Integers

(NMM)

Heading	Description	Completed	I Can Do this © 😐 😕
Sets of numbers	$\mathbb{N} = \text{natural numbers } \{1, 2, 3, 4, \dots, \infty\}$ $\mathbb{W} = \text{whole numbers: } \{0, 1, 2, 3, 4, \dots, \infty\}$ $\mathbb{Z} = \text{integers:} \{-\infty, \dots -4, -3, -2, -, 1, 0, 1, 2, 3, 4, \dots, \infty\}$ $\mathbb{Q} = \text{rational numbers or quotients.}$ These are all numbers which can be expressed as a fraction, $\frac{a}{b}$ where both a and b are integers, and b is not zero.		
Adding & Subtracting integers	(-5) + (-7) = -12 8 - 7 + (-2) = -1 6 - (-8) = 14 -9 - (-5) = -4		
Multiplying & Dividing integers	$(-5) \times (-7) = 35$ $6 \times (-8) = -48$ $18 \div (-6) = -3$ $-9 \div (-3) = 3$		
BODMAS with integers	$15 - 3 \times (-2) = 15 - (-6)$ = 15 + 6 = 21		
Squares & Square roots	$4^2 = 4 \times 4 = 16$ $12^2 = 12 \times 12 = 144$ $\sqrt{81} = 9$ $\sqrt{25} = 5$ $\sqrt{23} = 4.7958 (4 \text{ dp})$		
Powers	4^{3} = 4 x 4 x 4 = 64 2^{5} = 2 x 2 x 2 x 2 x 2 x 2 = 32		
Prime numbers & Prime factors	2, 3, 5, 7, 11, 13 Prime factors of $45 = 3 \times 3 \times 5$ $= 3^2 \times 5$		
Scientific Notation	$a \ge 10^n$ $1 \le a < 10$, $n \in \mathbb{Z}$ 5 x 10 ⁶ = 5000000 7.2 x 10 ⁻⁴ = 0.00072		



Decimals and significant figures

Heading	Description	Completed	I Can Do this ☺ ≌ ⊗
Rounding	1.45 is 1.5 (to 1 d.p.) 27.92693 is 27.927 (to 3 d.p.)		
Significant figures	25202 is written 30000 to 1 sig. fig. 25000 to 2 sig. fig. 25200 to 3 sig. fig.		
Addition and subtraction	1.27 175.00 + <u>3.90</u> - <u>28.32</u> 5.17 146.68		
Multiplying and dividing decimals	1.74 8.57 × <u>3</u> 59.99 ÷7 = 7)59. ³ 9 ⁴ 9		



S2 C (Harder)

(NMM)

Heading	Description	Completed	I Can Do this © 🕮 🖄
Number machines	$3 \rightarrow)x 12 \rightarrow 36$		
	To evaluate a formula, substitute numbers for letters calculate the value.		
Evaluating formulae	$P = 4l$ when $l = 8$, $P = 4 \times 8$ $= 22$		
	= 52 $C = 8h + 25$		
Finding missing variables	when C = 65, $65 = 8h + 25$ -25 - 25 40 = 8h $\div 8 \div 8$ 5 = h so $h = 5$		



The Circle

S2 C (Harder)

(SPM)

Heading	Description	Completed	I Can Do this © 😐 🖄
Circumference	$i = \frac{1}{2}$		
Area	Area = πr^2		
	Find the area of a circle of radius 4cm,		
	Give your answer correct to 2 dp. $\Delta - \pi r^2$		
	$A = \pi \times 4 \times 4$		
	A=16× π		
	A=50.265482457436691815402294132472		
	$A = 50.27 \text{ cm}^2 \text{ (2dp)}$		
Lengths of arcs	length of $arc = \frac{angle \ at \ centre}{360 \circ} \times \pi d$		
Areas of	area of sector = $\frac{angle \ at \ centre}{x \ \pi r^2}$		
sectors	360 •		



