Your Name:

Candidate Number:

		.	1			

City of London School

Specimen Entrance Examination
to join Old Grammar

MATHEMATICS

45 minutes

Do not open this booklet until you are told to do so.

INSTRUCTIONS

- Answer as many questions as you can in the spaces provided.
- Show all your working clearly.
- Be careful not to spend too long on any one question.
- Calculators are not allowed.

Leave blank

		%
Score		
Total	54	
Marker		

1. Work out:

(a) $3178 + 927$

.....

(1)

(b) $2018 - 394$

.....

(1)

(c) 428×6

.....

(1)

2. A bag contains 60 sweets. 25 are red, 17 are green, 8 are blue and the rest are yellow.



(a) How many sweets are yellow?

.....

(1)

(b) What fraction of the sweets are red? Give your answer in its simplest form.

.....

(1)

3. State whether the following sentences about prime numbers are true or false.
Circle the correct answer.

(a) A prime number has two factors only.

True or False

(b) No even numbers are prime numbers.

True or False

(c) Multiplying two prime numbers will never give a prime number.

True or False

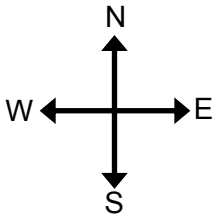
(d) 57 is a prime number.

True or False

(4)

4.

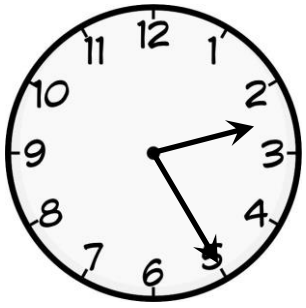
(a) If I am facing North West and turn 135° anticlockwise, which direction will I be facing?



……

(1)

(b) Through what angle does the minute hand turn through from 2:25 to 2:45?



……°

(1)

(c) I am facing forward and make one turn of 40° clockwise. How many **more** turns do I need to make to be facing forwards again?

……

(1)

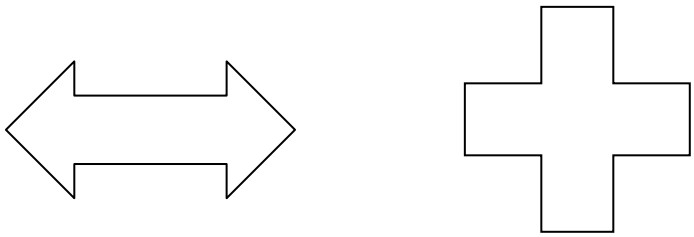
5. I think of a number, subtract 11 and then double it. The result is 34.
What number was I thinking of?



……

(1)

6. Draw all the lines of symmetry on the following shapes:



(2)

7. Write down the next two numbers in the following patterns:

(a) 65 74 83 92 ……. …….

(1)

(b) 0.0021 0.021 0.21 2.1 ……. …….

(1)

(c) 200 100 50 25 ……. …….

(1)

(d) 15 11 7 3 ……. …….

(1)

8. Calculate 218×57

……..

(2)

9. Below is a list of the six tallest buildings in the City of London, given in metres:

"The Gherkin"	180 m
Broadgate Tower	164 m
Heron Tower	230 m
"The Walkie Talkie"	160 m
"The Cheesegrater"	225 m
Tower 42	183 m



"The Gherkin"

(a) How tall is Tower 42 in **millimetres**?

…… mm

(1)

(b) How tall is "The Gherkin" in **kilometres**?

…….. km

(1)

(c) The Shard is a building outside the City of London. It measures 310 m.
What is the difference in height, in **metres**, between The Shard and the tallest building in the City of London?

…….. m

(1)

10. Write the following decimals as fractions **in their simplest form**:

(a) 0.4

……

(1)

(b) 0.45

……

(1)

(c) 0.068

……

(1)

11. Arrange the following fractions in order from smallest to largest:

$$\frac{1}{5}, \quad \frac{1}{4}, \quad \frac{2}{3}, \quad \frac{3}{4}, \quad \frac{1}{6}$$

Smallest ……. ……. ……. ……. ……. **Largest**

(2)

12. Work out the following:

(a) 13.6 + 2.9

……

(1)

(b) 5.2 – 1.7

……

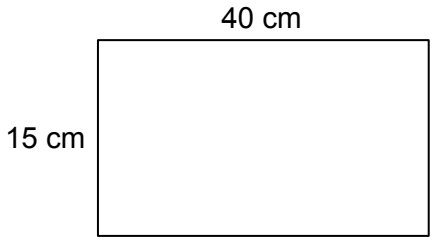
(1)

(c) 4.32 + 1.8

……

(1)

13. A piece of rectangular paper measures 15 cm by 40 cm.

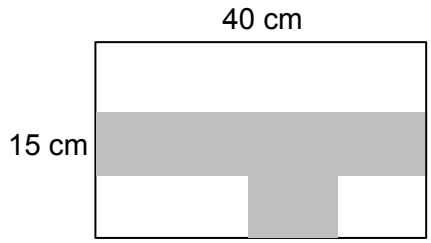


(a) Calculate the area of the piece of paper.

