Cheadle Hulme School

SENIOR ENTRANCE EXAMINATION

Mathematics Paper (sample)

50 Minutes

NAME IN FULL: .....

EXAMINATION NUMBER: .....

Read the following carefully:

1. You have ***50 minutes*** for this paper.
2. Your answers are to be written in this booklet.
3. Once you have been told to begin, you may **NOT** ask questions.
4. Work carefully and do as much as you can.

DO NOT TURN OVER UNTIL YOU ARE TOLD TO DO SO.

SECTION A

- **You may work out the answers to these questions in the spaces below, or on the rough paper provided.**
- **Your final answers should be written on the <u>separate answer sheet</u>.**

1. Write in figures the number twelve thousand and twenty-one.

2. 748 + 866

3. 5.96 – 2.78

4. $\frac{1}{5} + \frac{7}{10}$

5. 13.56 + 3.29

6. 6.32 × 5

7. 4200 ÷ 42

8. What is the highest number that will divide exactly into 24 and 40?

9. A piece of wood is 2.25m long. If it is cut into 5 pieces of equal length, how long will each piece be?

10. Give the next number in each of the following sequences:

a)	3	6	9	12	15	……
b)	4	6	9	13	18	……
c)	53	42	31	20	9	……
d)	7	14	28	56	112	……
e)	1	4	9	16	25	……
f)	3	7	15	31	63	……

11. Write $\frac{35}{56}$ in its simplest form.

12. What number is halfway between 36 and 84?

13. Choose from this set of numbers:

6 8 11 18 25 40 48

a) A multiple of 12

b) A square number

c) A factor of 32

d) A prime number

e) The product of 3 and 6

14. This table shows the midday temperature and number of hours sunshine in six cities in the UK on one day in last summer:

City	Midday temperature (°C)	Hours of sunshine
London	21	9
Birmingham	18	7
Salisbury	18	10
Manchester	17	8
Newcastle	15	6
Glasgow	13	7

a) Which city had the most hours of sunshine?

b) What was the midday temperature in Newcastle?

c) What was the most common midday temperature?

d) How many cities had more than 8 hours of sunshine?

15. In mathematics, 20! means "multiply together all the whole numbers from 1 to 20". Calculate the value of 5!

END OF SECTION A

SECTION B

PLEASE ANSWER SECTION B IN THIS BOOKLET

16. Write these numbers in order of size, starting with the smallest:

    0.304 0.43 3.4 0.034 3.04

    ……..……..……..……

17. Melissa spends two-thirds of her pocket money on four chocolate bars, each costing 40 pence. How much pocket money does she get?

    £……..

18. A bookshop is having a sale and it offers 20% off all its prices. If a book usually sells for £14, what will it cost in the sale?

    £……..

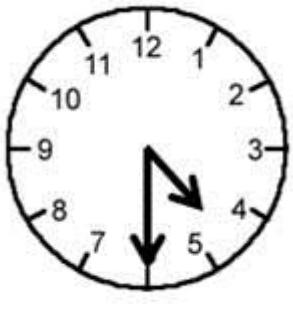
19. I need to allow 14 minutes to drive from my house to the local train station, 7 minutes to park my car and 5 minutes to buy my ticket. What is the latest time that I can leave home in order to catch the 8.18am train?

    ……..

20. A box contains 360 beads. $\frac{1}{10}$ of them are green, $\frac{7}{10}$ of them are blue and the rest are red. How many red beads are in the box?

    ……..

21. The drawing shows a clock face with the hands at half-past four.



a) How long does it take for the hour hand to move through 90°?

……..

b) How long does it take for the minute hand to move through 90°?

……..

c) What is the angle between the hands at exactly 2 o'clock?

……..

At 4.30pm, the hour hand is midway between the four and the five and the angle between the hands is 45°.

d) What is the angle between the hands at 5.30pm exactly?

……..°

e) Give an example of a time when the angle between the hands is exactly 120°.

……..

f) The two hands are directly in line with each other at 12 o'clock. At roughly what time are they next on top of each other?

……..

22. 6 Ω 9 means the units figure of 6 × 9

For example, 6 × 9 = 54 so 6 Ω 9 = 4

Using this system, calculate:

a) 7 Ω 9

……..

b) (5 Ω 13) + (6 Ω 7)

……..

c) (9 Ω 3) Ω (3 Ω 8)

……..

d) If X is a number and (7 Ω 3) Ω X = (3 Ω 9), find a value for X

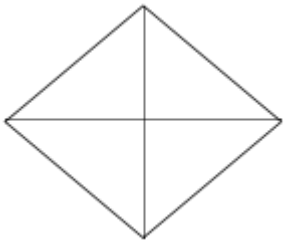
…….

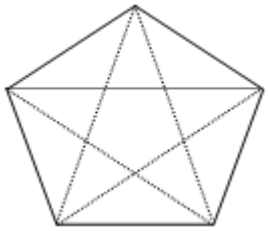
e) If X is a number bigger than 100 and (7 Ω X) Ω X = 7, what is the smallest possible value of X?

……..

23. A quadrilateral has 2 diagonals (shown below).

A pentagon has 5 diagonals.





Quadrilateral — 2 diagonals

Pentagon — 5 diagonals

a) In the space provided below, draw a hexagon (six sides) and mark the diagonals. Besides your drawing, write the number of diagonals.

b) Repeat for a heptagon (seven sides). Again, mark all the diagonals and write down how many there are next to your drawing.

c) WITHOUT drawing it, work out how many diagonals an octagon (eight sides) would have. Make sure that you explain your answer.

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THIS IS THE END OF YOUR PAPER