

# FKS F3 2425 Math Final

Page 1 of 19 pages

S3 Final Examination (2024-2025)

Mathematics

(2 hours)

Date: 6<sup>th</sup> June 2025

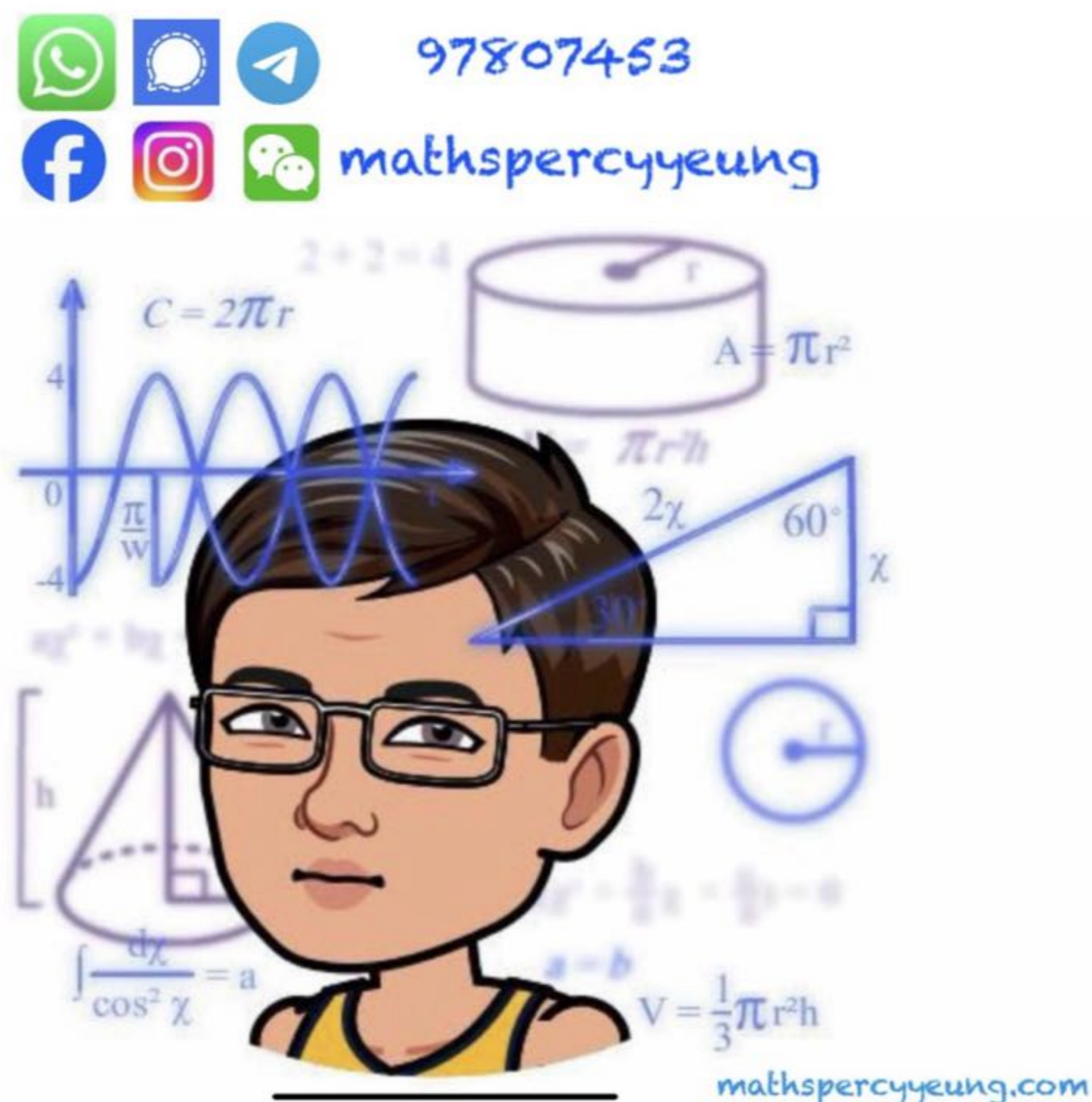
Time: 8:30 a.m. - 10:30 a.m.

