

牛津數學科DSE試題分析 座談會2019

必修部分 卷一

講者：林志恒老師
港大同學會書院

CONTENT

- Paper 1: Topics in Section A1, A2 and B
- Paper 1: Detailed Analysis in 2019 DSE
- Paper 1: Trend in 8 DSE papers
- DSE Students' performance and Cut-off
- Strategies for achieving Level 2, 4 and 5**

2019 Paper 1:

Topics in Section A(1), A(2) and B

2019 DSE A(1)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Number and Algebra	Change of subject (3)	Simplifying algebraic fractions (3)	Solving quadratic equation + Pythagoras' Theorem (3)	Factorization (4)	Percentage (Profit & Discount) (4)	Solving inequalities (4)	Ratio Solving simultaneous equations (4)		
Measures, Shape and Space									Volume & Surface Area of Spheres (5)
Data Handling								Pie Chart Probability (5)	

2019 Paper 1:

Topics in Section A(1), A(2) and B

2019 DSE A(2)	Q10	Q11	Q12	Q13	Q14
Number and Algebra	(a) Partial Variations (3) (b) Solving quadratic equations (2)	(a) Division of Polynomial (3) (b) Rational roots (3)			
Measures, Shape and Space				(a) Angle properties of a circle (3) (b) Perimeter of Sector (5)	(a) Prove $\cong \Delta s, \sim \Delta s$ (4) (b) Side opp, equal $\angle s$ (4)
Data Handling			(a) Stem-and-leaf diagram (2) (b) Range and S.D. (6)		

2019 Paper 1:

Topics in Section A(1), A(2) and B

2019 DSE B	Q15	Q16	Q17	Q18	Q19
Number and Algebra		(a) Solving quadratic equations in two unknowns (2) (b) Logarithm properties, sum of A.S., solving quadratic inequalities ✂(4)			(a) Quadratic function (1) (b) (i) Transformation; Finding vertex by completing square ✂(4)
Measures, Shape and Space			(a) Inscribed circle of Δ ✂(2) (b) (i) Description of a locus (1) (ii) Equation of a locus (4)	(a) 2D Trigo. – sine & cosine formulae ✂(5) (b) 3D Trigo. – angle between two planes ✂(2)	(b) (ii) Least area of circle – converse of \angle in semi-circle, <div style="border: 1px solid black; padding: 2px;">– equation of circle</div> (4) (iii) Tests for concyclic points ✂(3)
Data Handling	Combination ✂(3)				

2019 Paper 1:

Topics in Section A(1), A(2) and B

2019 DSE	A(1)	A(2)	B	Total	
Number and Algebra	25	11	11	47	45%
Measures, Shape and Space	5	16	21	42	40%
Data Handling	5	8	3	16	15%

2019 Paper 1: Detailed Analysis – A(1)

Q1 (3 marks)

1. Make h the subject of the formula $9(h+6k)=7h+8$.

Difficulties or common errors:

- Basic algebraic operation skills

Recommendation:

- Topic to be covered every year (2012–2019)
- Advices to students – Accuracy

2019 Paper 1: Detailed Analysis – A(1)

Q2 (3 marks)

2. Simplify $\frac{3}{7x-6} - \frac{2}{5x-4}$.

Difficulties or common errors:

- Basic algebraic operation skills

Recommendation:

- Test twice (2016, 2019)
- Advices to students – Accuracy

2019 Paper 1: Detailed Analysis – A(1)

Q3 (3 marks)

3. The length and the breadth of a rectangle are 24 cm and $(13+r)\text{ cm}$ respectively. If the length of a diagonal of the rectangle is $(17-3r)\text{ cm}$, find r .

Difficulties or common errors:

- Recognize the **legs** and the **hypotenuse**
- Expand $(a + b)^2$ and $(a - b)^2$ correctly

Recommendation:

- First time
- Advices to students
 - Accuracy
 - Drawing a diagram

2019 Paper 1: Detailed Analysis – A(1)

Q4 (3 marks)

4. Factorize

(a) $4m^2 - 9$, (b) $2m^2n + 7mn - 15n$,

(c) $4m^2 - 9 - 2m^2n - 7mn + 15n$.

Difficulties or common errors:

- Recognize the pattern of $a^2 - b^2$
- Take out the common factor “ n ” first

Recommendation:

- Topic to be covered every year (2012–2019)
- Advices to students – Accuracy

2019 Paper 1: Detailed Analysis – A(1)

Q5 (4 marks)

5. A wallet is sold at a discount of 25% on its marked price. The selling price of the wallet is \$450.
- (a) Find the marked price of the wallet.
- (b) After selling the wallet, the percentage profit is 15%. Find the cost of the wallet.

Difficulties or common errors:

- **Selling price**
= marked price \times (1 – discount %)
- **Selling price**
= cost price \times (1 + profit %)

2019 Paper 1: Detailed Analysis – A(1)

Q5 (4 marks)

5. A wallet is sold at a discount of 25% on its marked price. The selling price of the wallet is \$450.
- (a) Find the marked price of the wallet.
- (b) After selling the wallet, the percentage profit is 15%. Find the cost of the wallet.

Recommendation:

- Profit, loss and discount in 2014, 2015, 2018, 2019
- Advices to students – **relationship** among SP, CP & MP

2019 Paper 1: Detailed Analysis – A(1)

Q6 (4 marks)

6. (a) Solve the inequality $\frac{7x+26}{4} \leq 2(3x-5)$.

(b) Find the number of integers satisfying both inequalities $\frac{7x+26}{4} \leq 2(3x-5)$ and $45-5x \geq 0$.

Difficulties or common errors:

- Solving inequalities in one unknown
- Not listing all integers

Recommendation:

- And(12,13,15,17,18,19); Or(16); x(14)
- Advices to students – Accuracy

2019 Paper 1: Detailed Analysis – A(1)

Q7 (4 marks)

7. In a playground, the ratio of the number of adults to the number of children is 13:6. If 6 adults and 24 children enter the playground, then the ratio of the number of adults to the number of children is 6:7. Find the original number of adults in the playground.

