2016/17-ME
MATH CP
PAPER 1

HOK YAU CLUB

HONG KONG MOCK EXAMINATION 2016/17

MATHEMATICS Compulsory Part
PAPER 1
Question-Answer Book

9.00 am – 11.15 am (2¼ hours)

This paper must be answered in English

INSTRUCTIONS

1. After the announcement of the start of the examination, you should first write your Candidate Number in the space provided on Page 1 and stick barcode labels in the spaces provided on Pages 1 and 3.

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. Supplementary answer sheets will be supplied on request. Write your Candidate Number, mark the question number box and stick a barcode label 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 answer should be either exact or correct to 3 significant figures.

7. The diagrams in this paper are not necessarily drawn to scale.

8. No extra time will be given to candidates for sticking on the barcode labels or filling in the question number boxes after the 'Time is up' announcement.

Please stick the barcode label here.

Candidate Number									

	Marker's Use Only	**Examiner's Use Only**
	Marker No.	Examiner No.
Question No.	Marks	Marks
1-2		
3-4		
5-6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
Total		

SECTION A (1) (35 marks)

1. Simplify $\frac{(x^4y^{-3})^2}{x^{-4}y^7}$ and express your answer with positive indices. (3 marks)

2. Make s the subject of the formula $t(2s-r)=4(s-5t)$. (3 marks)

Answers written in the margins will not be marked.

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Please stick the barcode label here.

3. Factorize

(a) $2p^2 + pq - 6q^2$,

(b) $2p^2 + pq - 6q^2 + 9q - 6p$.

(3 marks)

4. Andy buys a toy then sells the toy to Betty at a profit of 20%. Later, Betty sells the toy to Calvin at a loss of 25%. It is given that Andy gains $\$28$.

(a) Find the price of the toy for Andy to purchase it.

(b) How much does Calvin spend on buying the toy?

(4 marks)

Answers written in the margins will not be marked.

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5. In a kindergarten, the ratio of the number of girls to that of boys is $5 : 4$. If the number of girls is increased by 72, then the number of girls will be twice the number of boys. Find the difference of the number of girls and the number of boys. (4 marks)

6. Consider the compound inequality

$$\frac{1-4x}{2} \geq 9 \quad \text{or} \quad 5-x<0 \quad \cdots\cdots(*) \ .$$

(a) Solve (*).

(b) Write down the greatest negative integer satisfying (*).

(4 marks)

Answers written in the margins will not be marked.

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7. The coordinates of the points P and Q are $(-4, 5)$ and $(4, -8)$ respectively. P is rotated anti-clockwise about the origin O through $270°$ to P'. Q is translated leftwards by k units to Q'.

(a) Write down the coordinates of P'.

(b) Suppose $P'OQ'$ is a straight line. Find k.

(4 marks)

Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

8. The stem-and-leaf diagram below shows the distribution of the scores (in marks) of 20 students in a Mathematics Test.

Stem (10 marks)	Leaf (1 mark)
5	*a* 3 7
6	0 2 3 4 5 8 9
7	1 3 6 7 8 8
8	2 4 6 *b*

It is given that the range and the mean of the score distribution are 34 marks and 70.2 marks respectively.

(a) Find a and b.

(b) If a student is randomly selected from the 20 students, find the probability that the score of the selected student in the Mathematics Test is divisible by 4 .

(5 marks)

Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

9. In Figure 1 , $ABCD$ is a parallelogram. E is a point lying on AB produced . F is a point lying on CD produced . Also, $BE = DF$.

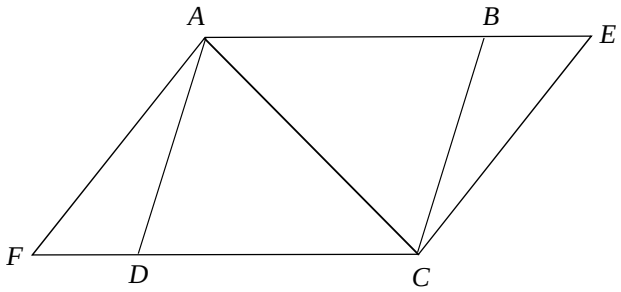

Figure 1

(a) Prove that $\Delta ACE \cong \Delta CAF$.