Fractions and percentages

Heading	Description	Completed	I Can Do this © 😐 😕
Changing percentages to fractions and decimals	$83\% = \frac{83}{100} = 0.83 \qquad 85\% = \frac{85}{100} = \frac{17}{20}$		
Percentages of quantities	<i>use</i> $1\% = \frac{1}{100}$ $10\% = \frac{1}{10}$ <i>e.g.</i> Find 7% of £60 $1\% \text{ of } \pounds 60 = \frac{1}{100} \times 60 = 0.6$ <i>so</i> 7% of £60 = $0.6 \times 7 = \pounds 4.20$		
Percentage increase And decrease	John bought a CD for £12 and sold it for £15. What was his profit as a percentage of the price he paid for it? Percentage Profit = $\frac{\text{Selling Price - Original price}}{\text{Original price}} \times 100\%$ = $\frac{15 \cdot 12}{12} \times 100\%$ = $\frac{3}{12} \times 100\%$ = $\frac{1}{4} \times 100\%$ = 25% increase		
Compound Interest	Calculate the compound interest earned on £500 for 3 years at 6% per annum.Capital startInterest earned end of year $\pounds500$ year 1 $6\% \times 500$ $\pounds30$ $\pounds30$ £530year 2 $6\% \times 530$ $\pounds31.80$ £561.80year 3 $6\% \times 561.80$ $\pounds33.71$ Total interest <i>Interest</i> earned = £95.51		



I think that I need to ...

(NMM)

Angles

(SPM)

Heading	Description	Completed	I Can Do this © © ®
Related Angles	Complementary angles add up to 90° Supplementary angles add up to 180° Angles in a triangle add up to 180° Vertically opposite angles Corresponding angles Alternate angles		
Angles in a polygon	Interior angles are inside the polygon. Exterior angles are outside the polygon.		
Scale Drawings	1 : 25 000 means 1 unit represents 25 000 units e.g using this scale 30 cm represents 30 x 25 000 = 750000 cm = 7500 m = 7.5 km		
Angles of elevation and Depression	angle of elevation angle of depression		
Bearings	 Bearings are always Measured from north Measured clockwise Given as 3 digit figures 		



Pythagoras' Theorem

(SPM)

Heading	Description	Completed	I Can Do this © 😄 🛞
Finding the hypotenuse	$(Hypotenuse)^{2} = (Shortest side)^{2} + (Other side)^{2}$ $c^{2} = 6^{2} + 8^{2}$ $c^{2} = 36 + 64$ $c^{2} = 100$ $c = \sqrt{100}$ $c = 10$		
Finding a shorter side	(Hypotenuse) ² = (Shortest side) ² + (Other side) ² $5^{2} = 3^{2} + b^{2}$ $25 = 9 + b^{2}$ $25 - 9 = b^{2}$ $16 = b^{2}$ $b = \sqrt{16}$ $b = 4$ $b = 4cm$		
Converse of Pythagoras	If $(Hypotenuse)^2 = (Shortest side)^2 + (Other side)^2$ Then the triangle is right angled.		



<u>Area</u>

(NMM)

Heading	Description	Completed	I Can Do this © 😐 🖄
Area of a triangle	Area = ½ x base x vertical height A=½bh		
Area of a rhombus	Area = $\frac{1}{2}$ x diagonal ₁ x diagonal ₂ A= $\frac{1}{2}$ d ₁ d ₂		
Area of a kite	Area = $\frac{1}{2}$ x diagonal ₁ x diagonal ₂ A= $\frac{1}{2}$ d ₁ d ₂		
Area of a parallelogram	Area = base x vertical height A=bh		
Area of a trapezium	Area = breadth x average length $A = \frac{b(L+l)}{2}$		
Compound shapes	To find the area of a compound shape, split it into regular shapes and add each individual area.		



Probability

(IH)

Heading	Description	Completed	I Can Do this © @ 8
	$P(Event) = \frac{\text{number of favourable outcomes}}{\text{total number of outcomes}}$		
	A bag contains 5 blue, 6 green and 4 red counters. What is the probability that a counter picked at random will be green ?		
	$P(Green) = \frac{6}{15}$ $= \frac{2}{5}$		
	A bag contains 5 blue, 6 green and 4 red counters. What is the probability that a counter picked at random will be green or red ?		
	$P(Green \text{ or } \text{Red}) = P(Green) + P(\text{Red})$ $= \frac{6}{15} + \frac{4}{15}$ $= \frac{10}{15}$ $= \frac{2}{3}$		



Enlarging & Reducing

(SPM)