…… cm^2

(1)

The paper is shaded leaving three white rectangles whose measurements are 40 cm by 5 cm, 20 cm by 5 cm and 10 cm by 5 cm. This is shown in the diagram below.



(b) Calculate the fraction of the paper that is shaded. Give your answer in its simplest form.

……

(2)

14. Which number when multiplied by 30 is the same as 21×20?

……..

(2)

15. A unicycle has 1 wheel, a bicycle has 2 wheels and a tricycle has 3 wheels.
In the park there are the same number of unicycles, bicycles and tricycles.
In total there are 57 tricycle wheels. How many bicycle wheels are there in total?

……..

(2)

16. In a school of 425 pupils, there are 9 girls for every 8 boys. How many boys are there in the school?

……..

(2)

17. Calculate: 2018×13

……..

(2)

18. Below is the train timetable for the Abington to Farmouth service.

	Train A	Train B	Train C	Train D
Abington	07:29	08:33	21:15	22:51
Birchester	08:26	09:25	20:25	21:58
Cowley	08:35	09:34	20:15	21:48
Downton	08:46	09:46	20:05	21:37
Elford	09:11	10:10	19:43	21:13
Farmouth	09:21	10:30	19:26	20:56

(a) Which is the fastest train that travels from Abington to Farmouth?

……..

(1)

(b) If I catch the 09:34 train from Cowley, how low will it take to arrive in Elford?

……minutes

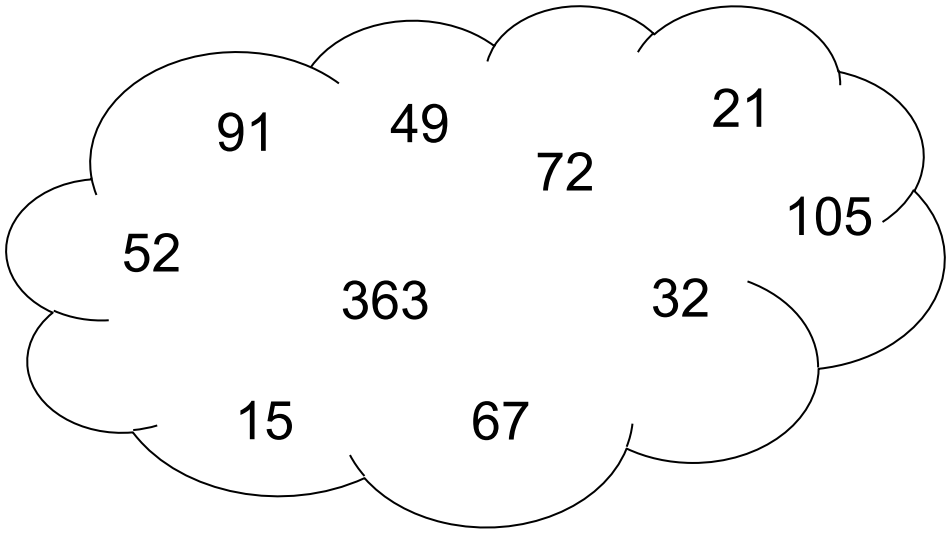
(1)

(c) I catch the 07:29 from Abington, I spend some time in Farmouth and then I catch the train back the same day. I arrive back at 21:15.
How many hours and minutes do I spend in Farmouth?

……hours……minutes

(2)

19. Using only the numbers in the cloud, write **one** number for each of the properties below.



(a) Multiple of 6:

……
(1)

(b) Factor of 60:

……
(1)

(c) Prime number:

……
(1)

(d) Square number:

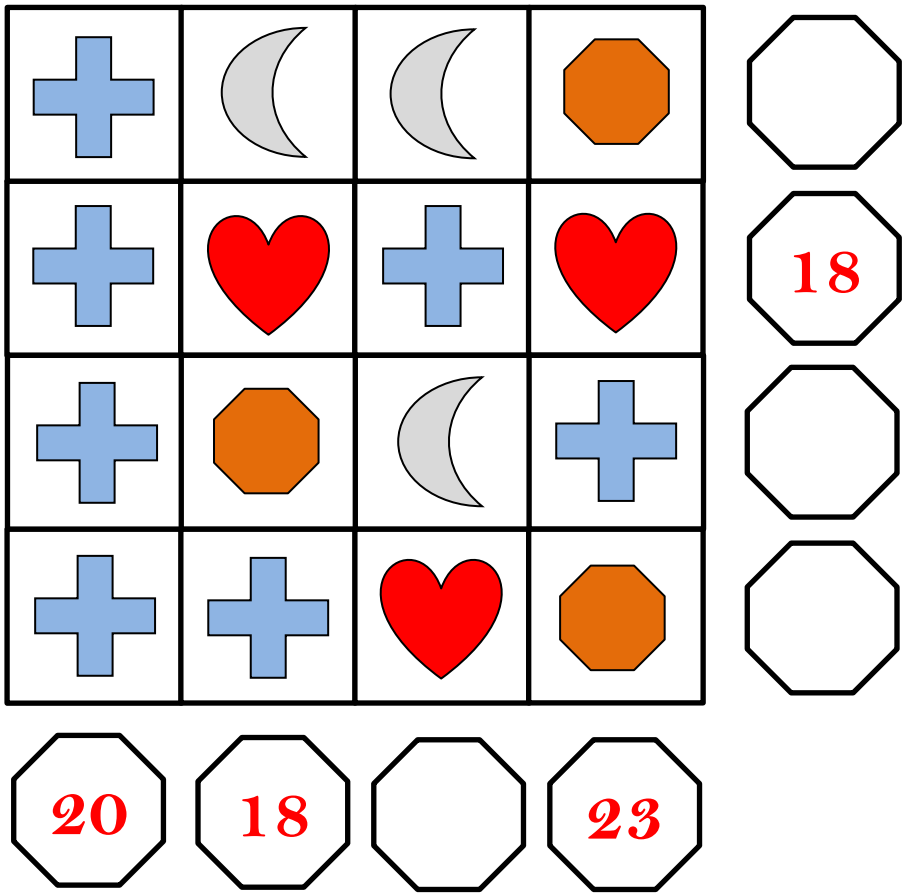
……
(1)