Difficulties or common errors:

- 6 adults = 13 children,
not 13 adults = 6 children
- Solving simultaneous equations

2019 Paper 1: Detailed Analysis – A(1)

Q7 (4 marks)

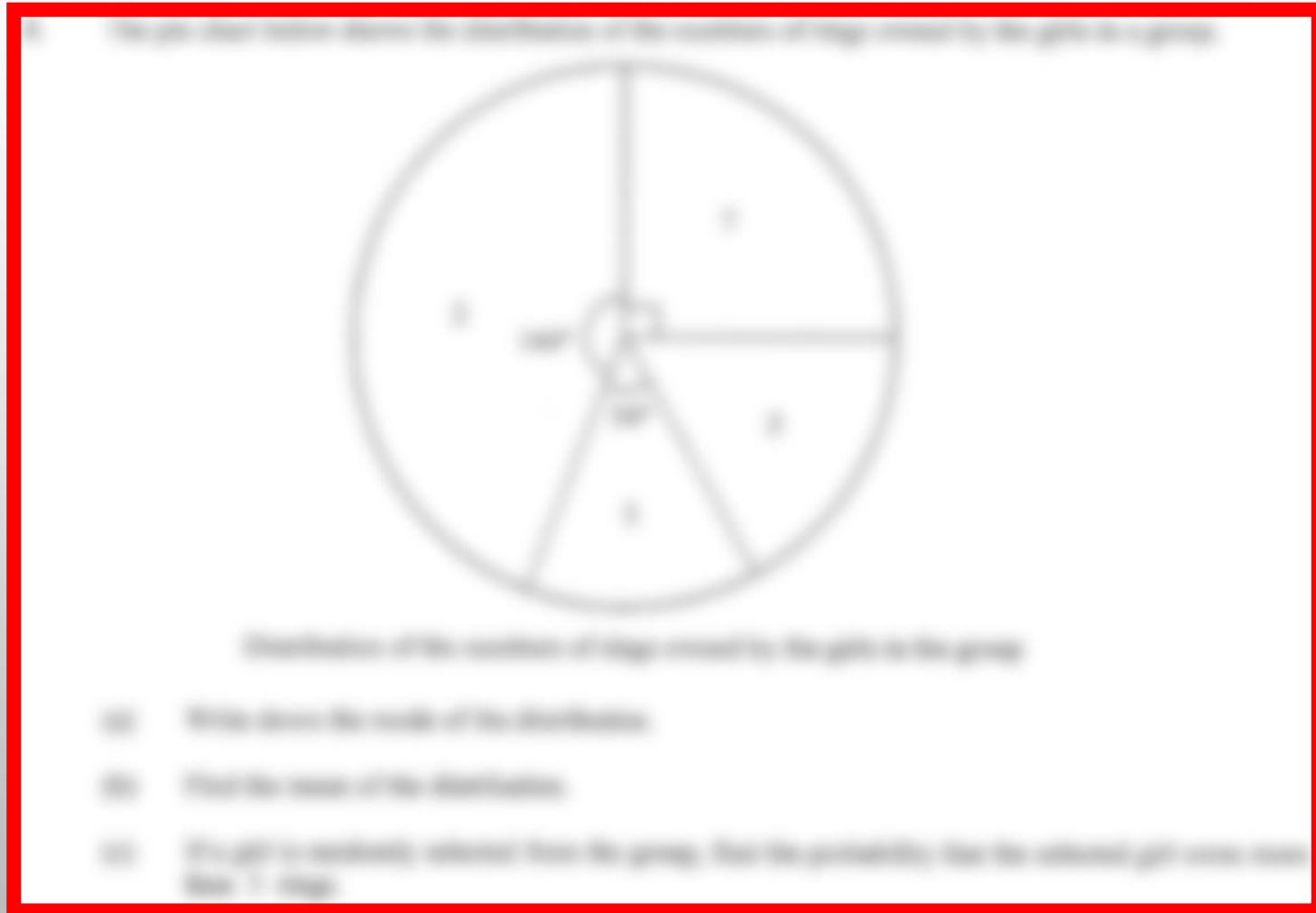
7. In a playground, the ratio of the number of adults to the number of children is $13:16$. If 9 adults and 24 children enter the playground, then the ratio of the number of adults to the number of children is $8:7$. Find the original number of adults in the playground.

Recommendation:

- Simultaneous equations
(12,13,15,16,17,18,19)
- Advices to students
 - **k -method for ratio**
Let the no. of adults be $13k$.

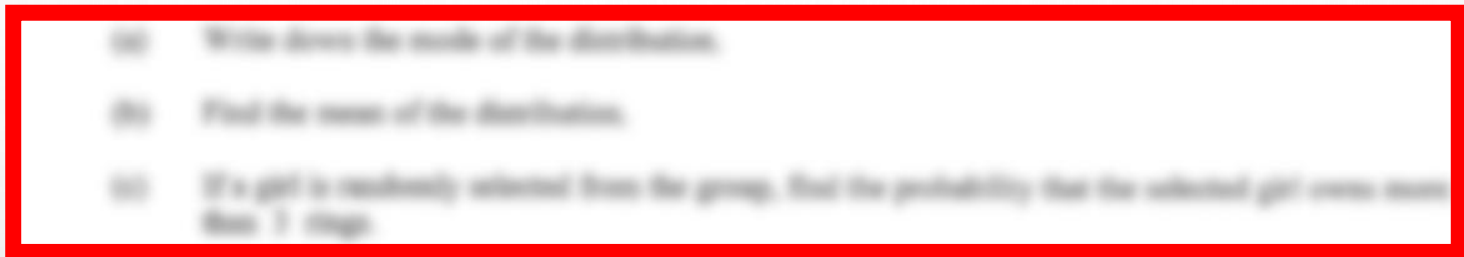
2019 Paper 1: Detailed Analysis – A(1)