Name: \_\_\_\_\_

Class: \_\_\_\_\_ No.: \_\_\_\_\_

## Instructions to students:

1. This paper consists of THREE parts, Conventional Questions, Multiple-choice Questions and Bonus Question. There are Section A and Section B in Conventional Questions. Section A carries 56 marks, Section B carries 24 marks, Multiple-choice Questions carry 20 marks and Bonus Question carries 3 marks.
2. The maximum score of this paper is 100.
3. Attempt ALL questions in Conventional Questions and Multiple-choice Questions. Write your answers in the spaces provided in this Question / Answer Book.
4. Unless otherwise specified, show your workings clearly.
5. Unless otherwise specified, numerical answers should either be exact or correct to 3 significant figures.
6. The diagrams in this paper are not necessarily drawn to scale.





























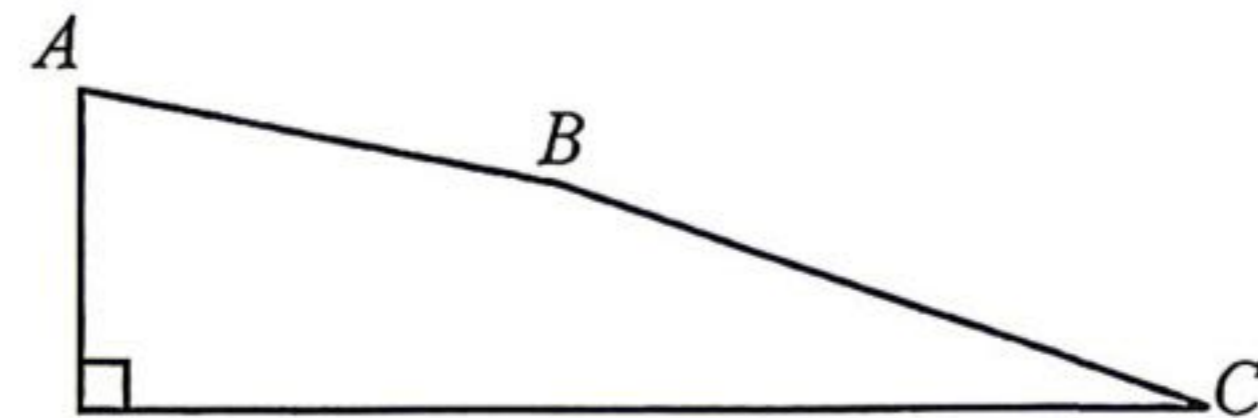


**Multiple-choice Questions (20 marks)**Each question carries 2 marks. Put  $\checkmark$  in the correct boxes.

	18	19	20	21	22	23	24	25	26	27
A										
B										
C										
D										

18. In the figure, Katie walks 32 m down path  $AB$  with gradient 1 : 5 and then walks 45 m down path  $BC$  with gradient 1 : 3. Find the horizontal distance between  $A$  and  $C$ , correct to 3 significant figures.

