


ONE-WEEK HOLIDAY CHALLENGE (HIGHER)

HOW MANY CAN YOU DO? ... HOW MANY WILL YOU DO?

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
Find the Highest Common FACTOR of 30 and 42.	Point A has coordinates (-3,8) Point B has coordinates (7,5) Find the MIDPOINT of the line AB	Work out $(2 + \sqrt{3})(2 - \sqrt{3})$	$f(x) = 5x + 2$ and $g(x) = x^3$	Simplify $16\pi - \pi$	FACTORISE fully $15x^2y + 5x^2y - 20xy^4$	Line A has equation $2y = 3x + 8$. Line B goes through the points (-1, 2) and (2, 8).
Calculate the discriminant of $y = x^2 + 4x + 9$	Write as a power of 2 $\frac{32 \times 8}{16^3}$	Find the Lowest Common Multiple of 30 and 45	Find an expression for $gf(x)$	Simplify: $\sqrt[3]{64} \times 2^{-4} \times 4^9$	$a : b = 4 : 5$ and $b : c = 7 : 11$ Find the ratio a:c	Do lines A and B intersect?
True or False A 25% reduction followed by a 25% increase means that no change to the original has taken place.		A is the point (2, -5) B is the point (4, -9) What is the equation of the line AB?	Simplify $\frac{2x^2 - 7x + 3}{x^2 - 9}$			EVALUATE: $\sqrt{33} \times \sqrt{132}$
MAKE "q" THE SUBJECT $5(q + p) = 4 + 8p$	L is directly proportional to M^3 . When $M = 2$, $L = 160$ Find the value of L when $M = 3$	Calculate $(4.1 \times 10^3) \times (2 \times 10^{-5})$	There are three £1 coins and seven 50 pence coins. Fiza takes at random, 3 coins from the bag. Work out the probability that she takes exactly £2.50 .	EVALUATE: $\sqrt{33} \times \sqrt{132}$	Solve the equation $x^2 + 2x - 5 = 0$	Prove algebraically that the DIFFERENCE between the squares of any two consecutive integers is equal to the sum of these two integers.
Find an expression, in terms of n, for the nth term of the sequence: 7 18 33 52	It takes 4 builders, 3 hours to move 5 tonnes of bricks. How long would it take 6 builders to move 10 tonnes of bricks?	SOLVE $3x + 1 < x + 12$	Solve $y = x^2 - 2x$ $y = x + 4$	The total cost of 3 pens and 4 pencils is £1.84 The total cost of 5 pens and 2 pencils is £1.76 Work out the cost of one pen and the cost of one pencil.		Simplify $3a^2h \times 2a^{-2} \times 4a^5h^4$
FACTORISE AND SOLVE $x^2 + x - 12 = 0$	Solve $(x-1)^2 - 2(x-1) - 3 = 0$	Find the equation of the line that is perpendicular to $y = 2x + 4$ and passes through (3,7)	Write down the number of ROOTS of $y = x^2 + 2x - 3$	How many different 5-digit whole numbers can be made using the digits 2, 3, 4, 5, and 6 when each digit can be used once only?	WITHOUT a calculator: 5.4×0.24	Find the length of the rectangle. 
Solve $x + y = 3$ $3x - y = 17$	EVALUATE $64\frac{1}{2}$	WORK OUT: $3\frac{1}{5} - 1\frac{2}{7}$	Write $x^2 - 6x + 19$ in the form $(x + a)2 + b$,	Find the length of the line that joins (12, 8) and (-3, 4)	When a number is reduced by 35% the answer is 624 What is the number?	
What is the diameter of the circle with equation $x^2 + y^2 = 25$	Explain why the cube of a prime number has exactly four factors.	Solve $x^2 - 4 < 0$.	Give an equation of a line that would be perpendicular to $y = 2x - 1$	The mode and median of the shoe sizes of four students are both 11. The range of their shoe sizes is 4. One of the students has size 13 shoes. What is the shoe size of each student?	Find the surface area of a cube with a volume of 512 cm^3	Find the HCF & LCM of 30, 42 and 54

I have tried to ensure the answers are correct
 BUT ... you know how it is (and I'm ALWAYS in a
 rush!)!! If you find any mistakes email me:
 mel@justmaths.co.uk

ANSWERS

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
6	(2, 6.5)	£1	$gf(x) = (5x+2)^3$	15π	20xy(x-y ³)	yes at x = 0
-20	02-Apr	90		4^8	28:55	
FALSE		$y = -2x - 1$	$\frac{2x-1}{x+3}$	66		Proof given
$q = \frac{4+8p}{5} - p$	M = 540	8.2×10^{-2}	$\frac{126}{720}$ or $\frac{7}{40}$		pen 24p, pencil 28p	
$2n^2 + 5n$	4 hours	$x < 11/2$	$x = 4$ or $x = -1$	$24a^5h^5$		
$x = -4$ $x = 3$		$x = 4$ or $x = 0$	$y = -\frac{1}{2}x + 8.5$	-3 and 1	120	1.296
$x = 5$ $y = -2$	$3\sqrt{5}$			√241	960	
5	8 (or - 8)	$1\frac{32}{35}$	$(x-3)^2 + 10$	9	384	6
	Call prime x, x ³ has prime factors x only. Factors are 1, x, x ² , x ³	$y = 2$	$y = -\frac{1}{2}x + c$			