Q8 (4 marks)



2019 Paper 1: Detailed Analysis – A(1)

Q8 (4 marks)



Difficulties or common errors:

- Mean, Mode & Median
- More than 3, i.e. **not including 3**

Recommendation:

- Simple probability (15, 16, 18, 19)
- Pie chart (17, 19)
- Advices to students – Accuracy

2019 Paper 1: Detailed Analysis – A(1)

Q9 (4 marks)

9. The sum of the volumes of two spheres is $124\pi \text{ cm}^3$. The radius of the larger sphere is equal to the diameter of the smaller sphere. Express, in terms of x ,

- (a) the volume of the larger sphere;
- (b) the sum of the surface areas of the two spheres.

Difficulties or common errors:

- Volume ratio = (Radius ratio)³
- Formulae $\frac{4}{3}\pi r^3$ and $4\pi r^2$

2019 Paper 1: Detailed Analysis – A(1)

Q9 (4 marks)

8. The ratio of the volumes of two spheres is $125:8$. The radius of the larger sphere is equal to the diameter of the smaller sphere. Express, in terms of x ,

- (a) the volume of the larger sphere;
- (b) the ratio of the surface areas of the two spheres.

Recommendation:

- Mensuration
(12, 13A2, 14A2, 15, 16A2, 17A2, 18A2, 19)
- Volume ratio (13A2, 17A2, 19)
- Advices to students – Accuracy

2019 Paper 1: Detailed Analysis – A(2)

Q10 (5 marks)

10. It is given that $h(x)$ is partly constant and partly varies as x . Suppose that $h(2) = -16$ and $h(3) = 72$.

(a) Find $h(x)$. (3 marks)

(b) Solve the equation $h(x) = 3x^2$. (2 marks)

Difficulties or common errors:

- Partial variation, $h(x) = a + bx$
- Solving quadratic equation

Recommendation:

- Partial (12,13,14,15,16, **18B**,19);
Inverse (**17A1**)
- Advices to students – Direct vs Inverse

– x or x^2 or \sqrt{x}

2019 Paper 1: Detailed Analysis – A(2)

Q11 (6 marks)

11. Let $p(x)$ be a cubic polynomial. When $p(x)$ is divided by $x-1$, the remainder is 50. When $p(x)$ is divided by $x+2$, the remainder is -52 . It is given that $p(x)$ is divisible by $2x^2+9x+14$.

- (a) Find the quotient when $p(x)$ is divided by $2x^2+9x+14$. (3 marks)
- (b) How many rational roots does the equation $p(x)=0$ have? Explain your answer. (3 marks)

Difficulties or common errors:

- Division Algorithm,

$$p(x) = (a + bx)(2x^2 + 9x + 14) + 0$$

- Remainder theorem,

$$\text{i.e. } p(1) = 50 \text{ and } p(-2) = -52$$

- Identifying rational root by showing

$$\Delta > 0$$

2019 Paper 1: Detailed Analysis – A(2)

Q11 (6 marks)

11. Let $p(x)$ be a cubic polynomial. When $p(x)$ is divided by $x-1$, the remainder is 30. When $p(x)$ is divided by $x-2$, the remainder is -32 . It is given that $p(x)$ is divisible by $2x^2+9x+14$.
- (a) Find the quotient when $p(x)$ is divided by $2x^2+9x+14$. (3 marks)
- (b) How many rational roots does the equation $p(x)=0$ have? Explain your answer. (3 marks)

Recommendation:

- Division of Polynomial
(12,13,14A1,15,16,17,18,19)
- Nature of root:
Real(13,16), Rational (14A1,18,19),
Integral(15,17)

2019 Paper 1: Detailed Analysis – A(2)

Q12 (8 marks)

12. The stem-and-leaf diagram below shows the distribution of the results (in seconds) of some boys in a 400 m race.

Stem (tens)	Leaf (units)
5	a
6	0 0 3 c c 8 9 9 9
7	0 1 1 1 2 2 5 6 9
8	b

It is given that the inter-quartile range of the distribution is 8 seconds.

- (a) Find c . (2 marks)
- (b) It is given that the range of the distribution exceeds 34 seconds and the mean of the distribution is 69 seconds. Find
- a and b ,
 - the least possible standard deviation of the distribution.

(6 marks)

2019 Paper 1: Detailed Analysis – A(2)

Q12 (8 marks)

Stem (tens)	Leaf (units)
5	a
6	0 0 3 c c 8 9 9 9
7	0 1 1 1 2 2 5 6 9
8	b

Difficulties or common errors:

- Stem-and-leaf: $60+c$ instead of $6c$
- $IQR = Q_3 - Q_1$, counting accuracy
- Case analysis $\begin{cases} a=0 \\ b=7 \end{cases}$ or $\begin{cases} a=1 \\ b=6 \end{cases}$ for $a+b=7$

2019 Paper 1: Detailed Analysis – A(2)

Q12 (8 marks)

Stem (cm)	Leaf (mm)
5	a
6	0 0 3 c c 8 9 9 9
7	0 1 1 1 2 2 5 6 9
8	b

Recommendation:

- Stem-and-leaf (12,13,15,17,19)
- Range, IQR & SD (13,14,15,17,18,19)
- Case analysis (12,13,15,16,19)

2019 Paper 1: Detailed Analysis – A(2)

Q13 (8 marks)

13. In Figure 1, O is the centre of circle $ABCDE$. AC is a diameter of the circle. BD and OC intersect at the point F . It is given that $\angle AED = 115^\circ$.



