeter of a rectangular garden is 36 metres.
Estimate the length of each side.

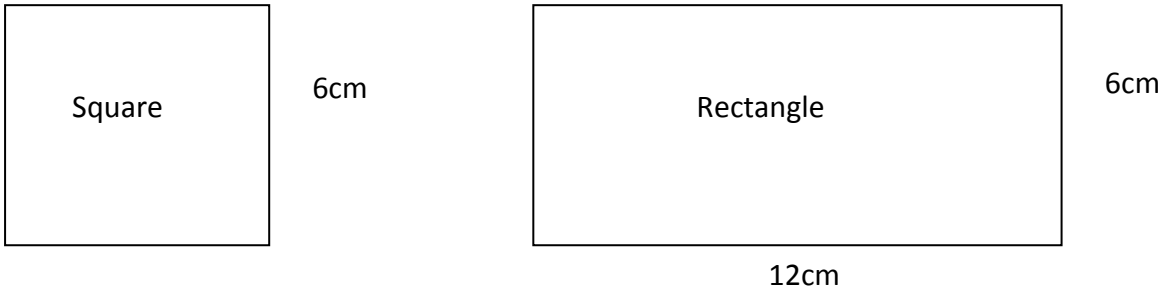


3) Manchester City's pitch is 116 x 77 yards, while Aston Villa's pitch is 114 x 75.
Work out the perimeters of the pitches for each.

Name_____

1) How do you find the area of a square or a rectangle? ……

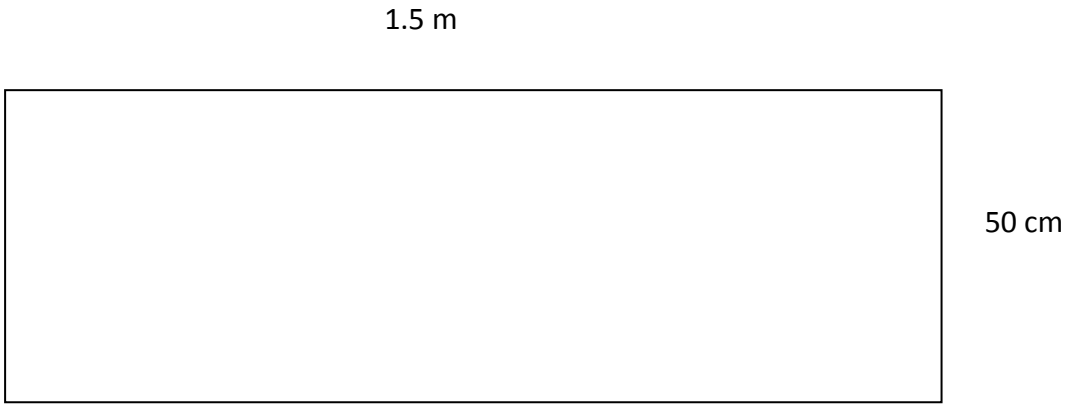
2) Label the missing sides of the following shapes:



3) Now calculate the area of each.

When you have different units e.g. cm and m, **you must** convert them to the same units before you calculate area.

4) Find the squared area

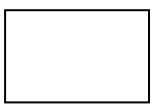


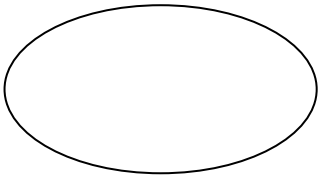
Name_____

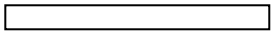
Complete the table.

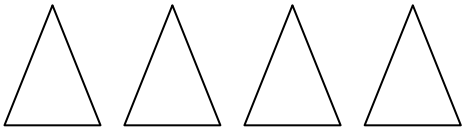
Shape	Number of sides	Number of corners
square	4	4
circle		
rectangle		
oval		0
triangle		

Put in the following items of furniture, into the “living room” above: table, sofa, armchair, television and four chairs.







