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MOCK 19(I)

MATHEMATICS Compulsory Part

PAPER 1

Question-Answer Book

(2¼ hours)

This paper must be answered in English

INSTRUCTIONS

1. Write your Name, Class and Class Number in the spaces provided on Page 1.
2. This paper consists of THREE sections, A(1), A(2) and B.
3. Attempt ALL questions in this paper. Write your answers in the spaces provided in this Question-Answer Book. Do not write in the margins. Answers written in the margins will not be marked.
4. Graph paper and supplementary answer sheets will be supplied on request. Write your Name and mark the question number box on each sheet, and fasten them with string INSIDE this book.
5. Unless otherwise specified, all working must be clearly shown.
6. Unless otherwise specified, numerical answers should be either exact or correct to 3 significant figures.
7. The diagrams in this paper are not necessarily drawn to scale.

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Name	
Class	()

	Marker's Use Only	Examiner's Use Only
	Marker No.	Examiner No.
Question No.	Marks	Marks
1–2		
3–4		
5–6		
7		
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Total		

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MOCK 19(I) MATH COMPULSORY PART PAPER 1

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3. Simplify $\frac{5}{3k+2} - \frac{4}{2k+7}$.

(3 marks)

4. Factorize

(a) $25x^2 - 4$,

(b) $5x^2y - 17xy + 6y$,

(c) $5x^2y - 17xy + 6y - 25x^2 + 4$.

(4 marks)

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MOCK 19(I) MATH COMPULSORY PART PAPER 1

Page total

7. Seven years ago, the ages of Peter and Irene were in the ratio 3 : 2. The ratio now becomes 4 : 3. Find the present age of Irene.

(4 marks)

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- | <i>Stem (10 kg)</i> | <i>Leaf (1 kg)</i> |
|---------------------|--------------------|
| 4 | 1 7 9 |
| 5 | 0 0 <i>a</i> 5 5 |
| 6 | 2 |
| 7 | 0 <i>a a</i> |

- Find a .
- Find the range, the inter-quartile range and the standard deviation of the distribution.

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9. In Figure 1, O is the centre of the circle $ABCD$. BAE and $CODE$ are straight lines. It is given that $\angle BDC = 48^\circ$ and $AO = AE$.

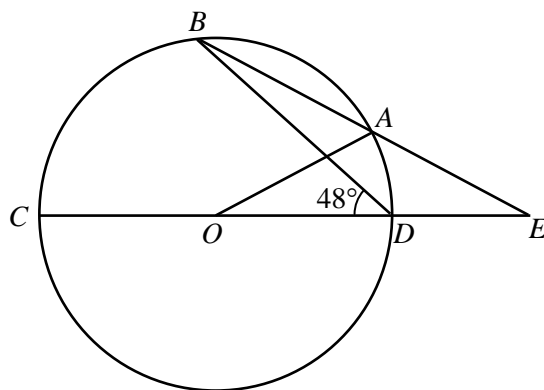


Figure 1

- (a) Find $\angle AOE$.
- (b) Someone claims that \widehat{AB} is shorter than AE . Do you agree? Explain your answer.

(5 marks)

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MOCK 19(I) MATH COMPULSORY PART PAPER 1

11. The following table shows the distribution of the numbers of films watched by a group of students last month, where $a > 5$, $b < 11$ and $c > 0$.

Number of films	0	1	2	3	4	5
Number of students	$c + 1$	4	a	8	$b - a$	c

The median of the distribution is 2.5.

- (a) Find a and b . (3 marks)

- (b) It is given that the mode of the distribution is greater than 2. Write down

- (i) the least possible value of c ,
(ii) the greatest possible value of c .

(2 marks)

- (c) Suppose c is the value obtained in (b)(i). If a student is randomly selected from the group, find the probability that the selected student watched more than 3 films last month. (2 marks)

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- (4 marks)

- (4 marks)

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16. Let $f(x) = \frac{x^2}{16} - \frac{x}{2} + 11$.

- (a) Using the method of completing the square, find the coordinates of the vertex of the graph of $y = f(x)$. (2 marks)
- (b) The graph of $y = g(x)$ is obtained by reflecting the graph of $y = f(x)$ in the x -axis. The graph of $y = h(x)$ is obtained by translating the graph of $y = g(x)$ vertically. If the graph of $y = h(x)$ touches the straight line $y = 6$, find the y -intercept of the graph of $y = h(x)$. (3 marks)

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(a) Find AB and AC . (4 marks)

(b) Let K be a point on AD such that $BK \perp AD$. Someone claims that $\angle BKC$ is the angle between the face ABD and the face ACD . Do you agree? Explain your answer. (3 marks)

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- (11 marks)

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