(b) Suppose $AF = 20\text{ cm}$, $AC = 15\text{ cm}$, $BE = 10\text{ cm}$ and $\angle ACB = \angle ABC$. Find the area of ΔACE .

(5 marks)

Answers written in the margins will not be marked.

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SECTION A (2) (35 marks)

10. The total publishing cost of books is $\$C$. It is given that C is the sum of two parts, one part is a constant and the other part varies directly as n, where n is the number of books that are published. When $n = 4\,000$, $C = 152\,000$; when $n = 6\,000$, $C = 222\,000$.

(a) When the publishing cost per book is \$40, find the number of books that are published.

(4 marks)

(b) Now, 5 000 books are published and the selling price of each book is \$42. The publisher claims that there is a loss even when all the published books are sold. Do you agree? Explain your answer. (2 marks)

Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

11. Consider the circle $C: x^2 + y^2 - 12x - 16y - 69 = 0$. Let X be the centre of C .

(a) Write down the coordinates of X and the radius of C . (2 marks)

(b) The straight line $L: 3x - 4y - 11 = 0$ and C intersect at two points A and B . A moving point P is equidistant from A and B . Denote the locus of P by Γ . Given that Γ cuts the x-axis and the y-axis at H and K respectively. Denote the origin by O . Someone claims that the area of ΔOHK is smaller than $\frac{1}{4}$ of the area of circle C . Is the claim correct? Explain your answer. (4 marks)

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Answers written in the margins will not be marked.

12. The following table shows the distribution of the numbers of group members joining the package tour provided by a travel agent. It is given that the median of the numbers of group members is 2.5 . Also, $a > 10$, $3 < c < 8$ and there are 28 groups in which the number of group members is less than or equal to 3 .

Number of group members	1	2	3	4	5
Number of groups	9	a	b	c	5

(a) Find a , b and c . (3 marks)

(b) Two more groups now join the package tour. It is found that the numbers of group members of these two groups are different and the range of the numbers of group members remains unchanged. Find the least possible value and the greatest possible value of the standard deviation of the numbers of group members. (4 marks)

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13. Figure 2 shows a vessel which is made by putting a cylinder on the top of a frustum . The height of the vessel is 31 cm , the upper base radius and the lower base radius of the frustum are 10 cm and 15 cm respectively. It is given that the capacities of the cylinder and the frustum are the same.

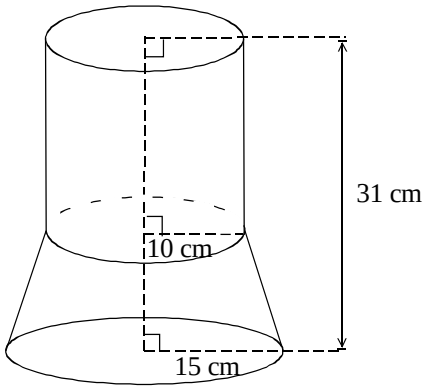

Figure 2

(a) Find the capacity of the frustum. (4 marks)

(b) 0.007 m^3 of water is now poured into the vessel. David claims that the depth of the water is greater than half of the height of the vessel. Is the claim correct? Explain your answer. (3 marks)

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14. Let $p(x)$ be a polynomial with the degree of 3 . It is given that $p(-2) = p(3) = 0$, $p(1) = -18$ and $p(2) = -20$.

(a) Find $p(x)$. (5 marks)

(b) How many rational roots does the equation $p(x) = 3x - 9$ have? Explain your answer.

(4 marks)

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SECTION B (35 marks)

15. The mean and the standard deviation of the test scores obtained by a class of students in a test are 38 marks and 10 marks respectively. Due to the poor performance, the test score of each student is adjusted such that each score is increased by 10 % and then extra 8 marks are added. The original standard score of Kelly in the test is -0.1. She claims that her standard score will be positive after the score adjustment. Do you agree? Explain your answer. (3 marks)

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Answers written in the margins will not be marked.