20. The height of a plant <u>doubles</u> each week. The plant is 7 cm when bought.

What is the height of the plant after 5 weeks?

……cm
(1)

21. The numbers shown are the totals of the line of four numbers in the row or column.
The circle, square, triangle and star each represent a number.
Write in the missing totals.

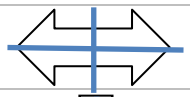
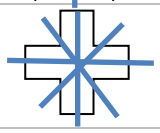


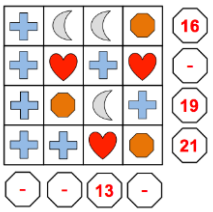
(2)

END OF THE EXAM
Go back and check your working.

There are no questions on this page.

10+ Mark Scheme 2018

		Answers	Notes	
1	(*a*)	4105	1 (cao)	
	(*b*)	1624	1 (cao)	
	(*c*)	2568	1 (cao)	
2	(*a*)	10	1 (cao)	
	(*b*)	5/12	1 (cao)	5
3	(*a*)	True	1 (cao)	
	(*b*)	False	1 (cao)	
	(*c*)	True	1 (cao)	
	(*d*)	False	1 (cao)	
4	(*a*)	South	1 (cao)	
	(*b*)	120°	1 (cao)	
	(*c*)	8	1 (cao)	7
5		28	1 (cao)	
6			1 (cao)	
			1 (cao)	
7	(*a*)	101, 110	1 (cao)	
	(*b*)	21, 210	1 (cao)	
	(*c*)	12.5, 6.25	1 (cao or equivalent)	
	(*d*)	-1, -5	1 (cao)	7
8		12426	2 (award 1 for 1 mistake only)	
9	(*a*)	183000	1 (cao)	
	(*b*)	0.18(0)	1 (cao)	
	(*c*)	80	1 (cao)	5
10	(*a*)	2/5	1 (cao)	
	(*b*)	9/20	1 (cao)	
	(*c*)	17/250	1 (cao) Award 1 in total if unsimplified	
11		1/6, 1/5, 1/4. 2/3, 3/4	2 (award 1 for the unit fractions in correct order)	
12	(*a*)	16.5	1 (cao)	
		3.5	1 (cao)	
		6.12	1 (cao)	8
13	(*a*)	600	1 (cao)	
	(*b*)	5/12	2 (award 1 for unsimplified)	
				3

		Answers	Notes	
14		14	2 (award 1 if 420/30 seen)	
15		38	2 (award 1 if “19” seen)	
16		200	2 (award 1 if “25” seen)	6
17		26234	2 (award 1 for 1 mistake only)	
18	(*a*)	Train A	1 (cao)	
	(*b*)	36 mins	1 (cao)	
	(*c*)	10 h 5 mins	2 (award 1 for 10 h)	6
19	(*a*)	72	1 (cao)	
	(*b*)	15	1 (cao)	
	(*c*)	67	1 (cao)	
	(*d*)	49	1 (cao)	
20		224 cm	1 (cao)	5
21			2 (cao) (award 1 for Cross = 5 ,Heart = 4 and Octagon = 7 Or 2 correct totals)	2

Total: 54 Marks

Mark	%
1	2%
2	4%
3	6%
4	7%
5	9%
6	11%
7	13%
8	15%
9	17%
10	19%
11	20%
12	22%
13	24%
14	26%
15	28%
16	30%
17	31%
18	33%
19	35%
20	37%
21	39%
22	41%
23	43%
24	44%
25	46%
26	48%
27	50%

Mark	%
28	52%
29	54%
30	56%
31	57%
32	59%
33	61%
34	63%
35	65%
36	67%
37	69%
38	70%
39	72%
40	74%
41	76%
42	78%
43	80%
44	81%
45	83%
46	85%
47	87%
48	89%
49	91%
50	93%
51	94%
52	96%
53	98%
54	100%