Grade: 8

Subject: Mathematics

Paper: I

Time Allowed: 1 hour 15 minutes

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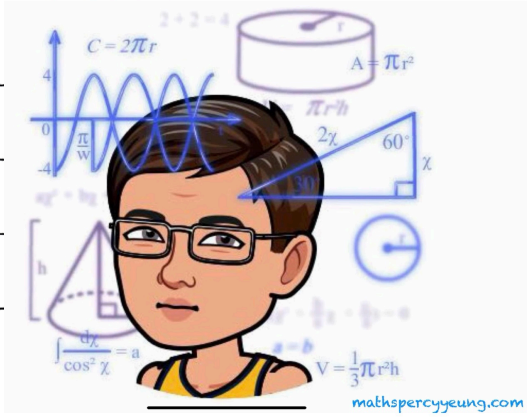


This paper must be answered in English

INSTRUCTIONS

1. This paper consists of Section A and Section B. Section A carries 50 marks. Section B carries 25 marks.
2. Answer all the questions.
3. Use of an HKEAA approved calculator is allowed.
4. The diagrams in this paper are not necessarily drawn to scale.
5. Write your mathematical expressions, answers and statements/conclusions in the spaces provided. There is NO need to show the rough work.
6. Unless otherwise specified, numerical answers should be either exact or correct to 3 significant figures.
7. Do your rough work in the rough worksheet provided.

Teacher's Use Only		
Question No.	Max. marks	Marks
Section A		
1	3	
2	3	
3	4	
4	3	
5	5	
6	5	
7	3	
8	5	
9	4	
10	6	
11	5	
12	4	
Sub-total	**50**	
Section B		
13	6	
14	9	
15	10	
Sub-total	**25**	

Section A (50 marks)

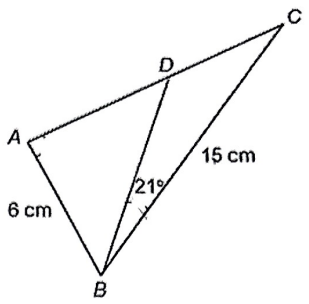
1. Simplify $\frac{3}{6x-1}+\frac{5}{4-7x}$. (3 marks)

2. If $(x + 4)(2x - 3) - P \equiv 2x^2 + Qx + 5$, where P and Q are constants, find the values of P and Q. (3 marks)

3. In the figure, ADC is a straight line. (4 marks)

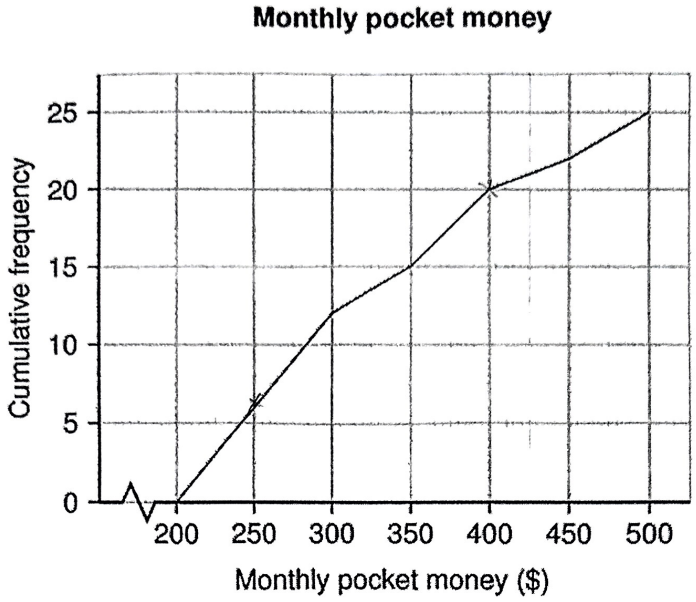
(a) Find $\angle ABD$.

(b) Find the length of BD.



4. Make b the subject of the formula $\frac{a-5}{4}=\frac{b+2}{3}$. (3 marks)

5. The cumulative frequency polygon below shows the monthly pocket money (in $).



(a) How many children have a monthly pocket money of $250 or more, but less than $400? (2 marks)

(b) Find the 60th percentile. (1 mark)

(c) Mr Lee claims that among these children, 20% of them have a monthly pocket money of $400 or more. Do you agree? Explain your answer. (2 marks)

6. Factorize the following expressions.

(a) $2ab - 4a - 3b + 6$ (2 marks)

(b) $(a-b)^2 - 9b^2$ (3 marks)

7. If h and k are non-zero numbers such that $2h:(3h-2k)=5:6$, find $h:k$. (3 marks)

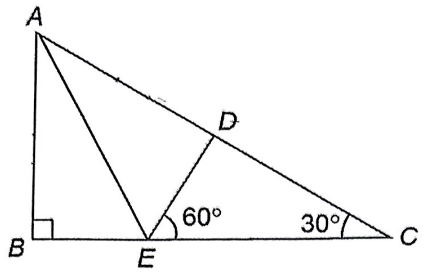
8. The volume of a carton of milk is measured as 1.5 L, correct to the nearest 0.1 L. Suppose the carton of milk is shared with n children such that each child receives a glass of milk, measured as 207 mL correct to the nearest mL.