16. There are three departments A , B and C in a company. It is given that there are 4 supervisors, 4 supervisors and 5 supervisors in each of these three departments respectively. 7 people are randomly selected from the 13 supervisors to form a committee.

(a) Find the probability that the numbers of supervisors from departments A and B are the same in the committee. (2 marks)

(b) It is given that the numbers of supervisors from departments A and B are the same in the committee, find the probability that the number of supervisors from department C in the committee is the greatest. (2 marks)

Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

17. The 1st term and the 6th term of a geometric sequence are 8 and 1 944 respectively. Find

(a) the common ratio of the sequence, (2 marks)

(b) the least value of n such that the sum of the first n terms of the sequence is greater than 100 000 000 . (3 marks)

Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

18. Let $\mathrm{f}(x) = -\frac{1}{2}x^2 + \frac{1}{4}x + 1$.

(a) Using the method of completing the square, find the coordinates of the vertex of the graph of $y = \mathrm{f}(x)$. (2 marks)

(b) It is given that the straight line $y = c$ $(c > 0)$ and the graph of $y = \mathrm{f}(x)$ intersect at two points P and Q, and the length of the line segment PQ is $\frac{1}{2}c$. Find c. (3 marks)

Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

19. Figure 3(a) shows the base $ABCD$ of a pyramid. It is given that $AB = BC$, $AD = DC = 2\sqrt{6}$ cm, $\angle ABC = 90°$ and $\angle BAD = 75°$.

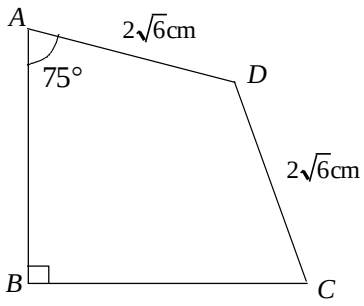

Figure 3(a)

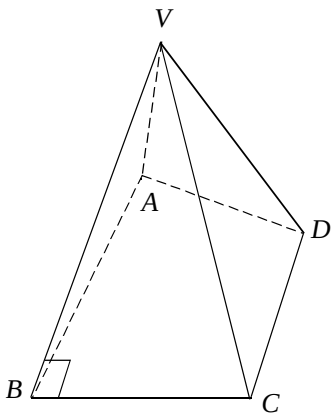

Figure 3(b)

(a) Find AB. (2 marks)

(b) Figure 3(b) shows a pyramid $VABCD$ with base $ABCD$. It is given that VAB is an equilateral triangle and $\angle VBC = 90°$.

(i) Find VD.

(ii) Let N be a point lying on DC such that BN is perpendicular to DC. Cindy claims that the angle between the plane VCD and the plane $ABCD$ is $\angle VNB$. Is the claim correct? Explain your answer.

(5 marks)

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Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

20. In Figure 4 , ABC is an acute-angled triangle. Denote the centroid and the orthocenter of ΔABC by G and H respectively. BH is produced to meet AC at D , CH is produced to meet AB at E , AG is produced to meet BC at M . Suppose N is the mid-point of ED .

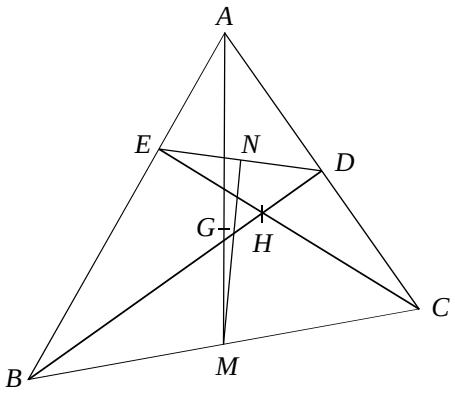

Figure 4

(a) (i) Prove that B , C , D and E are concyclic. Also, prove that the centre of the circle passing through these four points is M .

