Beckfoot

Subject: Maths	Term: September	Year Group: 7

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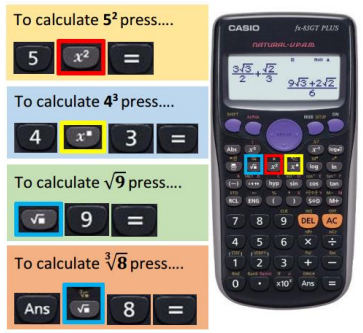
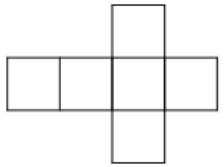
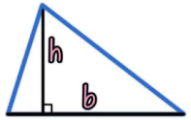
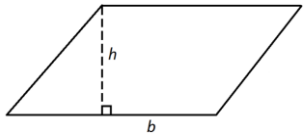
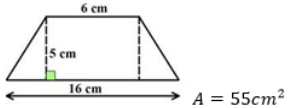
Number – Written Methods

1	BIDMAS • Brackets • Indices • Division • Multiplication • Addition • Subtraction	$3 + (12 \div 3) \times 4$ $= 3 + 4 \times 4$ $= 3 + 16$ $= 19$
2	Ordering negative numbers	When using negative numbers, the further away you get from 0, the smaller the number is. eg. -300 is smaller than -2.
3	Adding and subtracting negatives	+ – and - + is the same as – (eg. 3 + - 5 = -2) - - and + + is the same as + (eg. 6 - - 4 = 10)

Number – Use of Calculator

1	Squaring and Cubing numbers	
2	Square root and Cube root	

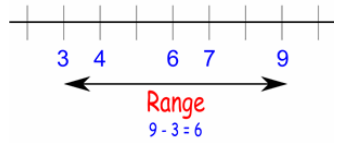
Geometry – Area and Perimeter

1	Area – counting by squares	 = 6
2	Area of a rectangle (length x width)	
3	Area of a Triangle (base x perpendicular height ÷ 2)	
4	Area of a Parallelogram (base x perpendicular height)	
5	Area of a trapezium $\frac{(a+b)}{2} \times h$	 $A = 55cm^2$

Algebra - Sequences

1	Finding the nth Term • Find the difference • Take it away from 1st term	8 12 16 20 24 -4 +4 +4 +4 +4 0th 4 8 12 16 20 24 n^{th} term = steps x n + 0^{th} term n^{th} term = $4n + 4$

Statistics – MMMR

1	Mean Add the numbers up and divide by the amount of numbers there is.	70, 72, 74, 76, 80, 114 $\frac{70+72+74+76+80+114}{6}$ $\frac{486}{6} = 81$
2	Median Arrange them in order and find the middle value.	70, 72, 74, 76, 80, 114 $\text{median} = \frac{74+76}{2} = \frac{150}{2} = 75$
3	Mode Find the number that occurs the most.	5, 13, 9, 7, 1, 9, 2, 9, and 11 Mode = 9
4	Range The largest value take away the smallest value.	

Key Vocabulary

1	Square number	The product of a number being multiplied by itself
2	Cube number	The product of multiplying a number by itself twice
3	Square root	Finding what number has been multiplied by each other to get your number
4	Perimeter	The distance around the outside of a shape
5	Area	The space inside a shape

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Subject: Maths	Term: November	Year Group: 7

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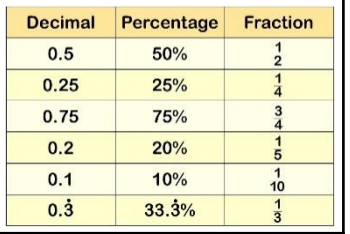
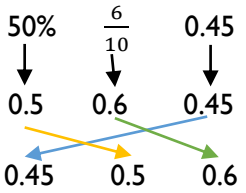
Number – Types of Number

1	Lowest Common Multiple	**LCM by Listing out the Multiples** **Find the LCM of 5 and 6** Multiples of 5: 5, 10, 15, 20, 25, 30, 35, ... Multiples of 6: 6, 12, 18, 24, 30, 36, ... Least Multiple common in both numbers is 30
2	Highest Common Factor	**HCF by Listing out the Factors** **Find the HCF of 24 and 36** Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24 Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36 Highest common factor is 12