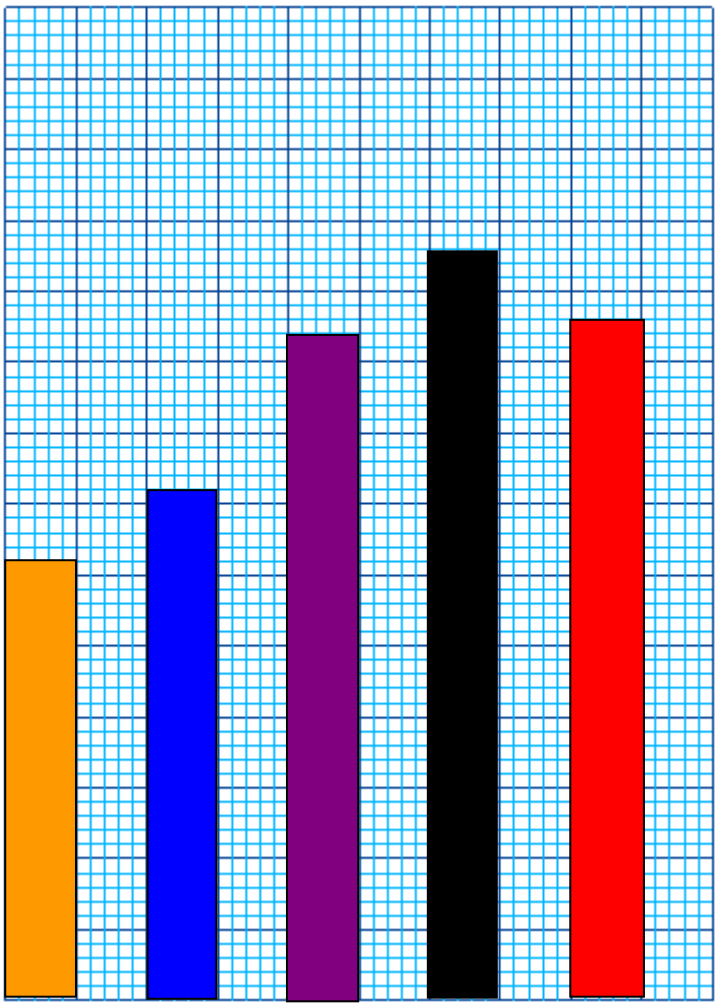


Name_____

This is a graph which shows the average attendance of home matches for the following premiership clubs.

Task A - Label both axes (horizontal and vertical). Add a scale to the vertical axis.

Task B - Count up the number of fans and write them under/next to the football club.



Wolves WBA Villa Newcastle Liverpool

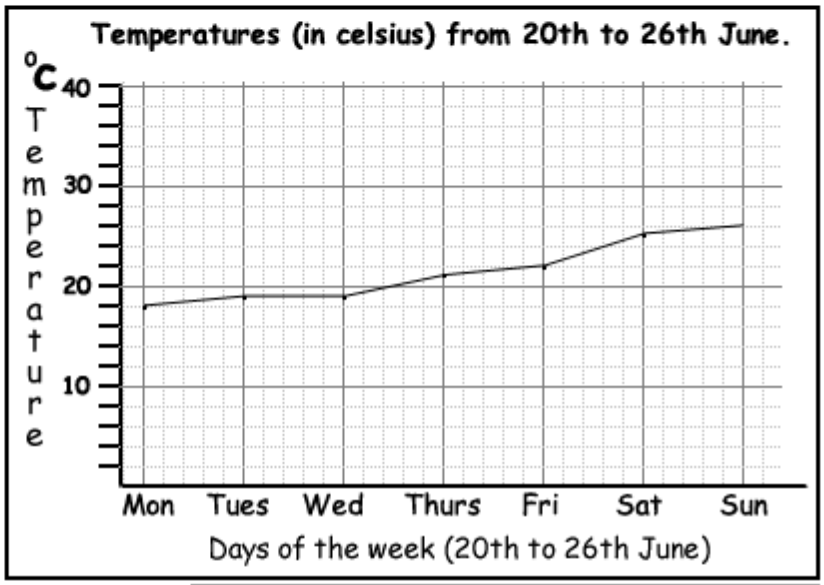
Key: each  on the graph paper = 1,000 fans

Skillswise HD1/L1.1

Graphs and charts: Worksheet 7 - questions

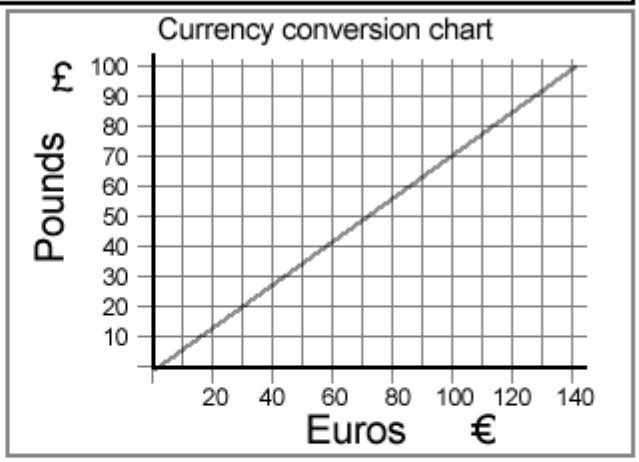
Use the temperature chart to answer these questions:

1) Which day was the warmest?
2) Which was the coldest?
3) What was the temperature on Saturday?
4) When was the biggest change in temperature?