(ii) Someone claims that $MN \perp ED$. Is the claim correct? Explain your answer.

(4 marks)

(b) A rectangular coordinate system is introduced so that the coordinates of D and E are $(6, 3)$ and $(4, 4)$ respectively and the equation of BC is $x - 7y = 0$.

(i) Find the coordinates of point C .

(ii) It is given that the tangent to the circle $BCDE$ at point C cuts the x-axis and the y-axis at two points P and Q respectively, find the radius of the inscribed circle of ΔOPQ , where O is the origin.

(7 marks)

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MC

HOK YAU CLUB
HONG KONG MOCK EXAMINATION 2016/17

MATHEMATICS Compulsory Part
PAPER 2

12.00 nn — 1.15 pm (1¼ hours)

INSTRUCTIONS

1. Read carefully the instructions on the Answer Sheet. After the announcement of the start of the examination, you should first stick a barcode label and insert the information required in the spaces provided. No extra time will be given for sticking on the barcode label after the 'Time is up' announcement.

2. When told to open this book, you should check that all the questions are there. Look for the words '**END OF PAPER**' after the last question.

3. All questions carry equal marks.

4. **ANSWER ALL QUESTIONS**. You are advised to use an HB pencil to mark all the answers on the Answer Sheet, so that wrong marks can be completely erased with a clean rubber. You must mark the answers clearly; otherwise you will lose marks if the answers cannot be captured.

5. You should mark only **ONE** answer for each question. If you mark more than one answer, you will receive **NO MARKS** for that question.

6. No marks will be deducted for wrong answers.

Not to be taken away before the end of the examination session

There are 30 questions in Section A and 15 questions in Section B.
The diagrams in this paper are not necessarily drawn to scale.
Choose the best answer for each question.

Section A

1. $(-3)^{2017}(\frac{1}{9})^{1009} =$

   A. -3.

   B. $-\frac{1}{3}$.

   C. $-\frac{1}{9}$.

   D. $\frac{1}{3}$.

2. $(x-2)(x^2-2x+4) =$

   A. x^3-8.

   B. $(x-2)^3$.

   C. x^3-4x^2+8x-8.

   D. x^3+4x^2-8x-8.

3. If $2m+n+1=m-2n+5=-1$, then $m+n=$

   A. -2.

   B. 0.

   C. 2.

   D. 4.

4. If $0.74496 < x < 0.74505$, which of the following must be true?

A. $x = 0.8$ (correct to 1 significant figure) .

B. $x = 0.74$ (correct to 2 decimal places) .

C. $x = 0.745$ (correct to 3 significant figures) .

D. $x = 0.7450$ (correct to 4 decimal places) .

5. If p and q are constants such that $(x+2)^2 + p \equiv (x-1)(x+q)+3$, then $p =$

A. 5 .

B. –2 .

C. –4 .

D. –6 .

6. The solution of $-2x+5<13<5x-2$ is

A. $x>-4$.

B. $x>3$.

C. $-4<x<3$.

D. $x<-4$ or $x>3$.

7. If the roots of the equation $2x^2 - x + k = 0$ are -1 and β , then $11+2\beta-4\beta^2 =$

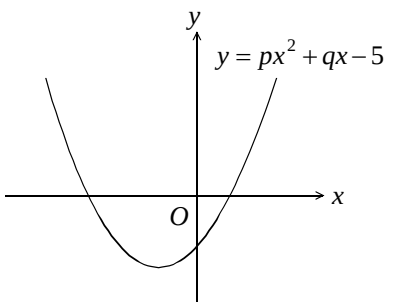
A. 5 .

