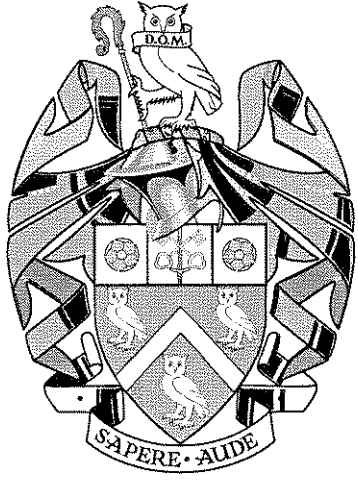




Candidate no.:



MANCHESTER GRAMMAR SCHOOL

ENTRANCE EXAMINATION 2005 PART 1 ARITHMETIC EXAMINATION

Time available: 50 minutes

Surname:

First Name(s):

Home address:

.....

School:

There are 40 questions in this paper and each question is worth one mark. Work through the questions in the order in which they appear. The questions toward the end of the paper are not necessarily the most difficult. Do attempt the questions on every page.

All answers must be written clearly in the answer-spaces provided. If an answer cannot be read easily it may be marked wrong.

Instead of leaving blank answer-spaces, you should use any available time at the end of the examination to make the best attempt you can at questions you have not done.

You may use rough paper; this will not be marked.

Calculators must not be used.

Marker 1

Marker 2

Total number of ticks

Total number of crosses

Check total is 40 and initial here

Check total is 40 and initial here

1 Write in figures the number two million four thousand and seventy.

1	
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2 Work out $689 + 917$.

2	
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3 Work out $723 - 237$.

3	
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4 Work out $474 \div 6$.

4	
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5 Work out 60% of 40.

5	
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6 Work out the average of the numbers 8, 9, 14, and 17.

6	
---	--

7 Add up these three lengths and give your answer in centimetres:

2 metres, 97 centimetres, 50 millimetres.

7		cm
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8 If you continue the sequence 1, 2, 4, 7, 11, 16, write down the smallest number which is greater than 50.

8	
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9 In an athletics club consisting of 51 members, there are 7 more men than women. The men are either sprinters or distance runners. There are 5 more male sprinters than male distance runners. How many male sprinters are there in the club?

9	
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10 Geraint weighs 60 kilograms and Andrew weighs 125 pounds. Using $1 \text{ kilogram} = 2.2 \text{ pounds}$, work out by how many pounds Geraint is heavier than Andrew.

10		pounds
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Answers to questions 11 to 14 must be written as fractions in their simplest form.

For example, $\frac{2}{3}$ is simpler than $\frac{4}{6}$, $1\frac{3}{7}$ is simpler than $\frac{10}{7}$ and 6 is simpler than $\frac{6}{1}$.

11 Work out $1\frac{3}{5} + \frac{9}{10}$. 11

12 Work out $3\frac{7}{12} - \frac{5}{6}$. 12

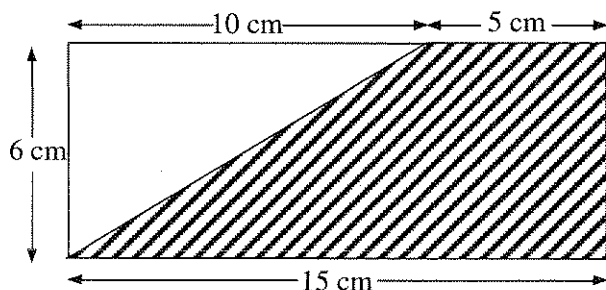
13 Work out $18 \times 2\frac{1}{6}$. 13

14 What fraction of a minute is 25 seconds? 14

15 It has been shown that when a slice of toast is dropped onto the floor, it lands buttered side up one-fifth of the time. Tim decides to demonstrate this to his son, so at breakfast time he drops lots of slices of toast onto the floor. 60 of the slices landed buttered side down. How many landed buttered side up? 15

16 Christopher gives half of his marbles to one son, Ian, and one-sixth of them to his other son, Stuart. Ian gets 40 more marbles than Stuart. How many marbles did Christopher have at the start? 16

17 What fraction of the area of this rectangle has been shaded?



17

18 Aidan's car uses 70% of a full tank of petrol in travelling 560 kilometres. How far can it travel on the remaining petrol in the tank? 18 km

19 A sheet of paper has length 8 centimetres and width 6 centimetres. Godfrey cuts out four squares, whose sides are 2 centimetres long, from each of the corners of this sheet of paper. What is the perimeter of the remaining shape? 19 cm

20 Write down the greatest odd number less than 7 000 which can be made by using all of the digits 4, 5, 6 and 7. 20



21 Add together 4.07 , 2.8 and 1.34 .

21

22 Multiply 600 by 0.4 .

22

23 Divide 6.3 by 0.7 .

23

24 A bus leaves Manchester Piccadilly station with some passengers on board. At the first bus stop, 13 got on, 4 off. At the second stop, 9 got on and 11 got off. There were now 20 passengers on the bus. How many passengers were on at the start?

