Baldragon Academy
National 3 Maths Checklist

Contents: **Page**

Manage Money and Data

Shape, Space and Measurement

Numeracy

Manage Money and Data

REMEMBER: To write money correctly we MUST use a £ sign and make sure that there are 2 numbers after the decimal place (1.5 = £1.50, 0.081 = £0.08)

Topic	Skills	Notes			

Income and Expenditure

Topic	Skills	Notes			
Wages	Wages are normally shown on a payslip where the gross pay, deductions and net pay are shown. Gross Pay = The money you have earned Deductions = Money taken off your gross pay (Income Tax, pension etc.) Net Pay = The money you are actually paid after deductions (Gross Pay – Deductions) Example: Calculate your monthly net pay if your gross pay = £425 and your deductions = £75 Net Pay = Gross Pay – Deductions = £425 - £75 = £350				
Bonuses	Bonuses can sometimes be paid based on work performance. Example: Sue is paid a £165 bonus on every car that she sells. How big will her bonus be if she sells 5 cars? Bonus = 5 × £165 = £825				
Income Tax	Income tax is a percentage of money taken off your pay by the government to fund things like education and the NHS. Example:				

	Rachel has to pay a 20% tax on her pay of £400. What will her pay actually be after tax? Tax = 20% of £400 = £400 ÷ 100 × 20 = £80 Actual Pay = £400 - £80 = £320				
Expenditure	Expenditure is money that you spend each week/ month on things like rent, council tax and food. Any money that is left over once you have taken your expenditure away from your income (pay) is sometimes referred to as disposable income (spare money that you can choose to spend on what you wish)				
Disposable Income	Spare money left over from your pay once you have taken off your deductions and expenditure				

Savings

Saving Up a Set Amount of Money in a Set Amount of Time	Divide the amount of money you need by the amount of time you need to save it up in. Example: Jill needs to save £200 in 5 months. How much will she need to save each month? £200 ÷ 5 = £40 each month				
Putting Aside Money Each Week/ Month	Multiply the amount of money put aside by the amount of weeks/month you will be doing it for. Example: Stephanie puts aside £30 a month. How much will she have saved after 6 months? £30 × 6 = £180 after 6 months				