B. 9 .

C. 13 .

D. 17 .

8. The figure shows the graph of $y = px^2 + qx - 5$, where p and q are constants. Which of the following is true?



A. $p > 0$ and $q > 0$

B. $p > 0$ and $q < 0$

C. $p < 0$ and $q < 0$

D. $p < 0$ and $q > 0$

9. The weight of Sunny is $20\,\%$ heavier than that of Clara and $20\,\%$ lighter than that of Kenny. Then

A. Kenny is $20\,\%$ heavier than Sunny.

B. Kenny is $40\,\%$ heavier than Clara.

C. Clara is $50\,\%$ lighter than Kenny.

D. Kenny is $50\,\%$ heavier than Clara.

10. \$ 50 000 is deposited at an interest rate of $2.4\,\%$ per annum, compounded half-yearly for 3 years. Another \$ 50 000 is deposited at a simple interest rate of $2.5\,\%$ per annum for 3 years. Find the difference between the two interests obtained correct to the nearest dollar.

A. \$ 40

B. \$ 63

C. \$ 1 928

D. \$ 3 896

11. Let a, b and c are non-zero numbers. If $\frac{1}{2}a = 2b = 3c$, then $\frac{1}{a} : \frac{1}{b} : \frac{1}{c} =$

A. $12:3:2$.

B. $6:4:1$.

C. $2:3:12$.

D. $1:4:6$.

12. It is given that z varies directly as the square of x and inversely as y. If x is increased by 20% and y is decreased by 25%, then z

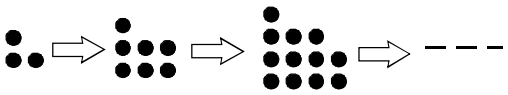
A. is increased by 8%.

B. is increased by 60%.

C. is increased by 92%.

D. is decreased by 10%.

13. In the figure, the 1st pattern consists of 3 dots. For any positive integer n, the $(n+1)$th pattern is formed by adding $n+3$ dots to the nth pattern. Find the number of dots in the 6th pattern.



A. 19

B. 25

C. 33

D. 42

14. There is a bag of salt. The weight of salt in the bag is measured as 8 kg correct to the nearest kg. If the bag of salt is packed into n packets such that the weight of salt in each packet is measured as 15 g correct to the nearest g, find the least possible value of n.

A. 483

B. 484

C. 517

D. 548

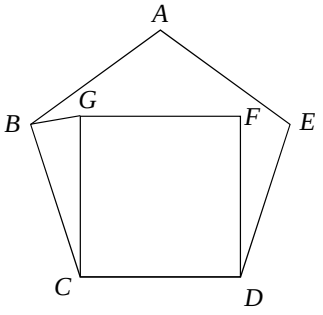
15. In the figure, $ABCDE$ is a regular pentagon and $CDFG$ is a square, $\angle ABG =$

A. $18°$.

B. $24°$.

C. $25°$.

D. $27°$.



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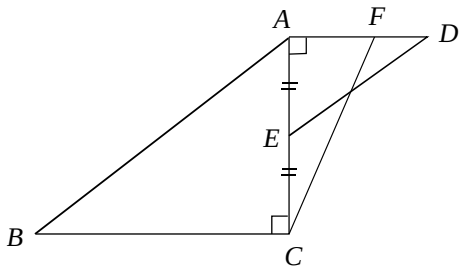
16. In the figure, E is the mid-point of AC and F is a point lying on AD. If $AB = 20\,\text{cm}$, $DE = 10\,\text{cm}$, $FD = 3\,\text{cm}$ and $CF = 13\,\text{cm}$, then the area of ΔABC is



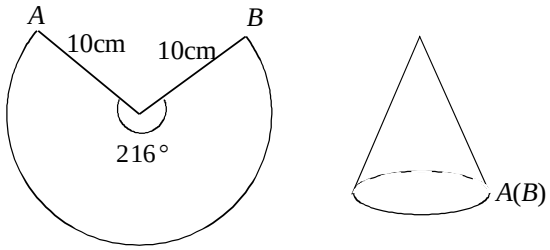
A. $48\,\text{cm}^2$.