24

25 The average of three numbers is 3 . Two of the numbers are the same and the third is smaller. What is the third number?

25

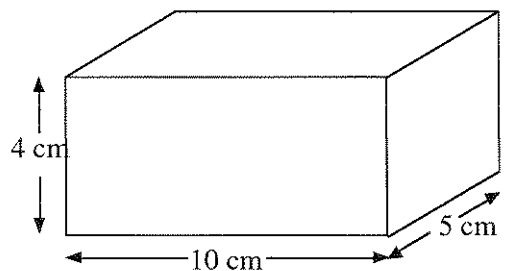
26 Carole cycles at 20 kilometres per hour and Eileen at 15 kilometres per hour. The girls start off at the same time and cycle a distance of 10 kilometres. How many more minutes does the journey take Eileen than it takes Carole?

26 mins

27 When David turns on his freezer, the temperature is 18°C . The temperature inside it then drops at a rate of 2.4°C per hour. What will be the temperature after 2 hours?

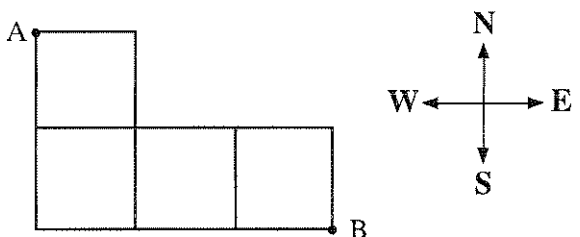
27 $^{\circ}\text{C}$

28 This brick is 10 centimetres long, 5 centimetres wide, and 4 centimetres high. Work out the total surface area of the brick.



28 cm^2

29 How many different routes are possible in travelling from A to B in only a Southerly or Easterly direction?



29

30 In twelve years' time Lynda will be one and a half times as old as she is now. How old is she?

30

31 4 938 is an example of a 'twelver' because its first and last digits add up to 12 and also its middle two digits add up to 12. Write down the smallest 'twelver' which is greater than 4 938.

31	
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32 Simon takes a block of wood which measures 25 centimetres by 8 centimetres by 5 centimetres. He cuts it up into cubes of edge 1 centimetre. He then sticks these together to form one big cube. What is the length of the edge of this cube?

32		cm
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33 What is the biggest multiple of 3 that is less than 1 000 and which divides exactly by 5?

33	
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34 The rule for a sequence is 'multiply by 3 and then add 1' in order to find the next number. If 121 is one of the numbers in this sequence, what is the smallest two-digit number in the sequence?

34	
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35 Irfan puts five dots on a piece of paper in such a way that no three dots are in a straight line. He joins every dot to every other dot with a straight line. How many lines does he draw?

35	
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36 At the supermarket, a tower of tins of beans is made up so that at each level there is one less tin than in the level below. Each tin is 10 centimetres high and the tower consists of 28 tins in total. What is the height of the tower?

36		cm
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37 Jim, John and Nick go into a shop and each spend the same amount. Next, Paul goes in and spends the same amount as the first three put together. Finally, Neil goes in and spends the same amount as the first four put together. In all, the five of them spent £96. How much did Jim spend in the shop?

37	£	
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38 One year, September 1st fell on a Friday. What was the next month which started on a Friday?

38	
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39 In the sequence of numbers 1, 2, 4, 8, 16, 32,..... what would be the answer if you divided the 20th number in this sequence by the 17th number in this sequence?

39	
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40 Nigel has a stack of 4 pence and 5 pence stamps. What is the largest number of pence that he cannot make up by using these stamps?

40	
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END OF EXAMINATION
USE ANY REMAINING TIME TO CHECK YOUR WORK
OR TRY ANY QUESTIONS YOU HAVE NOT ANSWERED.