Heading	Description	Completed	I Can Do this ☺ ≌ ⊗
Enlargement and reduction	A has been enlarged by a scale factor of 3 to get B		
Similar Shapes	Two objects are similar if they have the same shape, so that one is an enlargement of the other. $15 \text{ mm} \text{ A} \\ 30 \text{ mm} \text{ 10} \text{ mm} \text{ B} \\ 20 \text{ mm} \text{ 20 mm} \text{ mm} $ $\frac{\text{Length of A}}{\text{Length of B}} = \frac{30 \text{ mm}}{20 \text{ mm}} = \frac{3}{2} \text{ or } 1.5$ $\frac{\text{Breadth of A}}{\text{Breadth of B}} = \frac{15 \text{ mm}}{10 \text{ mm}} = \frac{3}{2} \text{ or } 1.5$		
Dimensions of similar shapes	20 5 x 12 scale factor = $\frac{5}{20} = \frac{5}{20} \frac{1}{4}$ x = scale factor × corresponding side $x = \frac{1}{4} \times 12$ x=3		



Straight Line Graphs

(NMM)

Heading	Description	Completed	I Can Do this © 😐 😕
Lines on co-ordinate diagrams	y = 2x + 4 $x 0 1 2$ $y 4 6 8$ $y = 2x + 4$		
Parallel lines	y=x+1 y=x+3 y=x+4 y=x+4 y=x-4y		
The y intercept	y=x+3 y=x+1		

C--

Time, distance & speed

S2 C (Harder)

Heading	Description	Completed	l Can Do this ⓒ 쓸 왕
Converting units of	e.g. 70 seconds = 1 minute 10 seconds 2 .8 hours = 2hours 0.8 x 60 mins = 2 hours 48 mins		
Distance, Speed and Time	$D = ST \qquad S = \frac{D}{T} \qquad T = \frac{D}{S}$		
Converting units of speed	e.g. 70 km/ hour = 70 x 1000 m/hour = 72000 ÷ 60 m/min =1200 m/min =1200 ÷ 60 m/second =20 m/s		
Distance – Time graphs & mileage charts	Kayak Trip		



Information Handling

(IH)

Heading	Description	Completed	I Can Do this © 😐 🛞
Types of data	Categorical - colours, car makes etc. Numerical - No. of books read etc. Continuous - unrestricted e.g. heights, weights Discrete - restricted e.g. shoe size		
Organising data	CODI – Collect, Organise, Display, Interpret		
Stem & Leaf diagrams	Reading and drawing stem & leaf diagrams. A stem and leaf diagram must have 1. A Title 2. A Key 3. The number of items of data (n)		
Grouping data	Reading, drawing And interpreting frequency tables		
Scatter diagrams	Reading, drawing And interpreting scatter diagrams.		
Measures of central tendency	$Mean = \frac{Sum \text{ of all of the data}}{\text{total number of bits of data}}$ $Mode = \text{The most occuring number.}$ $MEDIAN = \text{The middle number of}$ an ordered list.		



Algebra

(NMM)

Heading	Description	Completed	I Can Do this ☺ ≌ ⊗
Simplifying Expressions	To simplify an expression, collect like terms. x + x + 6 121p - p - 96p = 2x + 6 $= 24p$		
	2x+3=9 12 - p = 3e.g. 2x = 6 12 = 3 + p		
Solving Equations	$10p - 1 = p + 17$ $^{+1} + 1$ $10p = p + 18$ $^{-p} - p$ $9p = 18$		
	p = 2 $3(y + 4) -7(3 - 2m) + 6 - m$ $= 3y + 12 = -21 + 14m + 6 - m$		
Distributive law & Algebraic fractions	= 13m - 15 $2(x+3) - 1 = 7$ $2x + 6 - 1 = 7$ $2x + 5 = 7$ $2x = 2$ $x = 1$ $y = 4y - 36$ $36 = 3y$		
	12 = y $y = 12$		
Factorising	8y + 16 70s + 35t = 8(y + 2) = 7(10s + 5t)		
Inequations	3(x+2) > 9 3x+6 > 9 3x > 3 x > 1		



Proportion

(NMM)

Heading	Description	Completed	I Can Do this © © ⊗
Direct Proportion	4 books cost £ 1.28. How much do 7 books cost ? $books \rightarrow \pounds$ 4 $\rightarrow 1.28$ 1 $\rightarrow \frac{1.28}{4} = 0.32$ 7 $\rightarrow 0.32 \times 7$ So 7 books cost £2.24		
Inverse Proportion	If it takes 4 days for 10 men to dig a trench, how long will it take 8 men ? $men \rightarrow days$ $10 \rightarrow 4$ $1 \rightarrow 10 \times 4 = 40$ $8 \rightarrow \frac{40}{8} = 5$ It takes 5 days for 8 men to dig the trench. Note: 8 men take longer than 10 men.		

