

HMC 2014 - SECOND ROUND

BOOKLET - **A**

INSTRUCTIONS

- Before you start, make sure that your details are filled in accurately.
- Do not open this booklet until told to do so.
- This examination paper consists of 30 multiple choice questions. Each question is followed by answers marked A, B, C, D and E. Only one of them is correct.
- The final answers must be entered in the correct box on the ANSWER SHEET which is supplied separately.
- Each correct answer is worth:
 - 4 marks in Part 1 (Questions from 1 to 15)
 - 6 marks in Part 2 (Questions from 16 to 30)
- There is a penalty, -1 mark, for every incorrect answer.
- Exam duration is 75 minutes and no extra time will be given.
- Calculators and geometric instruments are NOT permitted.
- Diagrams are NOT necessarily drawn to scale.
- Rough paper, pen, pencil, and rubber are permitted.
- Start when the invigilator tells you to do so. Good luck!

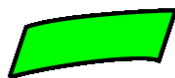


PART – I

- 1) What will be the new price of a soccer ball after 20% discount if its original price is R150?
A) R130 B) R100 C) R110 D) R120 E) R140
- 2) Consider the following sequence: 1, 3, 6, 10, 15, ... The next two numbers in this sequence add up to
A) 49 B) 21 C) 28 D) 20 E) 18
- 3) $\frac{2}{5}$ cup of milk is needed to make 45 biscuits. How many cups are needed for 1 350 biscuits?
A) 12 B) 45 C) 60 D) 75 E) 30
- 4) A clock is showing 09:58 where all digits are different. After how many minutes will the digits be different again?
A) 1min B) 2min C) 25min D) 14min E) 13min
- 5) In a 100m race, what will be the position of you if you pass the runner in the second place?
A) 1 B) 2 C) 3 D) 4 E) 5
- 6) Which of the following is the largest?
A) $20 \times 1 + 4$ B) $(2 + 0) \times 14$ C) $(20 + 1) \times 4$ D) $20 + 1 \times 4$ E) $20 \times (1 + 4)$



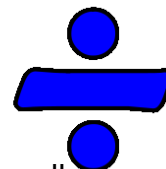
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7) There is a certain relationship between the following months and the corresponding numbers given below;

January: 4 May: 2
February: 5 June: 2
March: 4 July: 3
April: 3 August: ?

What must be the number corresponded to August?

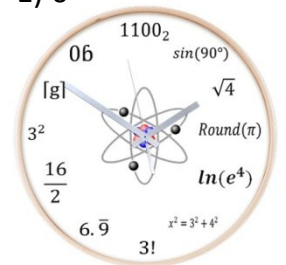
- A) 5 B) 3 C) 2 D) 1 E) 4

8) $19 - 17 + 15 - 13 + 11 - 9 + 7 - 5 + 3 - 1 = ?$

- A) 2 B) 18 C) 10 D) 21 E) 0

9) What is the size of the angle between the hour hand and the minute hand of a clock at 17:00?

- A) 5° B) 17° C) 90° D) 120° E) 150°

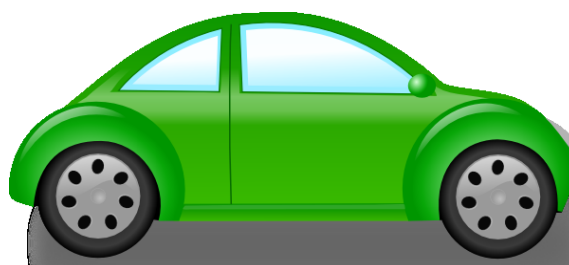


10) $\frac{1}{4} \div \frac{3}{8} + \frac{1}{3} = ?$

- A) $\frac{2}{5}$ B) $\frac{2}{6}$ C) 1 D) $\frac{2}{3}$ E) 0

11) A man drives 1400km distance from Johannesburg to Cape Town by a car. He leaves Johannesburg at 1:47pm and reaches Cape Town at 5:12am next day. How long does the journey take?

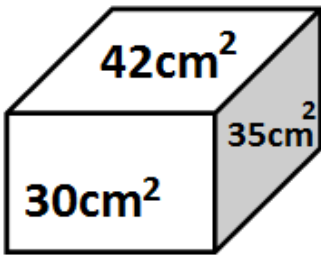
- A) 8h35m B) 18h59m C) 12h35m D) 15h45m E) 15h25m



12) What is the difference between the largest odd 4-digit number with different digits and the smallest even 4-digit number with different digits?