Use this currency conversion chart to answer questions 6 to 8.

The chart shows pounds (£) and euros (€)



5) About how many euros will I get for these amounts: £25, £50, £70, £100 ?
6) About how many pounds will I get for these amounts: €25, €50, €70, €100 ?

7) I exchanged £100 into euros. On my holiday I spent 110 euros altogether. When I got home I exchanged the money left over back into pounds. Using the conversion chart about how much money did I get back?

Now check your answers with those on the answer sheet.

BBC http://www.bbc.co.uk/skillswise © BBC 2004

Name_____

In July 2011, Internet sales for an eBay perfume seller were:

Chanel 300,

Hugo Boss 250,

Givenchy 130,

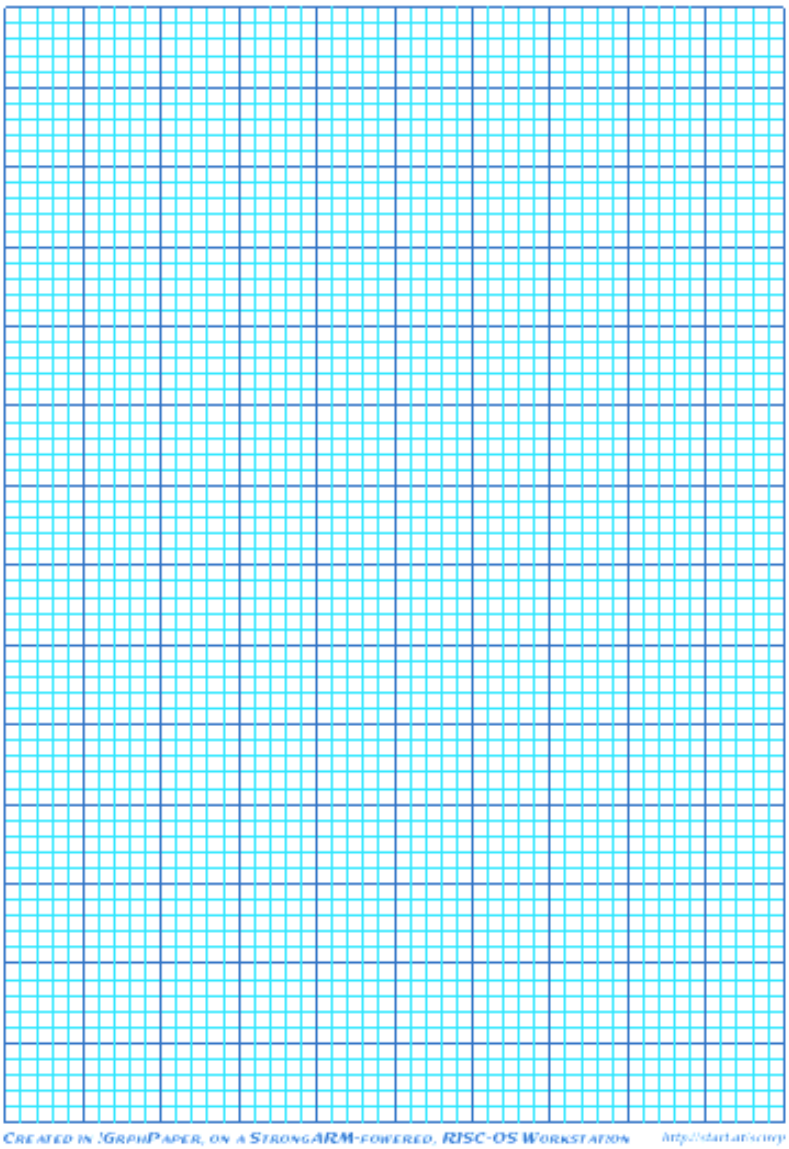
Christian Dior 100,

Paco Rabanne 180,

Lacoste 150.

Task

Draw a chart below. Don't forget labels and a suitable scale.



Name_____

To find the mean average, add up the values and divide them by the number of items / categories.

1) From the previous exercise (page 25), find the average number of each brand sold by the eBay perfume seller in July 2011.

2)

Attendance at Birmingham Clubs				
Club name	**Thursday night**	**Friday night**	**Saturday night**	**Sunday night**
Bank	231	430	515	121
Flares	287	454	498	132
Revolution	195	396	457	98
Oceana	220	510	646	175

a) What was the average number of clubbers on Thursday night?

b) What was the average number of clubbers on Saturday night?

c) What was the average number of clubbers at Revolution during all the nights?

d) What was the average number of clubbers at Oceana on Saturday and Sunday?