- A. 72.7 m  
 B. 73.0 m  
 C. 73.8 m  
 D. 74.1 m

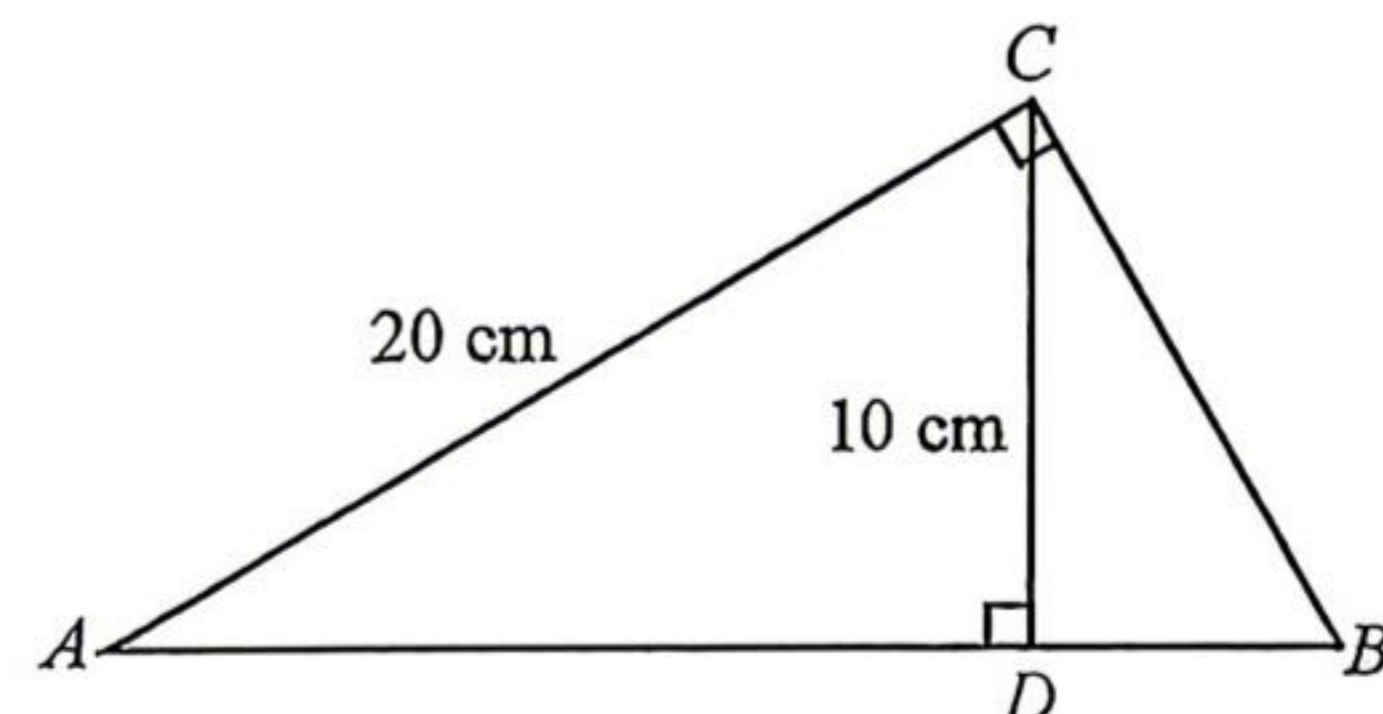


19. When a sphere of radius 8 cm is cut in a certain direction, the perimeter of the circular cross section obtained cannot be

- A. 28 cm.  
 B. 38 cm.  
 C. 48 cm.  
 D. 58 cm.

