11+ Entrance and Scholarship Examination 2019

MATHEMATICS

Time allowed: **45 minutes**

Name: ……………………………………………..

Instructions:

The test is 45 minutes long.

You may not use a calculator.

Section A contains 20 multiple choice questions.

Answer each question by drawing a circle around the correct answer like this:

A	B	C	D
	(B)		

Use the space on the paper for working out.

Section B contains 3 problem-solving questions.

Attempt all questions, and use the space on the paper to clearly show your working out.

SECTION A: MULTIPLE CHOICE QUESTIONS

This section contains 20 questions.

1.				
	What is the difference between the largest and the smallest of the following numbers: 0.9 0.17 0.72 0.73			
	A. 0.9	**B. 0.17**	**C. 0.72**	**D. 0.73**
	Working out:			

2.				
	What is the smallest four-digit positive integer which has four different digits?			
	A. 1032	**B. 1021**	**C. 1234**	**D. 1023**
	Working out:			

3.				
	What is $(999 - 99 + 9) \div 9$?			
	A. 99	**B. 100**	**C. 101**	**D. 109**
	Working out:			

4.

Each block shown in this tower will have a number displayed on it. Some are already done.

For each block above the bottom row, the number on it is the sum of the numbers on the two blocks it stands upon.

What number should replace n?
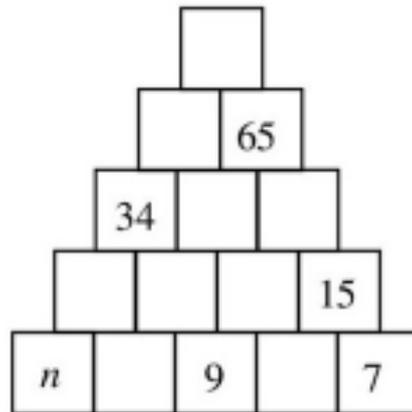
A. 6	B. 10	C. 11	D. 13

Working out:

5.

The number 987 654 321 is multiplied by 9.

How many times does the digit 8 occur in the result?

A. 1	B. 2	C. 3	D. 9

Working out:

6.				
	Which of the following has the same remainder when it is divided by 2 as when it is divided by 3?			
	A. 5	**B. 7**	**C. 9**	**D. 11**
	Working out:			

7.				
	What is the value of 19 + 99 + 19 × 99?			
	A. 1999	**B. 11 701**	**C. 13 563**	**D. None of these**
	Working out:			

8.

In this diagram, what is the value of x?
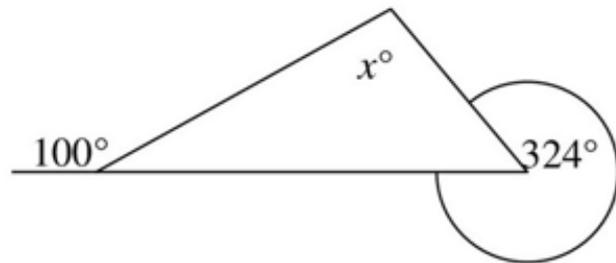
A. 36	B. 64	C. 100	D. 144

Working out:

9.

How many triangles of any size are there in this diagram?
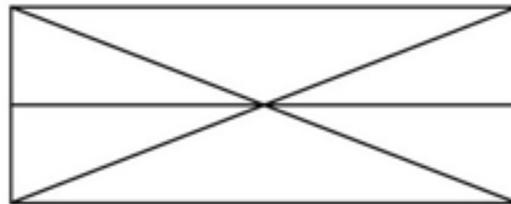
A. 8	B. 10	C. 12	D. 14

Working out:

10.	Which of these calculations produces a multiple of 5?	
	A. 1 + 2 × 3 + 4	**B. 1 × 2 + 3 × 4**
	C. 1 + 2 × 3 × 4	**D. 1 × 2 × 3 × 4**

Working out:

11.	It was reported recently that in an average lifetime of 70 years, each human is likely to swallow about 8 spiders while sleeping. Supposing that the population of the UK is around 60 million, what is the best estimate of the number of spiders that are consumed in this way in the UK each year?			
	A. 600 000	**B. 7 000 000**	**C. 80 000 000**	**D. 900 000 000**

Working out:

12.

Which of the following is divisible by all of the numbers from 1 to 10 inclusive?

| A. 34 × 45 | B. 45 × 56 | C. 56 × 27 | D. 67 × 78 |

Working out:

13.

Which one of these calculations is **incorrect**?

| A. 4 × 5 + 67 = 45 + 6 × 7 | B. 3 × 7 + 48 = 37 + 4 × 8 |
| C. 2 × 5 + 69 = 25 + 6 × 9 | D. 9 × 6 + 73 = 96 + 7 × 3 |

Working out:

14.	If the following fractions are arranged in increasing order of size, which one is in the smallest?

	A. $\frac{1}{2}$	B. $\frac{3}{5}$	C. $\frac{4}{7}$	D. $\frac{5}{9}$

Working out:

15.	In the sequence which begins 2, 3, 5, 10, … each number after the second is the sum of all the previous numbers in the sequence. What is the 10th number in the sequence?