Number – Fractions

1	Equivalent Fractions	$\frac{1}{2}$ is the same as $\frac{4}{8}$
2	Adding Fractions • The denominator has to be the same. • Add the numerator.	$\frac{1}{2} + \frac{3}{4}$ we can make the bottom 4 $\frac{2}{4} + \frac{3}{4} = \frac{5}{4}$
3	Subtracting Fractions • The denominator has to be the same. • Subtract the numerator.	$\frac{3}{4} - \frac{1}{3}$ We can make the bottom 12. $\frac{9}{12} - \frac{4}{12} = \frac{5}{12}$
4	Multiplying Fractions • Multiply both top and bottom	$\frac{3}{5} \times \frac{2}{3} = \frac{6}{15}$ $\frac{6}{15}$ is the same as $\frac{2}{5}$
5	Dividing Fractions • KCF • Keep – Change - Flip	$\frac{4}{3} \div \frac{2}{5}$ becomes $\frac{4}{3} \times \frac{5}{2}$ $\frac{4}{3} \times \frac{5}{2} = \frac{20}{6} = \frac{10}{3}$

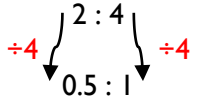
Number – FDP Equivalence

1	Equivalent fractions, decimals and percentages.	
2	Ordering FDP • Convert them all into the same form and then compare	

Algebra - Simplifying and Solving

1	Collecting like terms • Collect all your different letters together	4a + 3b + 2a -2b 4a + 2a = 6a 3b – 2b = 1b Answer: 6a + 1b
2	Simplifying expressions	$2a \times 3a = 6a^2$ $4a \div 2a = 2$
3	Substitution • Replace the letters with the numbers. • Multiply them as 2y is actually 2 times y.	If $x = 2$ and $y = 3$, what is the value of 4x + 2y? 4 x 2 = 8 **and** 3 x 2 = 6 8 + 6 = 14 14

Ratio – Ratio and Proportion

1	Simplifying Ratios • Divide by the HCF of both numbers	
2	Sharing an amount • Add • Divide • And Multiply	Share £30 in the ratio 3 : 7 • 3 + 7 = 10 • £30 ÷ 10 = £3 3 x £3 =£9 **and** 7 x £3=£21
3	Simplify unitary ratio. • Make one side of the ratio 1.	Put 2 : 4 in the form n : 1 

Key Vocabulary

1	Prime Numbers	Numbers that can only divided by themselves and 1.
2	Multiple	Your number multiplied by a whole number.
3	Factor	A number that goes into your number with no remainder.
4	Denominator	Bottom of a fraction
5	Numerator	Top of a fraction
6	Substitute	Swap your letter with a number
7	Share	To divide.

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Subject: Maths	Term: Half term 4 – January	Year Group: 7

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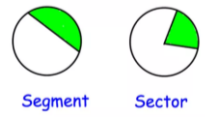
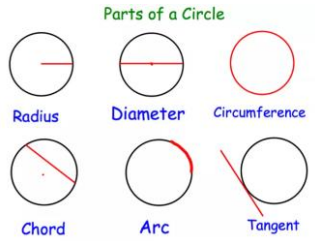
Number – Percentages

1	Find simple percentages of amounts	1% - Divide by 100 10% - Divide by 10 50% - Divide by 2 25% - Divide by 4
2	Use a multiplier to find a percentage	30% = multiply by 0.3 3% = multiply by 0.03
3	Find percentage change	$\frac{Changed\ by}{Original\ amount}\ x\ 100$
4	Use a multiplier to find percentage increase/decrease (calculator)	Increase 30 by 15% 30 x 1.15 = 34.5 Decrease 50 by 10% 50 x 0.9 = 45
5	Calculate compound interest	$A = P(1+i)^n$

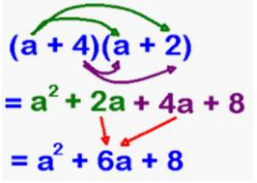
Ratio – Scales

1	Convert between 12 and 24 hour format	12 hour 24 hour 8:15pm = 20:15
2	Find the difference between two times	Calculate the time interval between 11:20 and 15:40 = 4 hours 20 mins
3	Convert units	10mm = 1cm 100cm = 1m 1000m = 1km
4	Convert between imperial/metric units	2.5cm = 1 inch 8km = 5 miles 1kg = 2.2lbs

Geometry – Area and Circumference of a circle

1	Know the parts of a circle	 
2	Area & circumference of a circle	$A = \pi r^2$ $C = \pi d$
3	Area & perimeter of a semicircle	$A = \frac{\pi r^2}{2}$ $P = \frac{\pi d}{2} + d$
4	Area of a sector & arc length	$A = \frac{angle}{360} \times \pi r^2$ Arc length $= \frac{angle}{360} \times \pi d$