Figure 1

- (a) Find $\angle CBF$. (3 marks)
- (b) Suppose that $BC \parallel OD$ and $OB = 18 \text{ cm}$. Is the perimeter of the sector OBC less than 60 cm ? Explain your answer. (3 marks)

2019 Paper 1: Detailed Analysis – A(2)

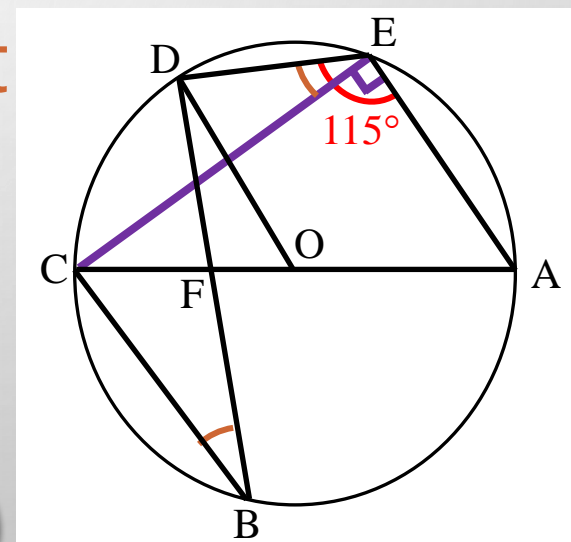
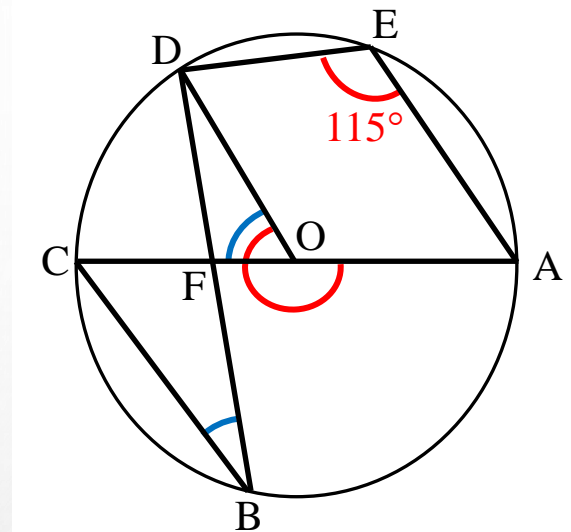
Q13 (8 marks)

Difficulties or common errors:

- Angle at **center** **twice** angle at circumference
- Angle in **semi-circle**
- Angle in the **same segment**

Recommendation:

- Angle properties of a circle (**12A1**, **15A1**, 17, **18A1**, 19)



2019 Paper 1: Detailed Analysis – A(2)

Q14 (8 marks)

14. In Figure 1, $ABCD$ is a square. Triangle BCF is isosceles with $BC = CF$. BF and CE intersect at the point P . Let G be a point such that $AG \parallel BC$ and $CG \parallel BF$.



Figure 1

(a) Prove that

(i) $\angle BCF = \angle CBP$,

(ii) $\angle BCF = \angle BPF$.

(2 marks)

(b) Suppose that $\angle BCF = \angle BPC$.

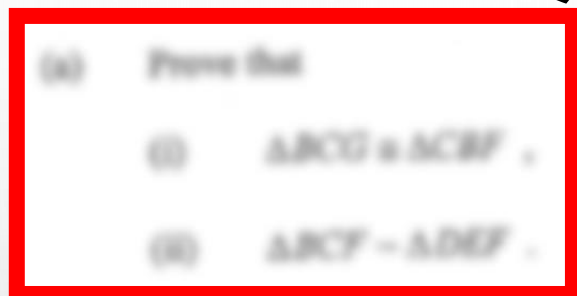
(i) Let $BC = 1$. Express BP in terms of 1.

(ii) Assume also that $AE = BP$. Do you agree? Explain your answer.

(2 marks)

2019 Paper 1: Detailed Analysis – A(2)

Q14 (8 marks)

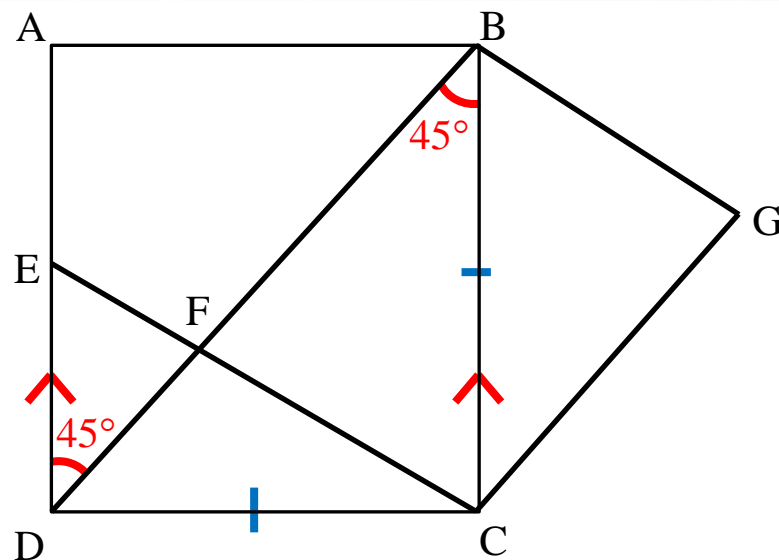


Difficulties or common errors:

- Prove $\cong \Delta$ s, $\sim \Delta$ s
- **Square:** $BC = DC$ and $BC \parallel ED$

Recommendation:

- Geometric proof:
 $\cong \Delta$ s(13A1, 16, 17, 19); $\sim \Delta$ s(14A1, 18, 19)
- Square (15, 19)



2019 Paper 1: Detailed Analysis – B

✂ Q15 (3 marks)

15. There are 21 boys and 11 girls in a class. If 5 students are selected from the class to form a committee consisting of at least 1 boy, how many different committees can be formed? (3 marks)

Difficulties or common errors:

- **Combination** instead of probability

Recommendation:

- ✂ Permutation (18)
- ✂ Combination (19)
- ✂ Probability (12, 13, 14, 15, 16, 17)
- Terminology: “at least”x3, “exactly”x2,
“at most”x1,
“not more than”x1,

2019 Paper 1: Detailed Analysis – B

✂ Q16 (6 marks)

16. Let α and β be real numbers such that
$$\begin{cases} \beta = 5\alpha - 18 \\ \beta = \alpha^2 - 13\alpha + 63 \end{cases}$$
- (a) Find α and β . (2 marks)
- (b) The 1st term and the 2nd term of an arithmetic sequence are $\log \alpha$ and $\log \beta$ respectively. Find the least value of n such that the sum of the first n terms of the sequence is greater than 888. (4 marks)

Difficulties or common errors:

- **Combination** of Log properties, Sum of A.S., Solving quadratic inequality (~2015Q17)

2019 Paper 1: Detailed Analysis – B

✂ Q16 (6 marks)

16. Let α and β be real numbers such that
$$\begin{cases} \beta = 5\alpha - 18 \\ \beta = \alpha^2 - 13\alpha + 63 \end{cases}$$
- (a) Find α and β . (2 marks)
- (b) The 1st term and the 2nd term of an arithmetic sequence are $\log \alpha$ and $\log \beta$ respectively. Find the least value of n such that the sum of the first n terms of the sequence is greater than 888. (4 marks)

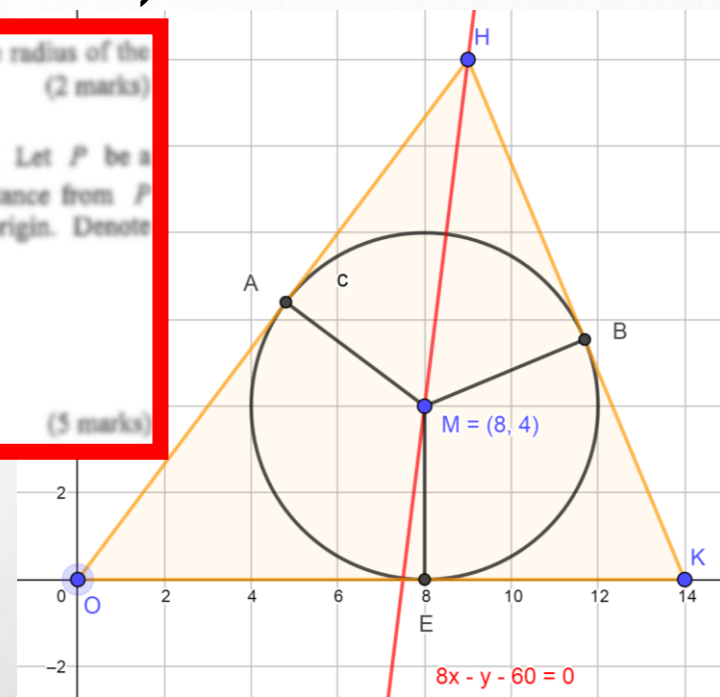
Recommendation:

- ✂ Log properties (12,13,15,17,19)
- ✂ A.S. (14,15,16,19),
- ✂ G.S. (12,13,17,18)
- ✂ Quadratic inequality (12,13,14,15,16,17,18,19)

2019 Paper 1: Detailed Analysis – B

✂ Q17 (7 marks)

17. (a) Let a and p be the area and the perimeter of $\triangle CDE$ respectively. Denote the radius of the inscribed circle of $\triangle CDE$ by r . Prove that $pr = 2a$. (2 marks)
- (b) The coordinates of the points H and K are $(9, 12)$ and $(14, 0)$ respectively. Let P be a moving point in the rectangular coordinate plane such that the perpendicular distance from P to OH is equal to the perpendicular distance from P to HK , where O is the origin. Denote the locus of P by Γ . (5 marks)
- (i) Describe the geometric relationship between Γ and $\angle OHK$.
- (ii) Using (a), find the equation of Γ .



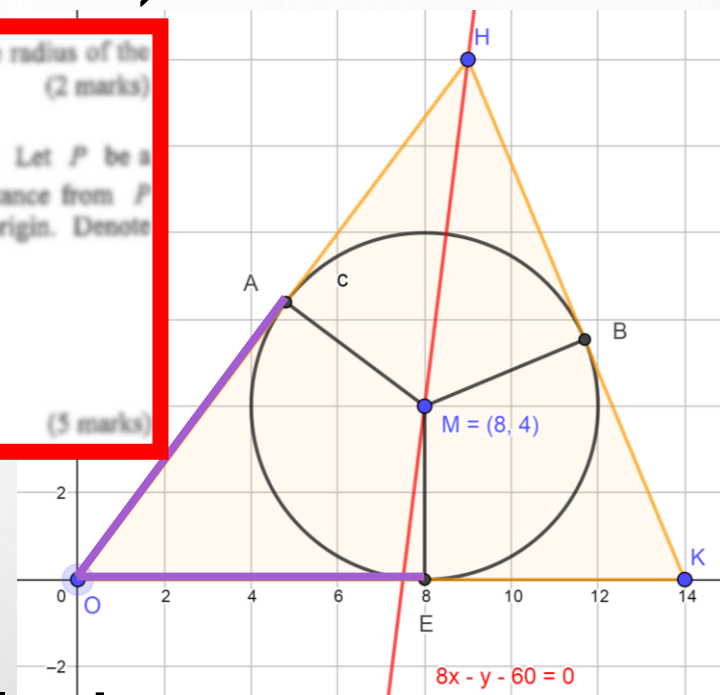
Difficulties or common errors:

- (a) Simple if practice in KS3 level before

2019 Paper 1: Detailed Analysis – B

✂ Q17 (7 marks)

17. (a) Let a and p be the area and the perimeter of $\triangle CDE$ respectively. Denote the radius of the inscribed circle of $\triangle CDE$ by r . Prove that $pr = 2a$. (2 marks)
- (b) The coordinates of the points H and K are $(9, 12)$ and $(14, 0)$ respectively. Let P be a moving point in the rectangular coordinate plane such that the perpendicular distance from P to OH is equal to the perpendicular distance from P to HK , where O is the origin. Denote the locus of P by Γ . (5 marks)
- (i) Describe the geometric relationship between Γ and $\angle OHK$.
- (ii) Using (a), find the equation of Γ .