	A. 47	B. 170	C. 640	D. 1280

Working out:

| 16. | Which of the following calculations is correct for the **area** of the shape? | |

5m

10m

6m

9m
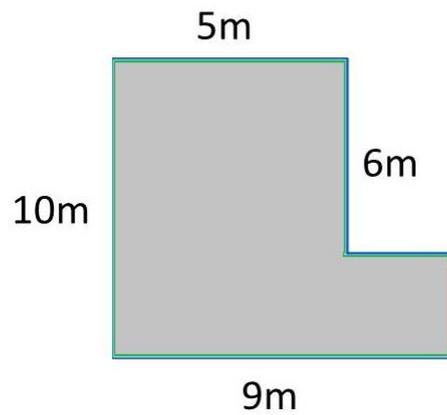
A. 10 × 6 + 5 × 4	B. 10 × 5 + 9 × 6
C. 9 × 10 − 6 × 4	D. They are all correct

Working out:

| 17. | When x = 1.5 what is the value of the **perimeter** of this triangular area? | |

3x + 1

2x − 2

4x
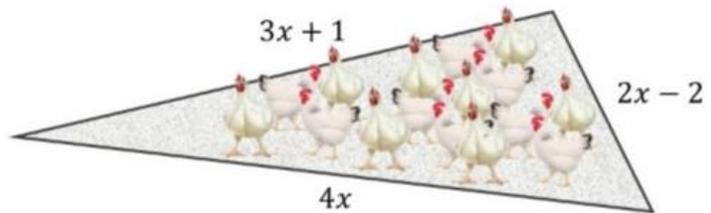
A. 12	B. 12.5	C. 13	D. 13.5

Working out:

18.

Kieran thinks of a number.

He doubles it and adds 6.

He then divides it by 2.

The answer is 8.

What was his original number?

| A. 5 | B. 11 | C. 20 | D. -2 |

Working out:

19.

Which image completes the symmetric figure using the dashed line of symmetry?
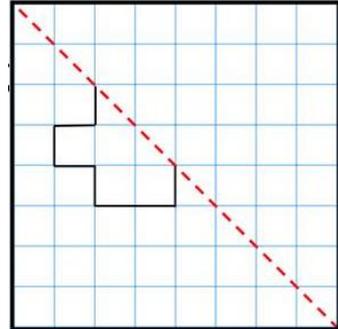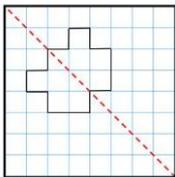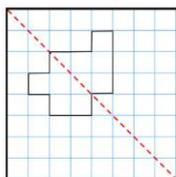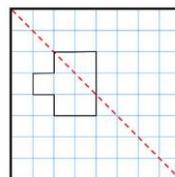
| A. | B. | C. | D. |
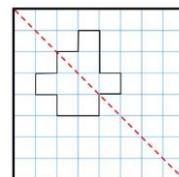
Working out:

20.

I choose three numbers from this number square, including one number from each row and one number from each column.

I then multiply the three numbers together.

What is the largest possible product?

1	2	3
4	5	6
7	8	9

| A. 96 | B. 105 | C. 162 | D. 504 |

Working out:

END OF SECTION A

MOVE STRAIGHT ONTO SECTION B

SECTION B: PROBLEM-SOLVING QUESTIONS

This section contains 3 questions.

Use the space on each page to clearly show your working out.

1.

A swimming pool has a length that is four times its width.

The length and width are both multiples of 5.

The perimeter is less than 150m.

How many different widths could it have?

2.

The numbers from 1 to 9 inclusive are to be placed, one number in each square, in to the shape shown below, so that the total of the three numbers in each of the four lines is the same.
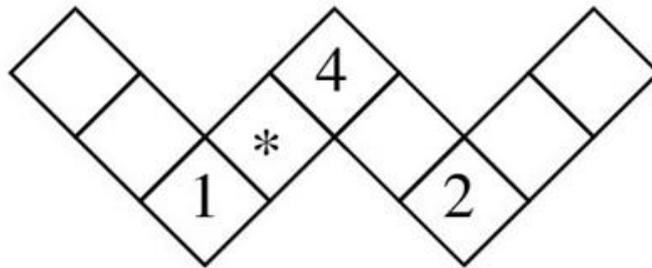
Which number should replace ✱ ?

3.

$$
\begin{array}{ccccc}
 & F & O & U & R \\
 & F & O & U & R \\
+ & F & O & U & R \\
\hline
T & H & R & E & E \\
\end{array}
$$

In this word sum – each letter represents a different digit.

What digit does each letter represent?

F = …… O = ……. U = ……. R = ……. T = ……. H = …….. E = ……….