Algebra - Equations

1	Substituting numbers into expressions	Find the value of 5c + 2, if c = 6. Answer: 5 x 6 + 2 = 32
2	Solve one and two step equations	Question: 3y + 4 = 22 Answer: 3y = 22 – 4 y = 18 ÷ 3 y = 6
3	Solve equations with unknowns on both sides	5x + 6 = 2x + 12 3x = 6 x = 2
4	Expanding single brackets	3(a + 2) = 3a + 6
5	Expanding double brackets	

Key Vocabulary

1	Multiplier	A number when multiplied finds the percentage of an amount.
2	Expand	When we multiply to remove the brackets.
3	Substitution	Replacing numbers where the letters are.
4	Sector	The area between two radiuses and the connecting arc of a circle. A 'pizza slice'.
5	Arc	A section of the circumference of the circle.

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Subject: Maths	Term: Half term 5 – February	Year Group: 7

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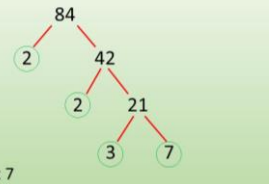
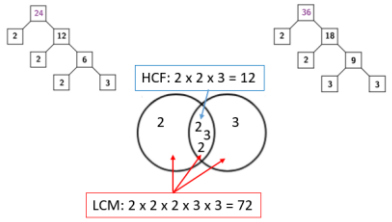
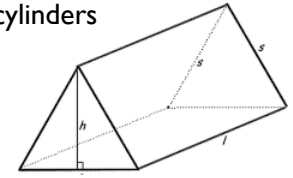
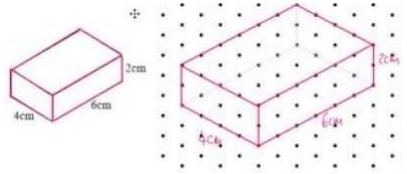
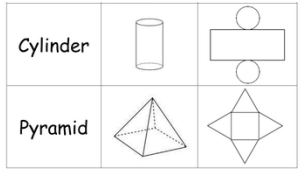
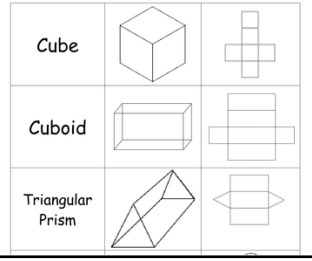
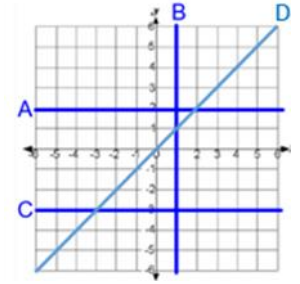
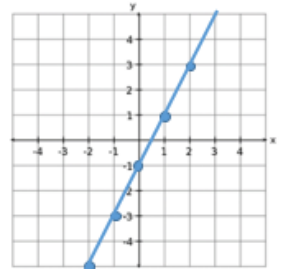
Number – Factors, Multiples & Primes

1	Find the highest common factor (HCF) & lowest common multiple (LCM)	**LCM by Listing out the Multiples** **Find the LCM of 5 and 6** Multiples of 5: 5, 10, 15, 20, 25, 30, 35, ... Multiples of 6: 6, 12, 18, 24, 30, 36, ... Least Multiple common in both numbers is 30 **HCF by Listing out the Factors** **Find the HCF of 24 and 36** Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24 Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36 Highest common factor is 12
2	Express a number as a product of its prime factors	• Example: Write 84 as a product of its prime factors  • 84 = 2 x 2 x 3 x 7 • 84 = 2^2 x 3 x 7
3	Use Venn diagrams to find the HCF and LCM	**HCF and LCM** Find the HCF and LCM of 24 and 36  HCF: 2 x 2 x 3 = 12 LCM: 2 x 2 x 2 x 3 x 3 = 72

Geometry & Surface Area

1	Find the surface area cubes & cuboids	Find the area of each surface and add together. Surface Area = 2lw + 2lh + 2wh
2	Find the surface area of triangular prisms & cylinders 	$Cylinder = 2\pi rh + 2\pi r^2$ $Triangular\ prism = bh + 2ls + lb$
3	Draw 3D shapes on isometric shapes	
4	Draw nets of 3D shapes 	

