Mathex 2017 **Year 10**

10/1 **Put a circle round the correct answer:**

Which of the following is **not** equal to (x+1)(x+2)?

A) $x(x + 3) + 2$ B) $x(x+2) + x+2$ C) $x(x+4) - x + 2$ D) $x(x - 4) - x - 2$

10/2 I open the Mathex book and see two page numbers. If I multiply these numbers I get 812. What is the value of the smaller page number?

10/3 What is the difference between 7^7 and 8^8 to the nearest million?

10/4 I needed to order 2000 pens for this year's Mathex Competition. I asked for 10% to be blue and 20% to be green and the rest to be red. They came in a big box mixed up. What is the probability of picking one pen without looking and getting a red pen?

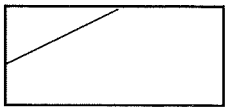
10/5 The Fibonacci sequence begins 1, 1, 2, 3, 5, 8, ...

What is the fourth even number?

10/6 In a certain year, there were exactly four Tuesdays and exactly four Fridays in October. On what day of the week did Halloween, October 31st, fall that year?

10/7 2017 is a prime year. When was the closest **previous** prime year?

10/8 Louise cut herself a triangular portion of a rectangular cake which is 6cm by 8cm through the midpoints of two sides. What fraction of the cake did Louise cut off and eat?



10/9 The four interior angles of a quadrilateral are x, 2x, 3x and 4x. What is the value of the smallest angle?

10/10 When Tino was 11 he could run 10 kilometres in 50 minutes, now he is 61, he can jog 10 kilometres in 2 hours. How much longer does it take him to go one kilometre now than when he was 11?

10/11

What is the value of x?

				Total
	x	y	y	11
	z	x	y	12
	x	z	z	13
Total	11	12	13	

10/12 In 2017, Bob noticed that the sum of the digits of the year he was born was the same as his age. How old is Bob?

10/13 A basket has some kittens in it.
How many kittens are in the basket if it contains 33 more legs than tails?

10/14 Eight hundred and thirty seven subtract a three digit number equals some hundred and some tens, and five. This subtraction uses all the digits from 1-9 only once. Find the unknown 3-digit answer.

10/15 Which two numbers need to be swapped
To make this array into a magic square?

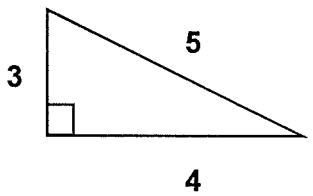
9	**6**	**3**	**16**
4	**13**	**10**	**5**
14	**1**	**8**	**11**
7	**12**	**15**	**2**

10/16 A square has vertices on (2,0), (0,2), (2,4) and (4,2). Find the area of this square.

10/17 Ethan has 10 small cubes with side length of 1cm. He decides to use them to investigate the difference between the cuboid with the greatest surface area and the cuboid with the smallest surface area that he could make, using all 10 small cubes. Calculate that difference

10/18 A teacher has some chocolate bars. On Monday she gave half of them away, and then she ate one. On Tuesday she gave half away, and then she ate one. On Wednesday, she gave half away, and then she ate one.
If she had one chocolate bar left on Thursday, how many did she start with on Monday?

10/19 **3, 4, 5** is a Pythagorean Triple.



So is 5, 12, 13. The length 13 is also in another triple, but not as the hypotenuse. Find the two other sides.

10/20 Fred is paving part of his garden with square paving stones. After he finishes he decided he wants it to be bigger, so he takes up all the pavers, buys 100 more, and makes another square. All the pavers are the same size – how many pavers did he use altogether?

MATHEX QUIZ ANSWERS Year 10 – 2017

No units required

Number	Answer	Comment/ and not needed
1	D) or x(x-4)-x-2	either
2	28	
3	16	million
4	0.7 or $\frac{7}{10}$	Accept equivalents
5	144	
6	Monday	
7	2011	
8	0.125 or $\frac{1}{8}$	Accept equivalents
9	36^0	Degrees symbol not required
10	7	minutes
11	3	X=3
12	23	
13	11 or 11 kittens	either
14	145	
15	13, 15	Both any order
16	8	Cm squared
17	8	
18	22	Chocolate bars
19	84 and 85	both
20	676	