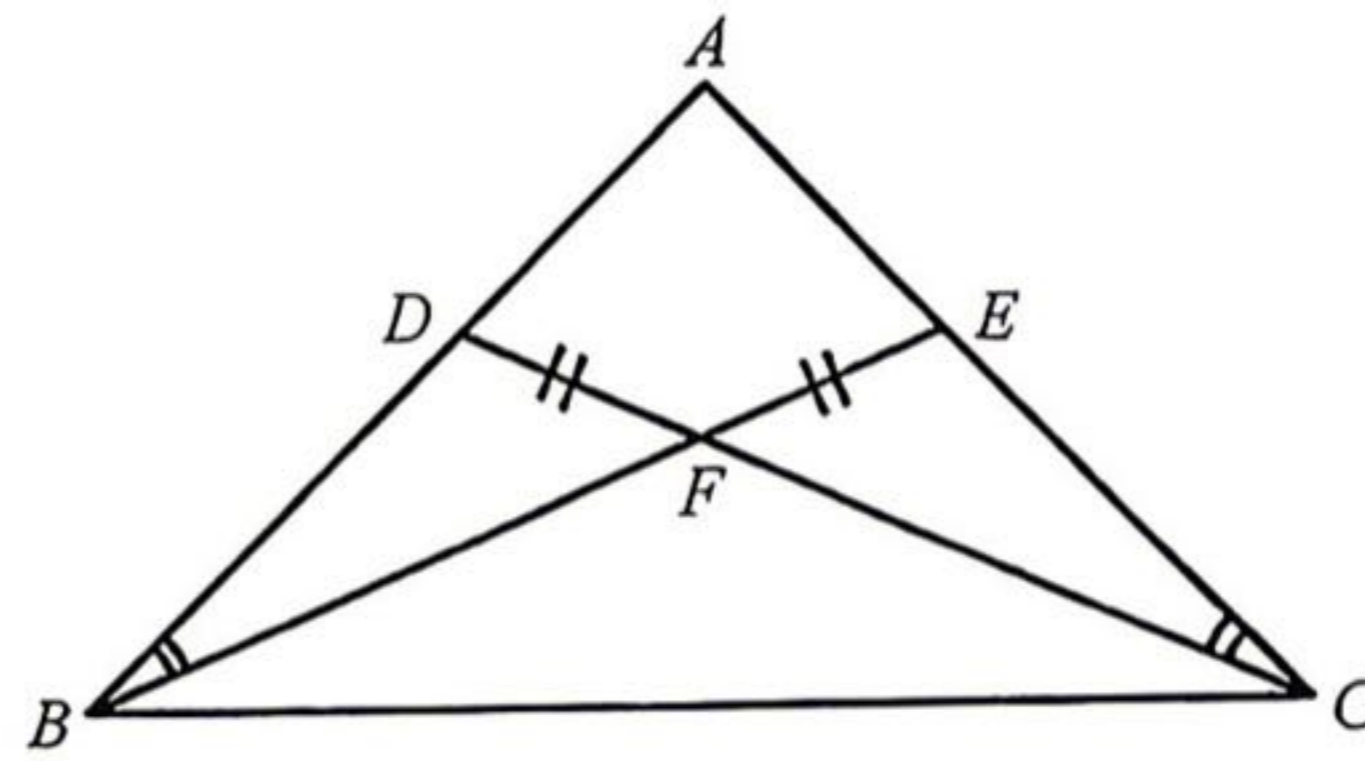
20. The figure shows a right-angled triangle  $ABC$ .  $D$  is a point on  $AB$  such that  $CD \perp AB$ . It is given that  $AC = 20$  cm and  $CD = 10$  cm. Find the length of  $BD$ .

- A.  $\frac{10}{\sqrt{3}}$  cm  
 B.  $\frac{10}{\sqrt{2}}$  cm  
 C. 10 cm  
 D.  $10\sqrt{3}$  cm



21. In the figure,  $D$  and  $E$  are points on  $AB$  and  $AC$  respectively.  $DC$  and  $BE$  intersect at  $F$  such that  $DF = EF$  and  $\angle ABF = \angle ACF$ . Which of the following must be true?

- I.  $\triangle BDF \cong \triangle CEF$   
 II.  $AB \perp AC$   
 III.  $\triangle ABC$  is an isosceles triangle.  
 A. I and II only  
 B. I and III only  
 C. II and III only  
 D. I, II and III



22. There are 2 comics, 1 dictionary and 2 novels on a bookshelf. Two books are randomly selected at the same time from the bookshelf. Find the probability of getting two different types of books.