Difficulties or common errors:

- (b) (i) Very Good – angle bisector
- (b) (ii) Difficult to find the relationship between radius and the equation; Find the equation without using (a), then?

2019 Paper 1: Detailed Analysis – B

✂ Q17 (7 marks)

17. (a) Let a and p be the area and the perimeter of $\triangle CDE$ respectively. Denote the radius of the inscribed circle of $\triangle CDE$ by r . Prove that $pr = 2a$. (2 marks)
- (b) The coordinates of the points H and K are $(9, 12)$ and $(14, 0)$ respectively. Let P be a moving point in the rectangular coordinate plane such that the perpendicular distance from P to OH is equal to the perpendicular distance from P to HK , where O is the origin. Denote the locus of P by Γ .
- (i) Describe the geometric relationship between Γ and $\angle OHK$.
- (ii) Using (a), find the equation of Γ . (3 marks)

Recommendation:

- Geometric relationship:
Angle bisector(19), midpoint(18)
- ✂ Four special centres of a triangle:
Incentre(16, 19), circumcentre(15, 16, 18)

2019 Paper 1: Detailed Analysis – B

✂ Q18 (7 marks)

18. Figure 3 shows a tetrahedron $ABCD$. Let P be a point lying on AD such that BP is perpendicular to AD . A craftsman finds that $AC = AD = CD = 13$ cm, $BC = 8$ cm, $BD = 12$ cm and $\angle ABD = 72^\circ$.

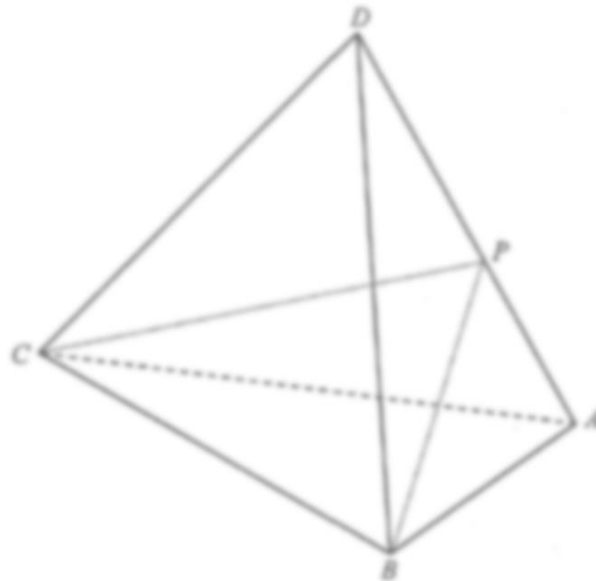
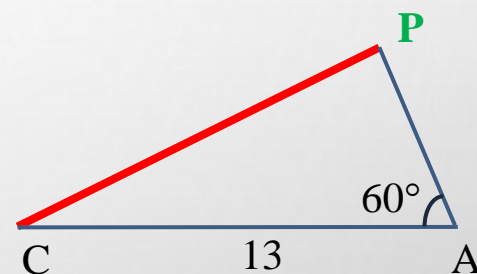
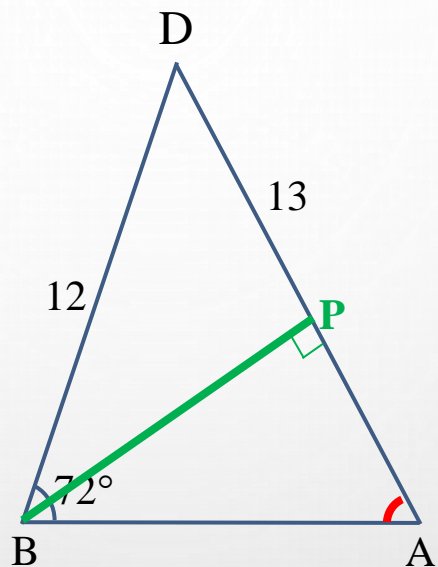
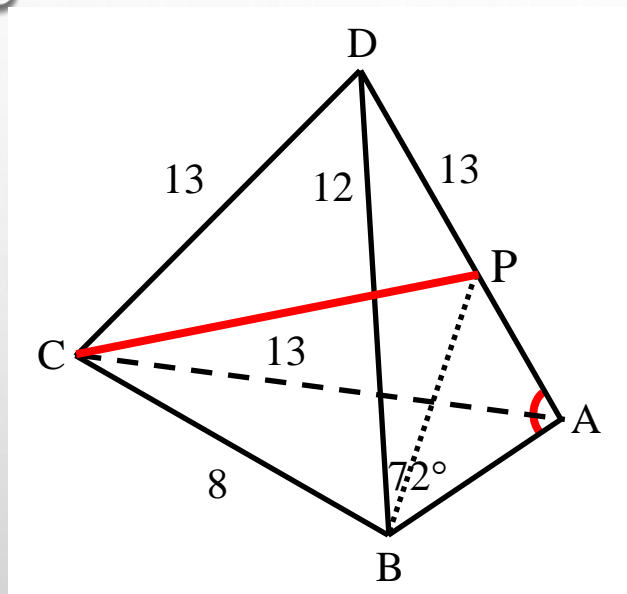


