

**MATHEMATICS PAPER 1**  
**Question-Answer Book**

8.30 am – 10.30 am (2 hours)

This paper must be answered in English

1. Write your Candidate Number, Centre Number and Seat Number in the spaces provided on this cover.
2. This paper consists of THREE sections, A(1), A(2) and B. Each section carries 33 marks.
3. Attempt ALL questions in Sections A(1) and A(2), and any THREE questions in Section B. Write your answers in the spaces provided in this Question-Answer Book. Supplementary answer sheets will be supplied on request. Write your Candidate Number on each sheet and fasten them with string inside this book.
4. Write the question numbers of the questions you have attempted in Section B in the spaces provided on this cover.
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.

Candidate Number									
Centre Number									
Seat Number									

	Marker's Use Only	Examiner's Use Only
Marker No.		Examiner No.

Section A Question No.	Marks	Marks
1-2		
3-4		
5-6		
7-8		
9		
10		
11		
12		
13		
Section A Total		

Checker's Use Only	Section A Total		

Section B Question No. *	Marks	Marks
Section B Total		

*\* To be filled in by the candidate.*

Checker's Use Only	Section B Total		

Checker No.	
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### FORMULAS FOR REFERENCE

SPHERE	Surface area	=	$4\pi r^2$
	Volume	=	$\frac{4}{3}\pi r^3$
CYLINDER	Area of curved surface	=	$2\pi rh$
	Volume	=	$\pi r^2 h$
CONE	Area of curved surface	=	$\pi rl$
	Volume	=	$\frac{1}{3}\pi r^2 h$
PRISM	Volume	=	base area $\times$ height
PYRAMID	Volume	=	$\frac{1}{3} \times$ base area $\times$ height





5. In Figure 2, find the bearing of  $B$  from  $A$ .

(3 marks)

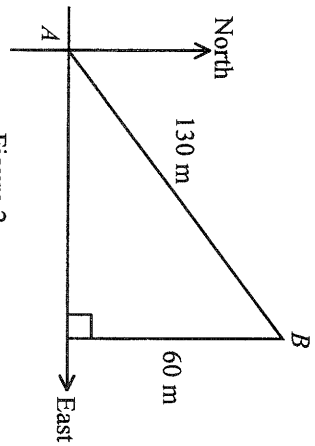


Figure 2

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6. Factorize

- (a)  $a^2 - ab + 2a - 2b$ ,
- (b)  $169y^2 - 25$ .

(4 marks)

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7. The prices of an orange and an apple are \$ 2 and \$ 3 respectively. A sum of \$ 46 is spent buying some oranges and apples. If the total number of oranges and apples bought is 20 , find the number of oranges bought. (4 marks)

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8. A box contains nine cards numbered 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 and 9 respectively.

- (a) If one card is randomly drawn from the box, find the probability that the number drawn is odd.  
(b) If two cards are randomly drawn from the box one by one with replacement, find the probability that the product of the numbers drawn is even. (5 marks)

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15. In Figure 7(a),  $F_1, F_2, F_3, \dots$  are square frames. The perimeter of  $F_1$  is 8 cm. Starting from  $F_2$ , the perimeter of each square frame is 4 cm longer than the perimeter of the previous frame.

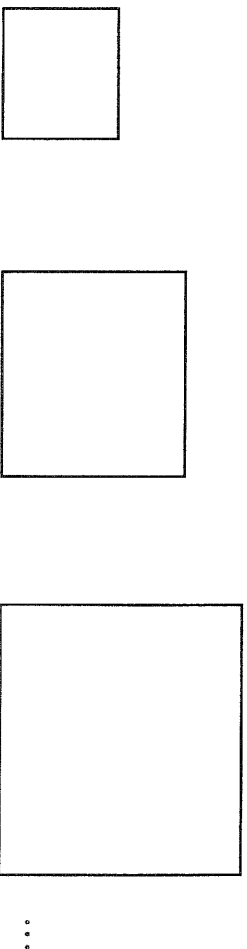


Figure 7(a)

- (a) (i) Find the perimeter of  $F_{10}$ .
- (ii) If a thin metal wire of length 1 000 cm is cut into pieces and these pieces are then bent to form the above square frames, find the greatest number of distinct square frames that can be formed.

(5 marks)

(b)

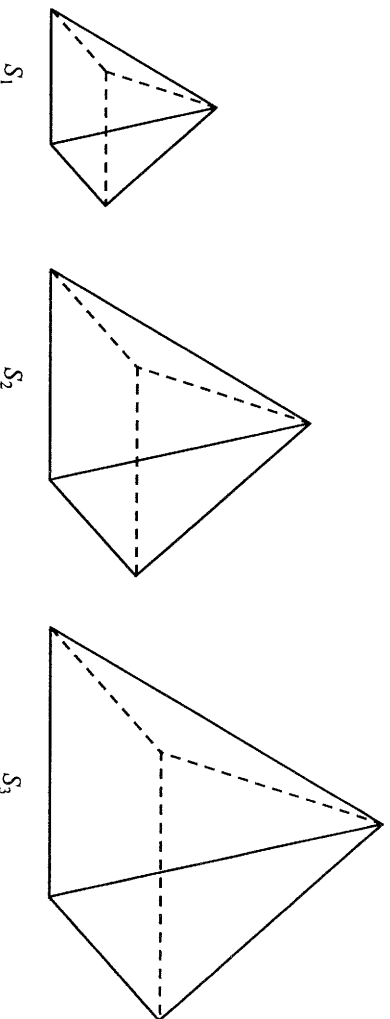


Figure 7(b)

Figure 7(b) shows three similar solid right pyramids  $S_1, S_2$  and  $S_3$ . The total lengths of the four sides of the square bases of  $S_1, S_2$  and  $S_3$  are equal to the perimeters of  $F_1, F_2$  and  $F_3$  respectively.

- (i) Do the volumes of  $S_1, S_2$  and  $S_3$  form a geometric sequence? Explain your answer.
- (ii) When the length of the slant edge of  $S_1$  is 5 cm, find the volume of  $S_3$ . Give the answer in surd form.

(6 marks)

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