B. $96\,\text{cm}^2$.

C. $160\,\text{cm}^2$.

D. $192\,\text{cm}^2$.

17. In the figure, the sector is folded to form a circular cone. Find the volume of the circular cone.



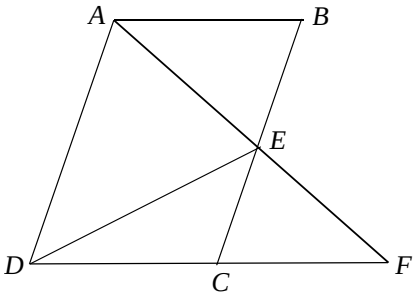
A. $96\pi\,\text{cm}^3$

B. $120\pi\,\text{cm}^3$

C. $288\pi\,\text{cm}^3$

D. $360\pi\,\text{cm}^3$

18. In the figure, $ABCD$ is a parallelogram. E is a point lying on BC such that $BE : EC = 3 : 2$. If the area of ΔECF is $96\,\text{cm}^2$, then the area of ΔADE is



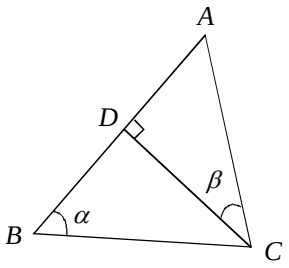
A. $144\,\text{cm}^2$.

B. $192\,\text{cm}^2$.

C. $216\,\text{cm}^2$.

D. $360\,\text{cm}^2$.

19. In the figure, $\frac{AC}{DB} =$



A. $\sin\beta\tan\alpha$.

B. $\cos\beta\tan\alpha$.

C. $\frac{\tan\alpha}{\sin\beta}$.

D. $\frac{\tan\alpha}{\cos\beta}$.

20. $\frac{\cos 0° + \cos(90° - \theta)}{\sin(90° + \theta)} - \frac{\cos(180° + \theta)}{1 - \sin(360° - \theta)} =$

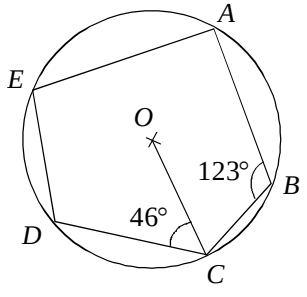
A. $\frac{\cos\theta}{2}$.

B. $\frac{2}{\sin\theta}$.

C. $\frac{2}{\cos\theta}$.

D. $\frac{2}{\cos\theta(1-\sin\theta)}$.

21. In the figure, O is the centre of the circle $ABCDE$. If $\angle OCD = 46°$ and $\angle ABC = 123°$, then $\angle AED =$



A. $80°$.

B. $101°$.

C. $103°$.

D. $123°$.

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22. If the sum of the interior angles of a regular polygon is $1\,440^\circ$, which of the following are true?

I. Each interior angle of the polygon is $135°$.

II. The number of diagonals of the polygon is 35.

III. The number of folds of rotational symmetry of the polygon is 10.

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

23. The rectangular coordinates of the point P are $(1, -\sqrt{3})$. If P is reflected with respect to the x-axis and then rotated clockwise about the origin through $270°$, then the polar coordinates of its image are

A. $(1, 120°)$.

B. $(1, 150°)$.

C. $(2, 120°)$.

D. $(2, 150°)$.

24. The coordinates of the points A and B are $(6, 0)$ and $(0, 8)$ respectively. If P is a moving point in the rectangular coordinate plane such that $PA \perp PB$, then the locus of P is

A. the perpendicular bisector of AB.

B. the straight line which passes through A and B.

C. the angle bisector of $\angle AOB$, where O is the origin.

D. the circle with AB as a diameter, excluding the points A and B.

25. If straight lines $2x - y + 4 = 0$ and $mx + ny + 2 = 0$ are perpendicular to each other at a point on the x-axis, then $n =$

A. -2.

B. -1.

C. 1.

D. 2.

26. The equation of the circle is $\frac{1}{2}x^2 + \frac{1}{2}y^2 - 3x + 5y + 9 = 0$. Which of the following are true?

I. The coordinates of the centre of the circle are $(3, -5)$.

II. The circle and the y-axis intersect at two distinct points.

III. The origin lies inside the circle.

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

27. There are four balls numbered 1, 4, 6 and 15 in a bag. If two balls are randomly drawn from the bag, find the probability that the product of the numbers drawn is ***not*** a multiple of 3.