Figure 3

- (a) Find
- (i) $\angle BAD$,
 - (ii) CP .
- (5 marks)
- (b) The craftsman claims that $\angle BPC$ is the angle between the face ABD and the face ACD . Is the claim correct? Explain your answer.
- (2 marks)

2019 Paper 1: Detailed Analysis – B

✂ Q18 (7 marks)

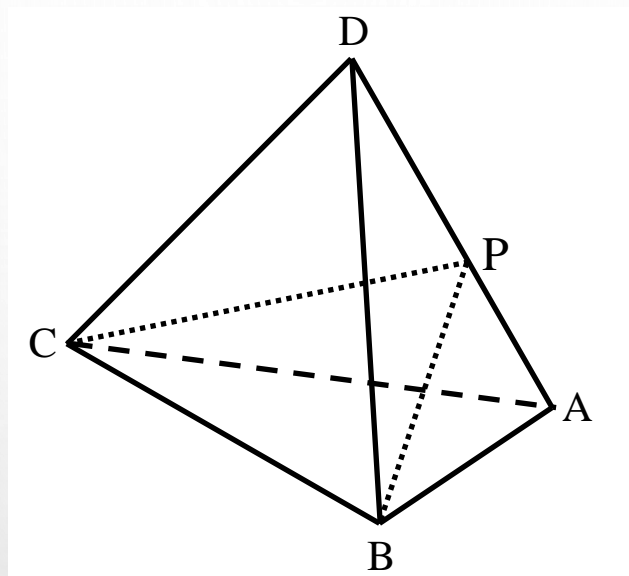


Difficulties or common errors:

- Not able to draw the separated triangles
- sine formula: 2 possible values of $\angle BAD$ & $\angle APC$
- Finding $\angle BPC$ instead of showing $\angle APC \neq 90^\circ$

2019 Paper 1: Detailed Analysis – B

✂ Q18 (7 marks)



Recommendation:

- ✂ 2D Trigo (13,15,18)
- ✂ 3D Trigo (12,13,14,15,16,17,18,19)
- ✂ Angle between two planes (13,18,19)

2019 Paper 1: Detailed Analysis – B

✂ Q19 (12 marks) for 5**

19. Let $f(x) = \frac{1}{1+k} \left(x^2 + (6k-2)x + (9k+25) \right)$, where k is a positive constant. Denote the point $(4, 33)$ by F .
- (a) Prove that the graph of $y = f(x)$ passes through F . (1 mark)
- (b) The graph of $y = g(x)$ is obtained by reflecting the graph of $y = f(x)$ with respect to the y -axis and then translating the resulting graph upwards by 4 units. Let U be the vertex of the graph of $y = g(x)$. Denote the origin by O .
- (i) Using the method of completing the square, express the coordinates of U in terms of k .
- (ii) Find k such that the area of the circle passing through F , O and U is the least.
- (iii) For any positive constant k , the graph of $y = g(x)$ passes through the same point G . Let V be the vertex of the graph of $y = g(x)$ such that the area of the circle passing through F , O and V is the least. Are F , G , O and V concyclic? Explain your answer.

(11 marks)

2019 Paper 1: Detailed Analysis – B

✂ Q19 (12 marks) for 5**

(b) The graph of $y = g(x)$ is obtained by reflecting the graph of $y = f(x)$ with respect to the y -axis and then translating the resulting graph upwards by 4 units. Let U be the vertex of the graph of $y = g(x)$. Denote the origin by O .

(i) Using the method of completing the square, express the coordinates of U in terms of k .

Difficulties or common errors:

- Transformation:
reflection in y -axis, translation
- Completing the square for the vertex

2019 Paper 1: Detailed Analysis – B

✂ Q19 (12 marks) for 5**

(b) The graph of $y = g(x)$ is obtained by reflecting the graph of $y = f(x)$ with respect to the y -axis and then translating the resulting graph upwards by 4 units. Let U be the vertex of the graph of $y = g(x)$. Denote the origin by O .

(i) Using the method of completing the square, express the coordinates of U in terms of k .

Recommendation:

- ✂ Transformation: Translation(16,19), Reflection(19)
- ✂ Completing the square for vertex(13,15,16,18,19)

2019 Paper 1: Detailed Analysis – B

✂ Q19 (12 marks) for 5**

- (ii) Find k such that the area of the circle passing through F , O and U is the least.
- (iii) For any positive constant k , the graph of $y = g(x)$ passes through the same point G . Let V be the vertex of the graph of $y = g(x)$ such that the area of the circle passing through F , O and V is the least. Are F , G , O and V concyclic? Explain your answer.

Difficulties or common errors:

- Any 3 points on a circle, then $\Delta = 0$
- Test of concyclic

2019 Paper 1: Detailed Analysis – B

~~✂~~ Q19 (12 marks) for 5**

- (ii) Find k such that the area of the circle passing through F , O and U is the least.
- (iii) For any positive constant k , the graph of $y = g(x)$ passes through the same point G . Let V be the vertex of the graph of $y = g(x)$ such that the area of the circle passing through F , O and V is the least. Are F , G , O and V concyclic? Explain your answer.