- A.  $\frac{1}{5}$   
 B.  $\frac{16}{25}$   
 C.  $\frac{2}{3}$   
 D.  $\frac{4}{5}$

23. Consider the following integers.

3 4 4 5 5 5 5 7 7 9 10 10 11 13  $k$

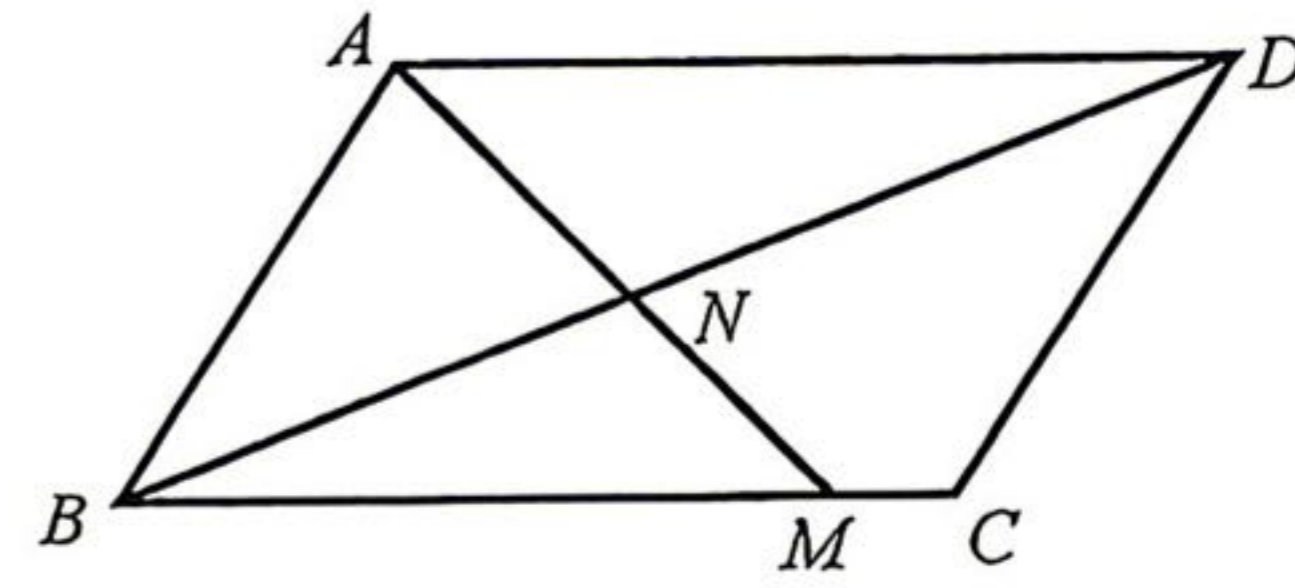
Let  $p$ ,  $q$  and  $r$  be the mean, the median and the mode of the above integers respectively.

If  $5 \leq k \leq 7$ , which of the following must be true?

- I.  $p > q$   
 II.  $p > r$   
 III.  $q > r$   
 A. I only  
 B. II only  
 C. I and III only  
 D. II and III only

24. In the figure,  $ABCD$  is a parallelogram.  $M$  is a point lying on  $BC$  such that  $BM : MC = 7 : 2$ .  $AM$  and  $BD$  intersect at the point  $N$ . If the area of  $\triangle ABN$  is  $126 \text{ cm}^2$ , then the area of the quadrilateral  $CDNM$  is

- A.  $134 \text{ cm}^2$ .  
 B.  $190 \text{ cm}^2$ .  
 C.  $288 \text{ cm}^2$ .  
 D.  $352 \text{ cm}^2$ .



25. A sum of \$55 000 is deposited at an interest rate of 5% per annum for 4 years, compounded half-yearly. Find the interest correct to the nearest dollar.
- A. \$12 149  
 B. \$12 135  
 C. \$12 093  
 D. \$12 012
26. The actual area of a piece of land is  $750 \text{ m}^2$ . If the area of the piece of land on a map is  $30 \text{ cm}^2$ , then the scale of the map is
- A. 1 : 25.  
 B. 1 : 50.  
 C. 1 : 500.  
 D. 1 : 250 000.
27. Let  $O$  be the origin. If the coordinates of points  $P$  and  $Q$  are  $(72, 42)$  and  $(0, 56)$  respectively, then the  $y$ -coordinate of the orthocentre of  $\triangle OPQ$  is
- A. 28.  
 B. 36.  
 C. 42.  
 D. 72.