(a) Find the lower and upper limits of the actual volume of a carton of milk. (2 marks)

(b) Find the greatest possible value of n. (3 marks)

9. Simplify $\sqrt{50}+\frac{3}{\sqrt{18}}$ and rationalize the denominator of the result if necessary. (4 marks)

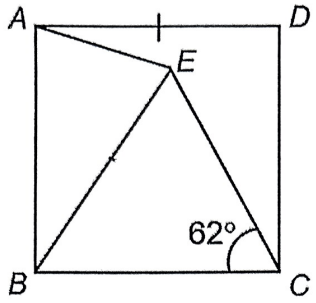
10. In the figure, D is a point on AC such that $AB = AD$. E is a point on BC.



(a) Prove that $\Delta ABE \cong \Delta ADE$. (3 marks)

(b) Are the lengths of AE and CE equal? Explain your answer. (3 marks)

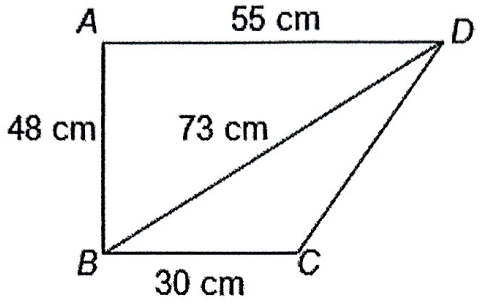
11. In the figure, $ABCD$ is a square and $AD = BE$. Find $\angle BAE$. (5 marks)



12. Solve the simultaneous equations $\begin{cases} 7x+5y=4 \\ 4x+3y=3 \end{cases}$ by any algebraic method. (4 marks)

Section B (25 marks)

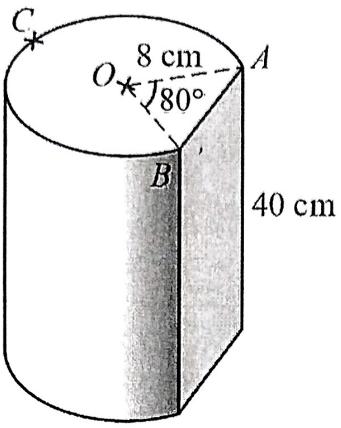
13. In the figure, $ABCD$ is a trapezium, where AD // BC. It is given that $AB = 48$ cm, $AD = 55$ cm, $BC = 30$ cm and $BD = 73$ cm.



(a) Prove that ΔABD is a right-angled triangle. Hence, find the area of $ABCD$. (4 marks)

(b) If E is a point on BD such that $CE \perp BD$, find the length of CE. (2 marks)

14. The solid in the figure is part of a right cylindrical metal bar of base radius 8 cm. O is the centre of the sector $OACB$.

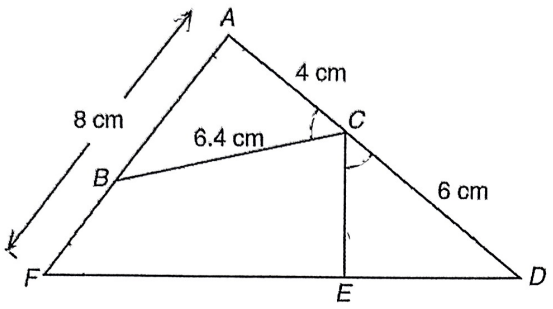


(a) Find the length of AB. (3 marks)

(b) Find the length of $\overset{\frown}{ACB}$. Express your answer in terms of π. (2 marks)

(c) Find the total surface area of the solid. (4 marks)

15. In the figure, ABF, ACD and DEF are straight lines. $\angle ACB = \angle DCE = \angle BFE$, $AC = 4$ cm, $CD = 6$ cm, $BC = 6.4$ cm and $AF = 8$ cm.



(a) Write down two triangles which are similar to ΔAFD and give proofs to justify your answer. (4 marks)

(b) Find AB. (2 marks)

(c) Find DE and EF. (4 marks)

END OF PAPER