Best Deal

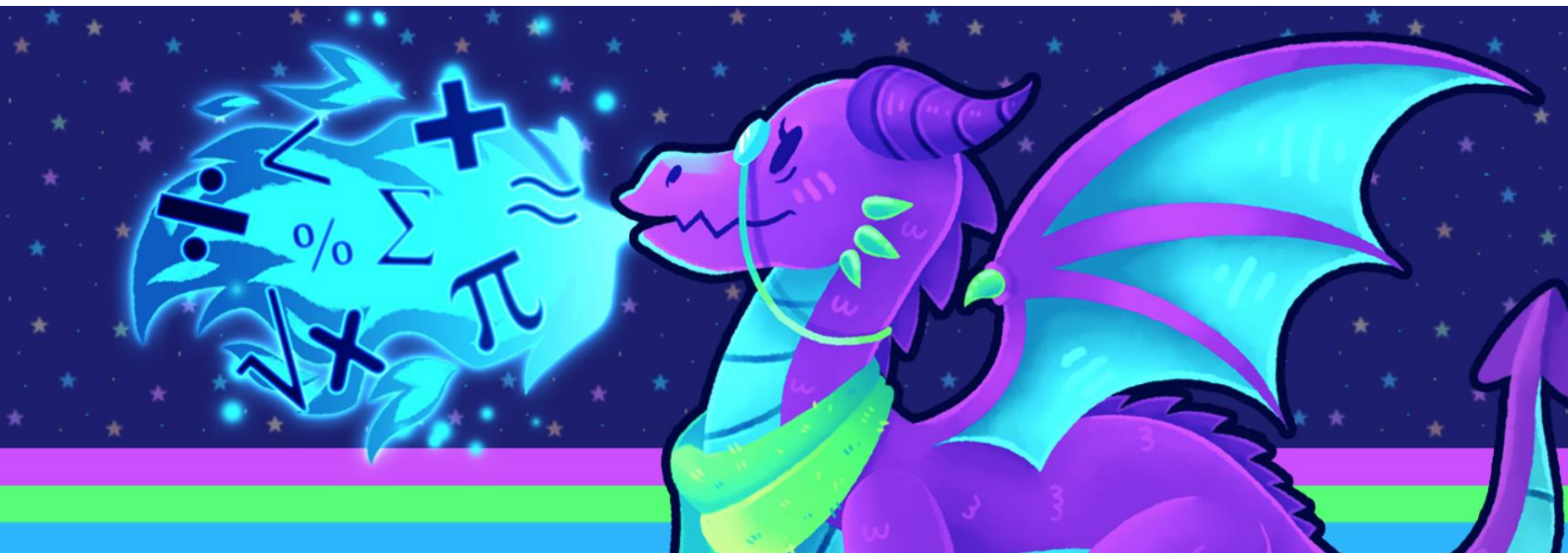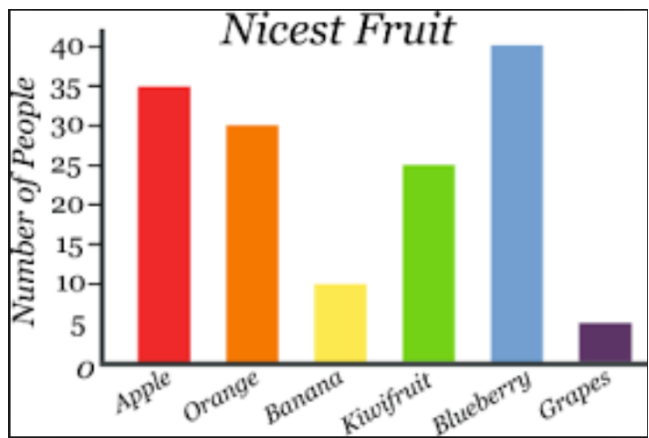|					
Discounts	If there is a discount on a product then it means that money has been taken off of it and the product will be cheaper than before.				
Percentage Discounts	New Cost = Original Cost – % Discount Example:				

Shampoo is normally £3.20, however, this week there is a 10% discount on it. How much does it cost this week?

% Discount = £3.20 ÷ 100 × 10 = £0.32

New Cost = Original Cost - % Discount
$$= £3.20 - £0.32$$
$$= £2.88$$

Best Deal

To compare which is the best deal we need to look for the cheaper option. Sometimes, things may appear to be the better deal because they have a discount on them but this isn't always the case!! Make sure you calculate which one works out cheaper before making a decision!

Example:

Jack has to decide between 2 shower gels.

FreshClean costs £1.95

Bubbles normally costs £2.20 but this week there is a 10% discount on this product.

Which bottle of shower gel is cheaper?

Bubbles % Discount = £2.20 ÷ 100 × 10 = £0.22

Bubbles New Cost = Original Cost - % Discount
$$= £2.20 - £0.22$$
$$= £1.98$$

FreshClean is the cheaper option as it is only £1.95 whereas even with the discount Bubbles costs £1.98.

Statistics

Frequency Tables
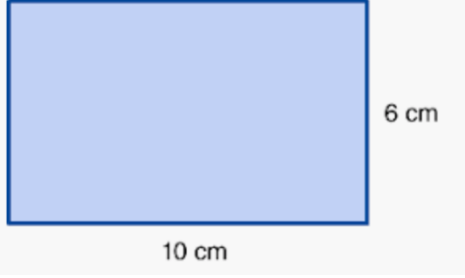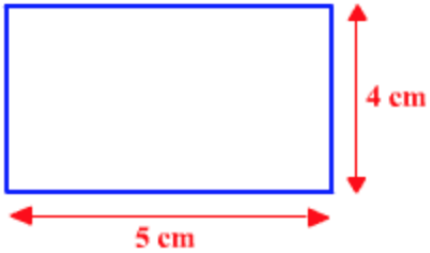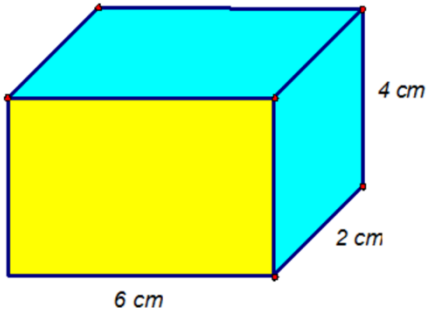
Example:

Mark	Tally	Frequency
4	II	2
5	II	2
6	IIII	4
7	⊦⊦⊦⊦	5
8	IIII	4
9	II	2
10	I	1

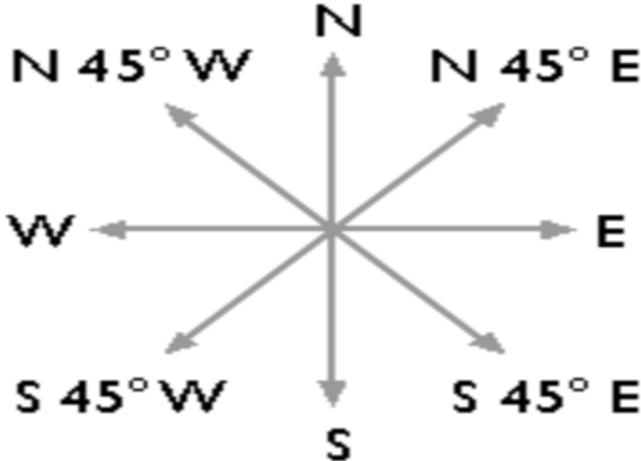|					
	Make sure you have your 2 titles, with the final 2 being Tally and Frequency.				
Bar Graphs	Bar Graphs – HAVE TO HAVE EQUAL SPACES BETWEEN EACH BAR Make sure you use a ruler and have 3 titles, one for the x-axes, one for the y-axes and one for the graph. Make sure to number the y- axes, starting at 0 in the bottom corner. Make sure to label the x- axis Example: 				5

Shape, Space and Measure

Topic	Skills	Notes			

Perimeter, Area, and Volume

Topic	Skills	Notes			
Perimeter	The perimeter of a shape is the total distance around the outside. It is found be adding together all of the lengths. 6 cm 10 cm Example: Calculate the perimeter of the rectangle P = 6 cm + 6 cm + 10 cm + 10 cm = 32 cm				
Area	Formula: $$A = l \times b$$ Where: A = area l = length b = breadth Example: Calculate the area of the rectangle 4 cm 5 cm $A = l \times b$ $A = 5 \times 4$ $A = 20\ cm^2$ Note: squared units for area				
Volume	Formula: $$V = l \times b \times h$$ Where: V = volume l = length b = breadth				

	h = height Example: Calculate the volume of the cuboid $$V = l \times b \times h$$ $$V = 6 \times 2 \times 4$$ $$V = 48 \; cm^3$$ 4 cm 2 cm 6 cm Note: cubed units for volume				
Capacity	Capacity is the measure of how much liquid a container can hold. It is found by calculating the volume, and then converting the cm^3 into ml $$1 \; cm^3 = 1ml$$ $$1000 \; ml = 1 \; litre$$				