Recommendation:

- Equation of circle: Any 3 points (15A2, 16, 19);
- Centre+radius (12, 13A2, 14A2, 15A2, 17A2, 18)
- ~~✂~~ Test of concyclic (19)

Paper 1: Trend in 8 DSE papers

Strand	2012	2013	2014	2015	2016	2017	2018	2019
Number and Algebra	47 (45%)	54 (51%)	51 (49%)	48 (46%)	47 (45%)	46 (44%)	47 (45%)	47 (45%)
Measures, Shape and Space	41 (39%)	32 (30%)	32 (30%)	39 (37%)	40 (38%)	42 (40%)	41 (39%)	42 (40%)
Data Handling	17 (16%)	19 (18%)	22 (21%)	18 (17%)	18 (17%)	17 (16%)	17 (16%)	16 (15%)

Paper 1: Trend in 8 DSE papers

Strand	Section A	Section B
Number and Algebra	33%	13%
Measures, Shape and Space	23%	14%
Data Handling	11%	6%

Paper 1: Trend in 8 DSE papers

Topics	2012	2013	2014	2015	2016	2017	2018	2019
KS3	37 (35%)	38 (36%)	43 (41%)	42 (40%)	47 (45%)	47 (45%)	51 (49%)	38 (36%)
KS4 – foundation	40 (38%)	34 (32%)	27 (26%)	30 (29%)	32 (30%)	26 (25%)	34 (32%)	44 (42%)
KS3&4 – non- foundation	28 (27%)	33 (31%)	35 (33%)	33 (31%)	26 (25%)	32 (30%)	20 (19%)	23 (22%)

Paper 1: Trend in 8 DSE papers

Topics	Section A	Section B
KS3	40%	–
KS4 – foundation	26%	6%
KS3&4 – non- foundation	–	27%

Paper 1: Trend in 8 DSE papers

Hot Topics of section A(1)	2012	2013	2014	2015	2016	2017	2018	2019
Indices	3	3	3	3	3	3	3	–
Formula	3	3	4	3	3	3	3	3
Factorization	3	3	3	4	4	3	4	4
Linear inequalities	4	4	–	4	4	2	4	4
Simultaneous Equations	4	4	–	4	–	4	–	–
Percentage	4	–	4	4	4	–	5	4
Mensuration	5	–	–	5	–	–	–	5
Deductive Geometry	–	4	5	5	–	–	5	–
Polar Coordinates	–	4	–	–	4	–	–	–
Transformation of Point	–	–	5	–	–	4	–	–
Simple Probability	–	–	–	3	2	–	3	2
Graph/Central Tendency	–	1	2	–	3	4	–	3

Paper 1: Trend in 8 DSE papers

Hot Topics of section A(1)	Section A(1) in 2020?
Indices	3
Formula	3
Factorization	4
Linear inequalities	4
Simultaneous Equations	4
Percentage	4
Mensuration	–
Deductive Geometry	–
Polar Coordinates	–
Transformation of Point	4
Simple Probability	2
Graph/Central Tendency	3

Paper 1: Trend in 8 DSE papers

Hot Topics of section A(2)	2012	2013	2014	2015	2016	2017	2018	2019
More about Polynomials	7	7	–	6	10	8	7	6
Variation	6	6	8	6	–	–	–	5
Mensuration	7	7	8	–	6	11	9	–
Deductive Geometry	–	–	–	7	7	2	8	8
Equation of Circle/Locus	9	9	7	9	5	7	–	–
Central Tendency	6	2	–	–	3	4	6	–
Measure of Dispersion	–	4	6	7	4	1	5	8

Paper 1: Trend in 8 DSE papers

Hot Topics of section A(2)	Section A(2) in 2020?
More about Polynomials	7
Variation	6
Mensuration Deductive Geometry Equation of Circle/Locus	8 8 9
Central Tendency	—
Measure of Dispersion	8

Paper 1: Trend in 8 DSE papers

Hot Topics of section B	2012	2013	2014	2015	2016	2017	2018	2019
Completing the square for vertex	–	6	–	7	6	–	2	4
A.S.	–	–	4	5	–	–	–	5
G.S.	13	13	–	–	5	4	5	
Application of Trigonometry	8	8	7	13	6	13	7	7
Equation of Circle/ 4 centres	7	–	–	–	12	–	12	13
Combination and Permutation/Probability	4	4	13	4	3	6	3	3
More about Dispersion	3	4	–	4	3	–	–	–

Paper 1: Trend in 8 DSE papers

Hot Topics of section B	Section B in 2020?
Completing the square for vertex A.S. G.S.	6 – 5
Application of Trigonometry	13
Equation of Circle/ 4 centres	13
Combination and Permutation/Probability	3
More about Dispersion	–

Unofficial Cutoff in 7 DSE papers

Cutoff	2012	2013	2014	2015	2016	2017	2018	2019
Level 5**	89%	89%	92%	93%	92%	93%	90%	July 2019
Level 5*	82%	81%	87%	87%	86%	87%	83%	
Level 5	79%	74%	79%	80%	78%	82%	77%	
Level 4	68%	61%	65%	64%	66%	67%	63%	
Level 3	58%	52%	50%	52%	51%	55%	52%	
Level 2	–	–	–	48%	–	45%	35%	

Source: http://dse00.blogspot.com/2016/03/2015-2014-dse-cut-off_20.html

Unofficial Cutoff in 7 DSE papers

Cutoff	Cutoff in 2019?	2019
Level 5**	93%	July 2019
Level 5*	87%	
Level 5	76%	
Level 4	65%	
Level 3	55%	
Level 2	35%	

Source: http://dse00.blogspot.com/2016/03/2015-2014-dse-cut-off_20.html

Strategies for achieving Level 2, 4 and 5**

Sections	Level 2	Level 4	Level 5**
A(1)	Target: 30 marks Time: 1 hour Topics: All common topics	Target: 30 marks Time: 45 minutes Topics: All common topics	Target: 35 marks Time: 30 minutes
A(2)	Target: 15 marks Time: 1 hour Topics: Choose 2 to practice	Target: 25 marks Time: 45 minutes Topics: Choose 4 to practice	Target: 35 marks Time: 30 minutes
B	–	Target: 15 marks Time: 45 minutes Topics: Choose 2 to practice	Target: 30 marks Time: 1 hour
Total	45/105 (43%)	70/105 (67%)	100/105 (95%)

The image features a light gray background with a subtle radial gradient. In the top-left and bottom-right corners, there are several realistic water droplets of varying sizes, rendered with soft shadows and highlights to give them a three-dimensional appearance. Centered in the middle of the frame is the text "THANK YOU" in a bold, black, sans-serif typeface.

THANK YOU