A. $\frac{1}{6}$

B. $\frac{1}{4}$

C. $\frac{1}{2}$

D. $\frac{5}{6}$

28. There are five \$20 paper notes, four \$50 paper notes and one \$500 paper note in a wallet. A paper note is randomly drawn from the wallet. Find the expected value of the paper note.

A. 20 dollars

B. 50 dollars

C. 80 dollars

D. 190 dollars

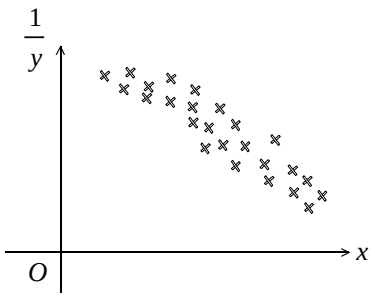
29. The scatter diagram below shows the relation between x and $\frac{1}{y}$. Which of the following represents the relation between x and y ?

A. When x increases, y decreases.

B. When x increases, y increases.

C. y varies directly as x.

D. y varies inversely as x.



30. Consider the following data :

11 18 12 14 14 20 7 16 10 p q

If the mean and the median of the above data both are 14, which of the following must be true?

I. $p+q=32$

II. $p \geq 14$

III. $q \leq 18$

A. I only

B. I and II only

C. I and III only

D. I, II and III

Section B

31. $\dfrac{1}{x^2-2x+1}-\dfrac{1}{x^2-1}=$

A. 0.

B. $\dfrac{2}{(x-1)(x+1)}$.

C. $\dfrac{2}{(x-1)^2(x+1)}$.

D. $\dfrac{2x}{(x-1)^2(x+1)}$.

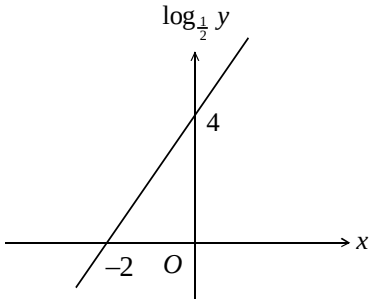
32. The graph in the figure shows the linear relation between x and $\log_{\frac{1}{2}} y$. If $y=ab^x$, then $a=$

A. $\dfrac{1}{16}$.

B. $\dfrac{1}{4}$.

C. $\dfrac{1}{2}$.

D. 16.



33. $5\times 2^7+2^5+17=$

A. 1001110001_2.

B. 1001101001_2.

C. 1010101001_2.

D. 1010110001_2.

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34. Let $u = \frac{i}{a+i}$ and $v = \frac{i}{a-i}$, where a is a real number. Which of the following must be true?