Distance and Direction

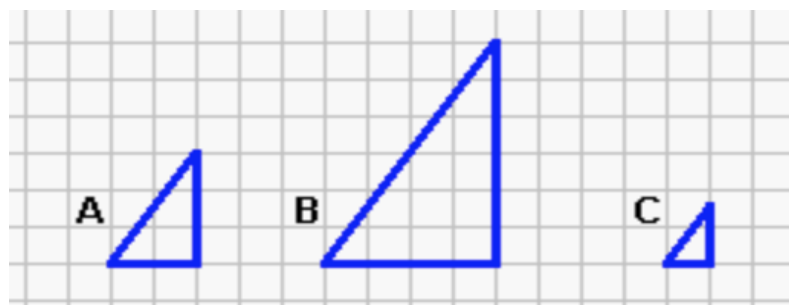|					
Bearings	**Bearings** N N 45° W N 45° E W E S 45° W S 45° E S				
Giving Directions	Make sure you give clear and concise directions, including which direction the person should turn, street names, and what landmarks they might pass on the way. Example: Give directions from the school to David's house.				
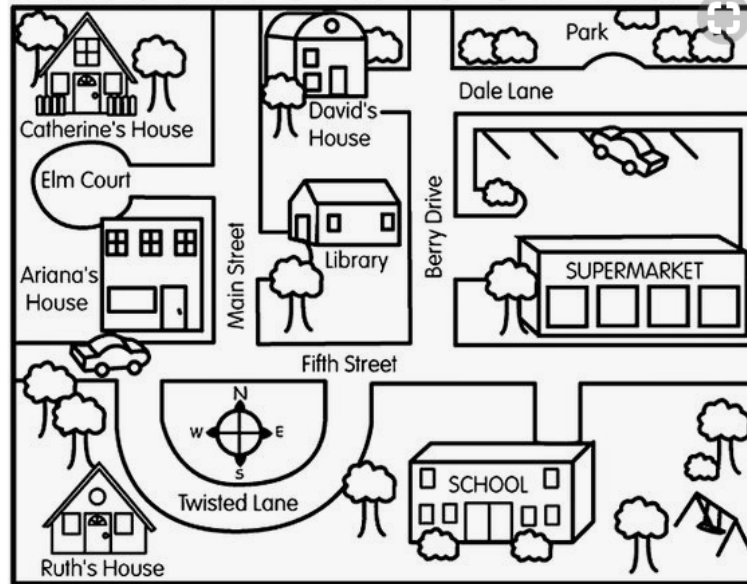
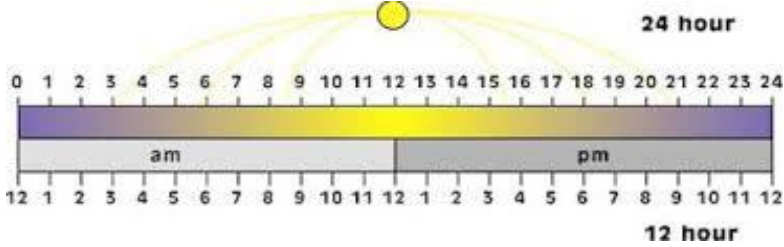|					
	  • Come straight out of David's house and turn right onto Berry Drive. • Carry on straight onto Fifth Street and turn left. • The School is the first turn off on the right.				
Scale Factors	Multiply original lengths by scale factor to find the lengths of the reduced or enlarged shapes, (a scale factor of 2 will make a shape double in size, a scale factor of 0.5 will half the size of the shape) Example: B is an enlargement of A by a scale factor of 2 C is a reduction of A by a scale factor of 0.5				
Scales on Maps	Example:				

	Two landmarks are 3 cm away on a map. If 1 cm = 100 m, how far away are the landmarks from each other in real life? 1 cm = 100m 3 cm = 3 × 100 m = 300 m The landmarks are 300 m away from each other in real life.				9

Time

Convert from 12 hour time to 24 hour time and back again	There are 24 hours in a day. 24 hour time counts all the hours throughout the day, whereas 12 hour time splits the day into 2 halves, am and pm. Time is set out in the format HH:mm. 12 hour time has to say whether it's am or pm and 24 hour time has to have 4 numbers. Example: Convert 11.20 pm to 24 hour time. 11.20 pm = 23.20 (since 11.20 in the evening is 20 minutes past the 23rd hour in the day)				
Time Intervals	Remember there are 60 minutes in an hour! Example:				

Raymond was in class from 10 a.m. till 4.45 p.m. How much time did he spend in class?