Name_____

To find the range take the smallest from the largest in a set of data.

1) From the previous exercise (page 26), what is the range in the number of clubbers attending the clubs in Birmingham?

2)

Caravan Holidays in UK summer/autumn 2011 (4 nights)		
Skegness	High Season £310	Low Season £99
Weston-Super-Mare	High Season £380	Low Season £120
Bournemouth	High Season £450	Low Season £175

a) What is the range of prices for both summer/autumn for caravan holidays?

b) What is the range of prices for Bournemouth?

c) What is the range of prices in the high season?

d) What is the range of prices in the low season?

Name_____

Language of probability: **might, should, never, probable** and **always.**

List the terms in order starting from what is least probable:

1…….

2…….

3…….

4…….

5…….

Put one of the terms against each one of the following scenarios:

1- Aston Villa winning the Premiership

2- The chance of rain tomorrow.

3- Saturday following Friday.

4- Victoria Beckham getting pregnant.

5- Meeting the girl/boy of my dreams.

1) There are 20 teams in the Barclays Premiership.
What is the statistical probability of any team winning the title as a fraction?

2) You are playing Russian roulette. You have a six-barrel revolver and there is one bullet in one of the chambers. If you put the gun to your head and pull the trigger, what is the probability of you as a fraction:

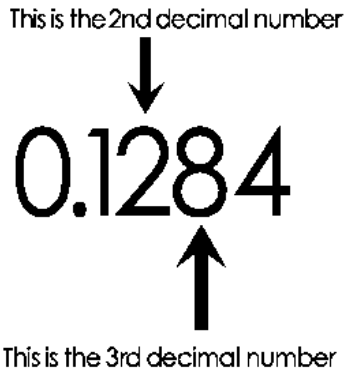
Blowing your brains out?

Surviving?

3) One night you go out to a night club with 100 people split evenly amongst the sexes. 10 of those clubbers have an STD. You go home with a new partner that evening and sleep with them without taking any sensible precautions. What is the possible probability that you may have exposed yourself to an infection as a percentage?

Name_____

Rounding is a common technique to simplify numbers and calculations. Often you will need to do this where there is a finite limit to the decimal place e.g. with money this is 2 decimal places.



1) Round the following figures and numbers to the required amount.

To the nearest 10

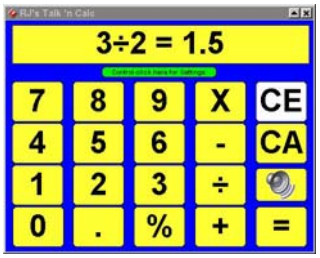
341 997 655 812

To the nearest 100-

3874 9949 845 87438

2) Round the following figures to the **nearest whole number.**

12.6 4.5 18.4 18.45



3) Use a calculator to work out the following and **round to two decimal places.**

£0.45 x 6.5= £34.75 / 12=

£1.49 x 2.5= £10.05 ÷ 4=

Name_____

Often you will need to round numbers in calculations with decimals. This is done to speed up or facilitate a calculation when you only need a rough idea (an estimate) of the answer.

E.g. you want to buy 18 first-class stamps at £0.43 each. How could you make this simpler to give you a "rough guide" to how much this will be?

20 x 40: 2x 4= 8 +00 = £8.00 rough answer

18 x £0.43= £7.74 exactly.

Now try the following:

Your car journey to work is 6.2 miles each way.
How many miles, approximately will you travel to work over 5 days, there and back?

You buy a round of drinks: J2O £2.32, Fosters Extra Cold £2.89 x 2, red wine (small) £3.05.
Do a rough calculation to estimate the total cost.

A parent buys two pairs of shoes at £2.79 and two pullovers at £4.25.
How much is this approximately?

Name_____

1) A gardener wants to fertilise his garden. It's £3.50 per bag which will cover an area of $5m^2$.
How many bags of fertiliser will he need?

2) A syndicate doing the lottery win a prize of £275,000 pounds. There are 12 people in the syndicate.
How much will each collect?

3) A dogs' home relies on charitable income for its survival. The home needs to cover the following monthly costs:
Wages - £5,670
Rent - £658
Utilities - £248
Food and veterinarian costs - £589
How much will the home need to raise each month to cover these basic costs?

4) A "Pay as You Go" tariff is priced at 8p per minute for "any-time" calls and 5p per text. Over one month Sharon makes 74 texts and uses 2 hrs and 5 minutes calling time.
How much has she spent in this period?