I. uv is a real number.

II. The imaginary part of u is equal to the imaginary part of v.

III. The real part of $\frac{1}{u}$ is equal to the real part of $\frac{1}{v}$.

A. I only

B. II only

C. I and II only

D. II and III only

35. Which of the following systems of inequalities will make $p = 2x - 3y$ have both maximum and minimum values?

A. $\begin{cases} x \geq 0 \\ y \geq 0 \\ 3x - 2y \leq 6 \end{cases}$

B. $\begin{cases} x \leq 0 \\ y \leq 0 \\ 3x - 2y \geq 6 \end{cases}$

C. $\begin{cases} x \geq 0 \\ y \geq 0 \\ 3x - 2y \geq 6 \end{cases}$

D. $\begin{cases} x \geq 0 \\ y \leq 0 \\ 3x - 2y \leq 6 \end{cases}$

36. Let a, b and c be positive numbers and $b^2 = ac$. Which of the following must be true?

I. $\log a$, $\log b$, $\log c$ is an arithmetic sequence.

II. 2^a, 2^b, 2^c is a geometric sequence.

III. a^m, b^m, c^m is a geometric sequence, where m is a positive integer.

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

37. For $0° \le x \le 360°$, how many roots does the equation $\sin x(3\cos^2 x + 4\cos x - 4) = 0$ have?

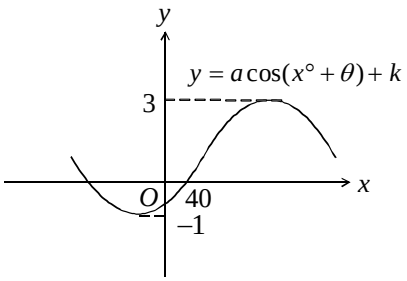
A. 2

B. 3

C. 4

D. 5

38. Let a and k be constants and $-90° < \theta < 90°$. The figure shows the graph of $y = a\cos(x° + \theta) + k$. Find the values of a , θ and k .



	a	θ	k
A.	2	20°	1
B.	2	50°	1
C.	–2	20°	1
D.	–2	20°	3

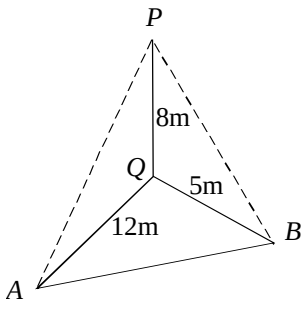
39. In the figure, PQ is a vertical pole standing on the horizontal ground AQB , where $\angle AQB = 90°$. If the angle between the plane PAB and the horizontal plane is θ , then $\tan\theta =$

A. $\frac{2}{3}$.

B. $\frac{15}{26}$.

C. $\frac{8}{5}$.

D. $\frac{26}{15}$.



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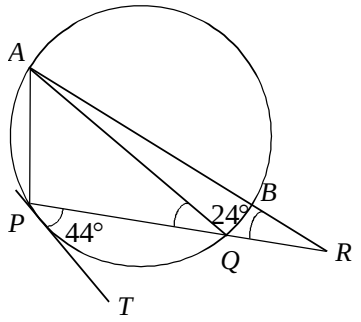
40. In the figure, AB is a diameter of the circle. TP touches the circle at P . ABR and PQR are straight lines. If $\angle ARP = 24°$ and $\angle RPT = 44°$, then $\angle AQP =$

A. $22°$.

B. $35°$.

C. $46°$.

D. $48°$.



41. Find the equation of the circle with its centre at the point $(3, -1)$ and touching the straight line $3x + 4y + 5 = 0$.

A. $x^2 + y^2 + 6x - 2y + 6 = 0$

B. $x^2 + y^2 - 6x + 2y + 6 = 0$

C. $x^2 + y^2 - 6x + 2y + 8 = 0$

D. $x^2 + y^2 - 6x + 2y + 9 = 0$

42. Bag A contains 3 red balls and 2 white balls while bag B contains 2 red balls and 4 white balls. If one ball is randomly drawn from bag A and put into bag B , then one ball is randomly drawn from bag B and put into bag A . Now, a ball is randomly drawn from bag A , the probability of drawing a red ball is

A. $\frac{43}{175}$.

B. $\frac{51}{175}$.

C. $\frac{97}{175}$.

D. $\frac{3}{5}$.

43. 5 girls and 4 boys sit in a row. If only two boys sit next to each other , find the number of permutation.

A. 43 200

B. 86 400

C. 172 800

D. 362 880

44. The stem-and-leaf diagram below shows the distribution of the scores (in marks) of a group of students in a test.

Stem (tens)	Leaf (units)
3	1 6 7 9
4	2 2 7 8
5	2 6 6 7 9
6	0 4 4
7	3 4 8
8	5

Which of the following are true?

I. The inter-quartile range of the distribution is 22 marks.

II. There is no student with standard score less than -2.

III. There are 3 students whose standard scores are above 1.3 .

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

45. The standard deviation of the five numbers $-3a+b$, $-3a+5b$, $-3a-3b$, $-3a+9b$ and $-3a-7b$, where $b>0$, is

A. $4\sqrt{2}b$.

B. $2\sqrt{10}b$.

C. $\frac{24}{5}b$.

D. $32b$.

END OF PAPER