6 h 45 min

	10 a.m.	4 p.m.	4.45 p.m.	Midnight
Midnight				
00 00	10 00	16 00	16 45	00 00
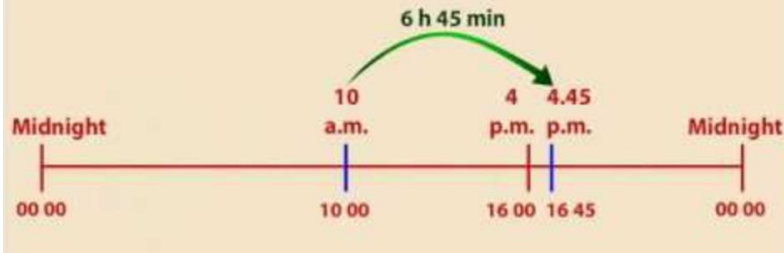
Timetables

Depart City Centre	10:20	10:35	10:50	11:05	11:20
Arrive Airport	10:33	10:48	11:03	11:18	11:33

Timetables are used everywhere, such as in schools, train stations and bus stations.

Example:

Liam is going from the city centre to the airport by bus. The buses run at regular intervals 24 hours a day. Part of the bus timetable is shown below.

Depart City Centre	10:20	10:35			
Arrive Airport	10:33	10:48			

   (a)   Complete the timetable to show the departure and arrival time of the next 3 buses
   (b)   Liam has decided to catch the bus that leaves the city centre at 14:20. At what time will he arrive at the airport?

10

| | The bus takes 13 minutes to travel from the city centre to the airport. So if Liam catches the bus at 14:20 he will arrive at the airport at 14:33 | | | | |

Patterns

| Picture Patterns |
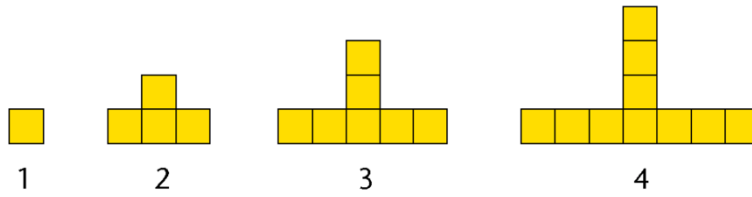
Can you see that that 5th pattern in the sequence would contain 13 boxes?

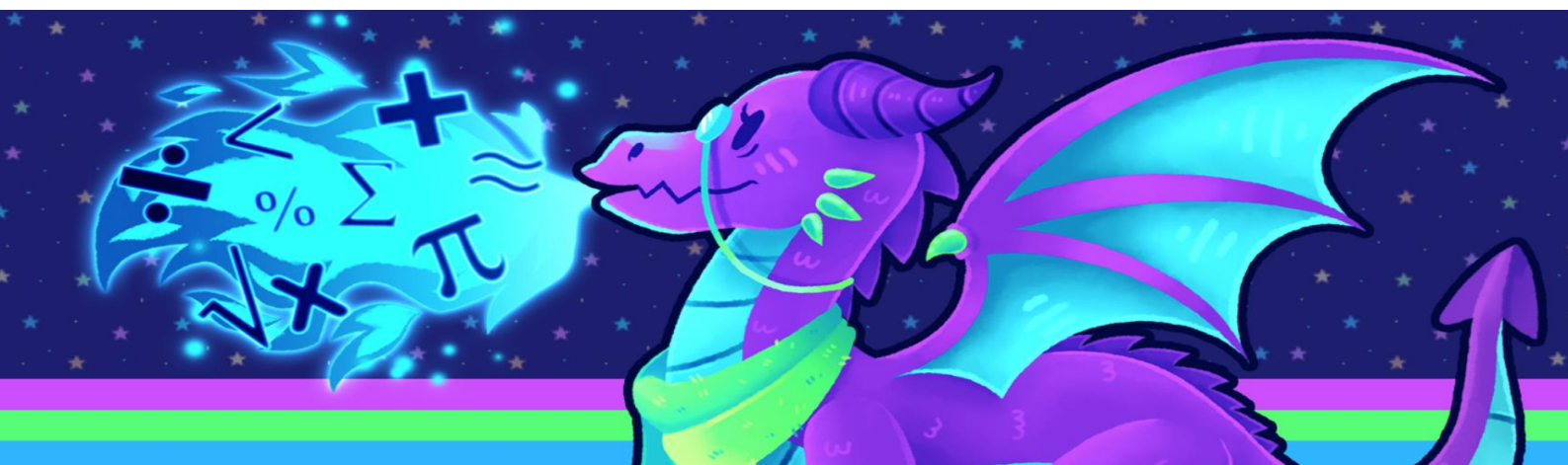We add 3 boxes, 1 to the top, 1 to the left, and 1 to the right, in order to carry on the pattern. | | | | |
| Sequences | Example:

Copy and complete the table below:

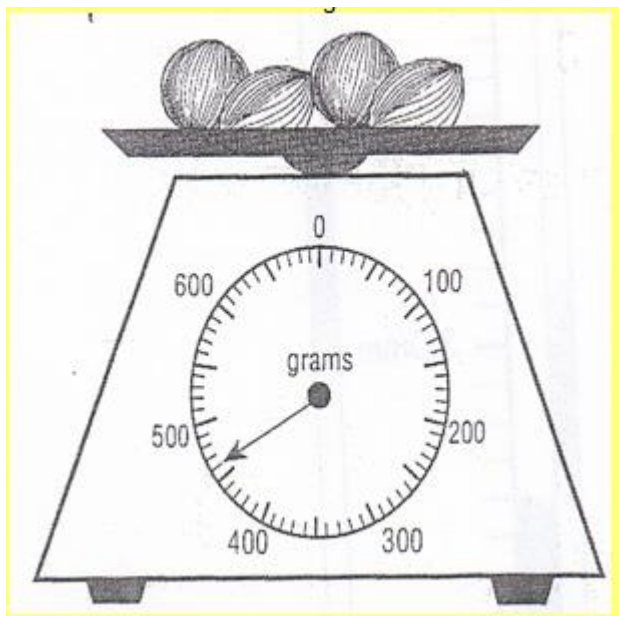| No. of spiders (S)	1	2	3	4	5	6
No. of legs (L)	8					

For each spider there are 8 legs, that means we add 8 legs on for each spider: 2 spiders would have 16 legs, 3 spiders would have 24 legs and so on. | | | | |

Numeracy

Topic	Skills	Notes	🟥	🟨	🟩
Fractions and Percentages					
Calculating a Fraction of a Quantity	To find a fraction of a quantity, we divide by the bottom and multiply by the top. Example: Calculate $\frac{2}{3}$ of 15 = 15 ÷ 3 × 2 = 10				12
Calculating a Percentage of a Quantity	A percentage is just a fraction over 100. Example: $15\% = \frac{15}{100}$ This means that to find a percentage of a quantity we just divide by 100 and multiply by the percentage. Example: Calculate 20% of £400 = £400 ÷ 100 × 20 = £80				
Percentage Increase or Decrease	Calculate percentage then add to or subtract from the original quantity. Example: Joe earns £800 a month. His friend Lola earns 20% more than him. Calculate how much Lola earns a month 20% of £800 = £800 ÷ 100 × 20 = £160 Lola's Monthly Pay = £800 + £160 = £960				
Proportion					
Calculating a Multiple When Given the Value of 1	If we know the value of 1 quantity, we can multiply to find the value of more than 1 Example: A ready meal factory can make an average of 300 ready meals a day. How many ready meals could be made in 10 days?				

	300 × 10 = 3000 could be made in 10 days				
Calculating the Value of 1 When Given the Value of Multiple	If we know the value of multiple quantities, we can divide to find the value of 1 Example: 7 bags of crisps cost £2.80, how much does 1 bag of crisps cost? £2.80 ÷ 7 = £0.40 for one bag of crisps			13	
Rounding	Sometimes we will have to round our answer up after we have divided. Example: Jessie has 26 bags of donations to take to her local charity shop. Her car can only hold 4 bags at a time. How many trips will she have to make? 26 ÷ 4 = 6.5 Since Jessie can't make 6.5 trips to the charity shop, we have to round up to 7. Jessie will have to make 7 trips to the charity shop				

Measurement

Calculating Capacity	Recap: 1000 ml = 1 litre				
Using Scales	Example:				

What weight does the scale show to the nearest 100 g?

The arrow is closer to 500g than 400 g so it shows 500 g to the nearest 100 g

14