Name:	School:
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TONBRIDGE SCHOOL

Test for Entrance into Year 9: Specimen B

MATHEMATICS

Time allowed: 1 hour

Total Marks: 100

THIS IS A **NON-CALCULATOR PAPER**

Instructions:

- 1. Complete Name and School at the top of the cover page.
- 2. All questions should be attempted and answers given in the space provided.
- 3. A completely correct answer may receive no marks unless all workings are shown.

1.	(a)	Write 45% as a fraction	in lowest	terms.	
	(b)	Write $\frac{5}{8}$ as a decimal.	Answer:		(2)
	(c)	Calculate 30% of \$12.50			(2)
	(d)	Calculate $\frac{7}{15}$ of 4.5 metre		\$	(2)
			Answer:		(2)

(a)	estimate the answer to
	11.4 x 194 93.1
(b)	Answer:
	Answer:
(c)	Write 300 as a product of prime factors, using indices .
	Answer: (3)
(d)	What is the smallest integer by which 300 has to be multiplied by to produce a perfect square?
	Answer: (2)

3.	(a)	It takes 2 hour 27 minutes to travel from York to London by train. Christopher catches the 11.35 a.m. train from York.
		At what time should Christopher arrive in London?
		Angwer:
		Answer:p.m. (2)
	(b)	A race horse averages 2 miles every 5 minutes. How long will it take the horse to run 26 miles at this rate ?
		Answer: h min (2)
	(c)	How far does a car travel in 35 minutes at 30km/h?
		Answer: km (2)
		Aliswei Kiii (2)
	(d)	Write 40km/h as a speed in metres per second.
		Answer: m/s (2)

4.	Calcula	te		
	(a)	the sum of 73.5 and 9.74		
			Answer:	 (1)
	(b)	the difference between 84 a	and 7.7	
			Answer:	 (1)
	(c)	the product of 4.3 and 7		
			Answer:	 (1)
	(d)	24 ÷ 0.4		

Answer: (2)

5.	(a)	Fully simplify the following:		
		(i) $2m + 3m$		
			Answer:	(1)
		(ii) $3y^3 \times 3y^3$		
			Answer:	(2)
		(iii) $\frac{9y^6}{3y^2}$		
			Answer:	(2)
	(b)	Multiply out the brackets and fu	ılly simplify	
		2(3p+4q)-	6(p-2q)	
			Answer:	(3)
	(c)	Factorise completely		
		$9a^2 + 27a$		
			A	(2)

6. (a) Solve the following:

(i)
$$5a - 3 = 21 - a$$

(ii)
$$\frac{1}{3}(b+1) = 10$$

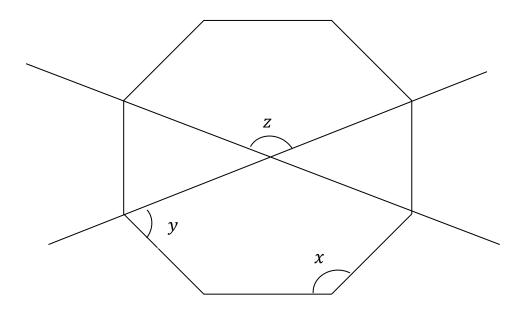
(iii)
$$5c^2 = 45$$

(iv)
$$\frac{1}{2}(6d+2)-4=10$$

(v)
$$\frac{10}{e} = 20$$

	(b)	201	ve these inequalities:		
		(i)	n + 2n > 9		
		(ii)	$2(n-3) \le 6$	Answer:	(2)
7			ets are to be divided betweer any sweets do each of the tw	Answer:	(2)
				ers:	
				Answer:	(3)

8. Below is a picture of a regular octagon.



Calculate the size of the angles x, y and z

Answers:
$$x =(2)$$

$$y =$$
 (2)

$$z =$$
 (2)

9.	Given that	$a = \frac{2}{5}$ and	$b = \frac{3}{4}$ and	$c=\frac{1}{3}$, find	d the value of
	(a)	a + b			

Answer: (1) (c) $\frac{b}{c}$

Answer: (2)

(d) abc

Answer: (2)

10.	In the desert, every soldier drinks $\frac{3}{5}$ of a litre of water each day.						
	An a	army patrol drinks 18 litres in a day					
	How	many soldiers are there in the patrol?					
		Answer: (2)					
11.	A fair, six-sided dice has faces numbered 1, 2, 3, 4, 5 and 6. When the dice is thrown, the number facing up is the score.						
	The dice is thrown once.						
	(a)	What is the probability that the score is 1 or 2					
		Answer: (1)					
	(b)	If the dice was thrown 300 times, how many times would a score of 5 be expected?					
		Answer: (1)					
		1 HID W C1 (1)					

12. **By first drawing a set of axes**, draw the line defined by the equation

$$y = 2x + 5$$

showing the coordinates where the line intercepts the axes.

13. The following graph is to be drawn

$$y = 2x^2 - 3x$$

a) Complete the table

x	-2	-1	0	1	2	3	
x ²							
$2x^2$							
3 <i>x</i>							(2)
у		5				9	

b) **By first drawing a set of axes**, then plotting appropriate points based on the information in the above table, draw the graph for the values $-2 \le x \le 3$

14.	The wage bill for five builders and six carpenters is £1,340, while the bill for eight builders and three carpenters is £1,220. What wage is paid to each builder?
	Answer: (4)

15.	A sec	A sequence begins:							
	5 8	11 14							
	(a)	Write down a formula for the <i>n</i> th term							
		Answer: (2)							
	(b)	Calculate the 25 th term							
		Answer: (1)							
	(c)	Find the value of n when the n th term equals 146							
		Answer: (2)							
	(d)	Determine the value of the first term which is greater than 1000							
		Answer:							
		Answer' (2							

16.	A <i>unit fraction</i> is one like $\frac{1}{4}$ with numerator 1.	
	(a)	Write 1 as the sum of three different unit fractions
		Answer: (2)
	(b)	By multiplying your answer to (a) by a suitable unit fraction, write $\frac{1}{6}$ as the sum of three different unit fractions
		Answer: (2)
	(c)	Use your answers to (a) and (b) to write 1 as the sum of five different unit fractions
		Answer: (3)