- A) 8641 B) 8851 C) 8843 D) 8999 E) 8888

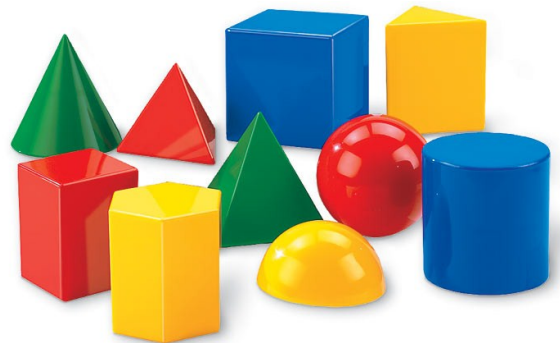
13) The areas of three faces of a rectangular box are 30cm^2 , 42cm^2 , and 35cm^2 . What is the volume of the box?



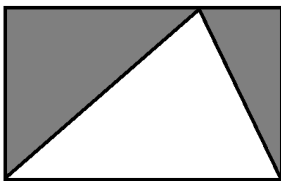
- A) 107 cm^3 B) 214 cm^3 C) 75 cm^3 D) 210 cm^3 E) 410 cm^3

14) If the areas of a square, a regular hexagon and an equilateral triangle are the same, then which shape(s) has the longest side.

- A) Square
B) Hexagon
C) Triangle
D) Square and Hexagon
E) All have equal sides



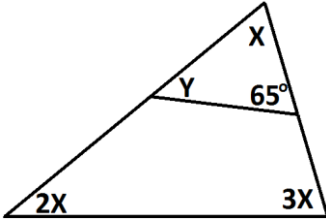
15) The breadth of the rectangle given below is 10cm and its length is 1,5 times longer than its breadth. Find the area of the shaded region.



- A) 15cm^2 B) 150cm^2 C) 100cm^2 D) 50cm^2 E) 75cm^2

PART – II

16) What is the value of Y in the following figure?



- A) 65° B) 30° C) 85° D) 90° E) 95°

17) If each diagonal, row and column adds up to 15, then find Z.

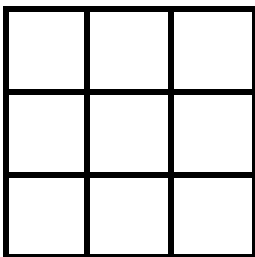
8		
		7
4	Z	

- A) 5 B) 2 C) 9 D) 6 E) 8

18) Tando is older than Sibahle. Sibahle is older than Luthando. Luthando is younger than Clare while Clare is older than Tando. List the people from oldest to youngest.

- A) T, S, L, C B) S, C, L, T C) L, C, S, T D) C, T, S, L E) T, S, C, L

19) Nine identical squares are combined in the figure given below. How many squares are there in total?



- A) 14 B) 9 C) 10 D) 15 E) 13

20) There are 7 brothers in a family. Each brother has one sister. How many children are there in the family?

- A) 14 B) 8 C) 15 D) 13 E) 10



21) The word DEAF is represented in numbers by 4516 and the word HI is represented in numbers by 89. Which of the following will represent AGE?

- A) 451 B) 165 C) 175 D) 415 E) 156

22) In how many different ways one can choose 2 prefects out of 5 candidate learners?

- A) 5 B) 2 C) 1 D) 10 E) 3

23) What is the sum of the terms in the 10th row?

		1				row1
		1	1			row2
	1	2	1			row3
	1	3	3	1		row4
1	4	6	4	1		row5

- A) 126 B) 70 C) 252 D) 35 E) 512



24) Two identical robots can together complete a task in 6 hours. How many hours will it take three robots to complete the same task?

- A) 6 B) 2 C) 3 D) 4 E) 9

25) Jacob has 30 coins of R2s and R5s, which add up to R111. How many R5 coins does Jacob have?

- A) 17 B) 6 C) 24 D) 20 E) 5

26) How many positive divisors (factors) does 144 have?

- A) 6 B) 8 C) 9 D) 12 E) 15

27) In a class of 16 learners, 10 learners take Maths and 8 learners take Natural Science. How many learners take both Maths and NS if everyone does at least one subject?

- A) 16 B) 18 C) 0 D) 2 E) 1

28) A paper is divided into 5 pieces. One of these 5 pieces is again divided into 5. This operation is continued. Which of the following cannot be the number of paper pieces which might be obtained in this way?

- A) 1453 B) 1565 C) 1865 D) 2025 E) 2015

29) My brother and I went to a birthday party where all of 30 people including us had a mask on his/her face. I shook everyone's hand except one person. What is the possibility of that person being my brother?

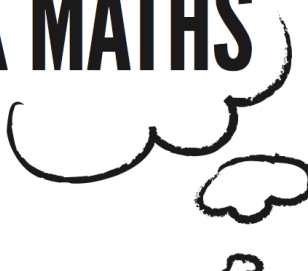
- A) $\frac{1}{30}$ B) $\frac{1}{29}$ C) $\frac{1}{28}$ D) $\frac{1}{2}$ E) $\frac{2}{3}$



30) Consider the following sequence: 1, 11, 21, 1112, 3112, 211213, ... What will be the next number?

- A) 312213 B) 2111323 C) 4111323 D) 3111323 E) 321123

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THINK MATHS

THE END

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