Algebra – Coordinates, Straight line graphs

1	Draw lines in the form y=3, x=2, y = x A: y = 2 B: x = 1 C: y = -3 D: y = x	
2	Plot simple linear graphs from a table of results, in the form y = mx + c	Draw the graph of y = 2x - 1 X: -2, -1, 0, 1, 2 Y: -5, -3, -1, 1, 3 
3	Find the gradient of a straight line	$\frac{Change\ in\ y}{Change\ in\ x}$
4	Identify the equation of a straight line graph	y = mx + c m is gradient and c is y intercept

Number - Decimals

1	Round to a given number of decimal places	Round 5.68 to 1dp = 5.7
2	Round to any significant figure	Round 346 to 1sf = 300
3	Estimate answers to calculations involving decimals	$\frac{7.19 \times 19.7}{0.46} = \frac{7 \times 20}{0.5}$ $= 280$

Key Vocabulary

1	Linear graph	A straight line graph.
2	Surface area	The area of each surface of a 3D shape added together.
3	Gradient	The slope of a line. The higher the gradient the steeper the line.

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Subject: Maths	Term: Half term 6 – April	Year Group: 7

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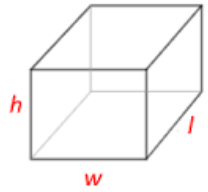
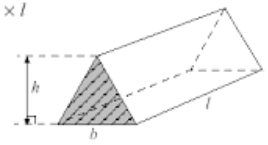
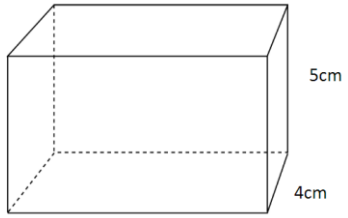
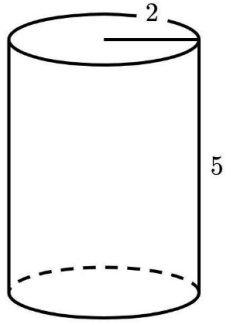
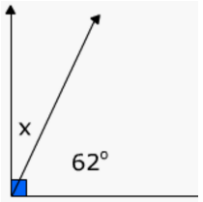
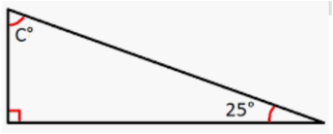
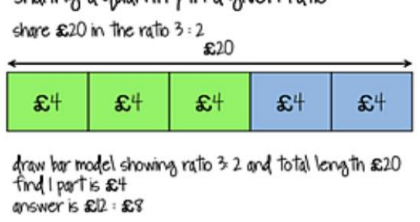
Geometry - Volume

1	Volume of cubes, cuboids V = length x width x height	
2	Volume of simple prisms Triangular prism = ½ x base x height x length	$= \frac{1}{2} \times b \times h \times l$ 
3	Find missing lengths given volume $Length = \frac{160}{5 \times 4}$ $= 8cm$	
4	Volume of cylinders & composite shapes $V = \pi r^2 h$ $V = \pi \times 2^2 \times 5$ $V = 62.83\ cm^3$	

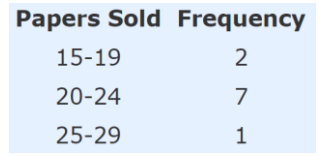
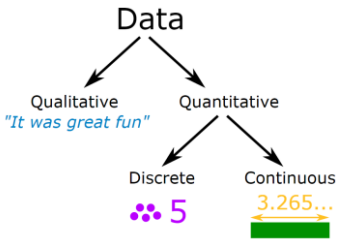
Geometry - Angles

1	Angles on a line, in a triangle, around a point	Angles on a straight line = 180° Angles in a triangle = 180° Angles around a point = 360°
2	Find missing angles x = 90 – 62 x = 28°	
3	Angles in a triangle and in a quadrilateral	Angles in a triangle = 180° Angles in a quadrilateral = 360°
4	Missing angles in a triangle and in a quadrilateral C = 180 – 90 – 25 = 65°	
5	Angles in parallel lines & intersecting lines	Alternate angles are equal. Corresponding angles are equal. Co-interior angles = 180° Vertically opposite angles are equal.

Ratio

1	Find missing parts in a ratio using bar modelling	

Statistics – Graphs & Charts

1	Bar charts	Bars must be the same width. Always leave equal gaps between bars.
2	Grouped frequency tables	
3	Understand different types of data	

Key Vocabulary

1	Quadrilateral	A four sided shape.
2	Parallel	Two lines that are always the same distance apart and never touch.
3	Perpendicular	A line meeting another at a right angle, or 90°.
4	Volume	The space enclosed by a 3D shape.
5	Frequency	The number of times something occurs.
6	Composite shapes	A shape that consists of multiple different shapes.