New Senior Secondary Mathematics Curriculum

Public Examination of Compulsory Part

HKEAA
November 2008
Consultations on Public Assessment

- First Consultation (2004): Direction of Public Assessment
- Second Consultation (2005): Framework of Public Assessment
- Briefing Sessions (2008): Public Examination of Compulsory Part
Results of Questionnaires after Third Consultation

Examination Format

Sample Paper 1

Draft Level Descriptors

Sample Paper 2

Onscreen Marking
Results of Questionnaires after Third Consultation
1. The proposed assessment objectives of the public assessment are in alignment with the aims and objectives of the curriculum.
3. The proposed paper structure for the public examination is appropriate.
4. The proposed weighting of each paper is appropriate.
5. The proposed duration of each paper is appropriate.

![Bar chart showing responses to the statement. The chart indicates that the majority of respondents strongly agree with the proposed duration.](chart.png)
## Examination Format

<table>
<thead>
<tr>
<th>Component</th>
<th>Weighting</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compulsory Part</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper 1 Conventional questions</td>
<td>65%</td>
<td>2 1/4 hours</td>
</tr>
<tr>
<td>Paper 2 Multiple-choice questions</td>
<td>35%</td>
<td>1 1/4 hours</td>
</tr>
</tbody>
</table>
Paper 1 (2¼ hours) (65%)

● All the questions to be attempted
● Two sections
  ➢ Section A: Foundation Topics of the Compulsory Part together with the Foundation Part of the S1-3 Mathematics Curriculum
  ➢ Section A divided into two parts:
    ✓ Section A(1) (35 marks): 8 to 11 elementary questions
    ✓ Section A(2) (35 marks): 4 to 7 harder questions
Section B: Compulsory Part together with the Foundation Part and the Non-Foundation Part of the S1-3 Mathematics Curriculum

Section B (35 marks): 4 to 7 questions
Some New Features in Section B of Paper 1

- All the questions are to be attempted
- Each question may not carry the same mark
- The number of questions may vary from year to year
- Short questions may be included
- More topics can be covered
- To differentiate high ability students from others, some questions with less guidance may be included
Paper 2 (1¼ hours) (35%)

- Multiple-choice questions
- All the questions to be attempted
- Two sections
  - Section A (2/3 of the paper mark): Foundation Topics of the Compulsory Part together with the Foundation Part of the S1-3 Mathematics Curriculum
  - Section B (1/3 of the paper mark): Compulsory Part together with the Foundation Part and the Non-Foundation Part of the S1-3 Mathematics Curriculum
Some of the contrasts between the content of the HKDSE Mathematics (Compulsory Part) and the present HKCEE Mathematics:

- Permutation and Combination
- Change of bases in Logarithm
- Solving quadratic inequalities by algebraic method
- Properties of circles in Section A instead of Section B
- Complex numbers
- Compound inequalities
- The relations between the roots and coefficients of quadratic equation
- Finding equations of tangents to a circle
- Standard Score and Normal Distribution
- ...
Section A(1)

1. Simplify \( \frac{(xy)^2}{x^{-5}y^6} \) and express your answer with positive indices. (3 marks)

2. Make \( b \) the subject of the formula \( a(b + 7) = a + b \). (3 marks)

7. In Figure 2, \( O \) is the centre of the semicircle \( ABCD \). If \( AB \parallel OC \) and \( \angle BAD = 38^\circ \), find \( \angle BDC \). (4 marks)
Section A(2)

12. Figure 5 shows the graph for John driving from town A to town D (via town B and town C) in a morning. The journey is divided into three parts: Part I (from A to B), Part II (from B to C) and Part III (from C to D).

(a) For which part of the journey is the average speed the lowest? Explain your answer. (2 marks)

(b) If the average speed for Part II of the journey is 56 km/h, when is John at C? (2 marks)

(c) Find the average speed for John driving from A to D in m/s. (3 marks)
13. In Figure 6, the straight line $L_1: 4x - 3y + 12 = 0$ and the straight line $L_2$ are perpendicular to each other and intersect at $A$. It is given that $L_1$ cuts the y-axis at $B$ and $L_2$ passes through the point $(4, 9)$.

![Figure 6](image.png)

(a) Find the equation of $L_2$. 

(b) $Q$ is a moving point in the coordinate plane such that $AQ = BQ$. Denote the locus of $Q$ by $\Gamma$.

(i) Describe the geometric relationship between $\Gamma$ and $L_2$. Explain your answer.

(ii) Find the equation of $\Gamma$. 

(3 marks)

(6 marks)
15. The seats in a theatre are numbered in numerical order from the first row to the last row, and from left to right, as shown in Figure 7. The first row has 12 seats. Each succeeding row has 3 more seats than the previous one. If the theatre cannot accommodate more than 930 seats, what is the greatest number of rows of seats in the theatre?

Figure 7

(4 marks)
16. A committee consists of 5 teachers from school A and 4 teachers from school B. Four teachers are randomly selected from the committee.

(a) Find the probability that only 2 of the selected teachers are from school A.

(b) Find the probability that the numbers of selected teachers from school A and school B are different.

17. A researcher defined Scale A and Scale B to represent the magnitude of an explosion as shown in the following table:

<table>
<thead>
<tr>
<th>Scale</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$M = \log_4 E$</td>
</tr>
<tr>
<td>B</td>
<td>$N = \log_8 E$</td>
</tr>
</tbody>
</table>

It is given that $M$ and $N$ are the magnitudes of an explosion on Scale A and Scale B respectively while $E$ is the relative energy released by the explosion. If the magnitude of an explosion is 6.4 on Scale B, find the magnitude of the explosion on Scale A.

(5 marks)
19. In Figure 9, the circle passes through four points $A$, $B$, $C$ and $D$. $PQ$ is the tangent to the circle at $C$ and is parallel to $BD$. $AC$ and $BD$ intersect at $E$. It is given that $AB = AD$.

![Diagram](https://via.placeholder.com/150)

Figure 9

(a) (i) Prove that $\triangle ABE \cong \triangle ADE$.

(ii) Are the in-centre, the orthocentre, the centroid and the circumcentre of $\triangle ABD$ collinear? Explain your answer. (6 marks)

(b) A rectangular coordinate system is introduced in Figure 9 so that the coordinates of $A$, $B$ and $D$ are $(4, 4)$, $(8, 12)$ and $(14, 4)$ respectively. Find the equation of the tangent $PQ$. (7 marks)
Standards Referenced Reporting (SRR)

• The standards are held constant

• The percentage of students awarded a given level may vary from year to year

• The standards are more informative

• Level descriptors together with students’ examples can better reflect the standards
Standards setting

- Based on examination results, candidates are awarded with a total score

- To determine the minimum scores (also known as cut scores) a candidate must obtain for meeting various standards (Levels 1-5)
Draft Level Descriptors

The typical performance of candidates at this level:

Level 5

- demonstrates comprehensive knowledge and understanding of the Mathematics contents and concepts by applying them successfully at a sophisticated level to a wide range of unfamiliar situations
- communicates and expresses views precisely and logically using mathematical language, notations, tables, diagrams and graphs
- recognizes patterns, makes generalizations with complete justification, draws full and relevant conclusions, and evaluate the significance and reasonableness of results
- is able to integrate knowledge, understanding and skills from different areas of the curriculum in handling complex tasks using a variety of strategies
Level 4

- demonstrates good knowledge and understanding of the Mathematics contents and concepts by applying them successfully to unfamiliar situations
- communicates and expresses views accurately using mathematical language, notations, tables, diagrams and graphs
- recognizes patterns, makes generalizations with partial justification, draws full and relevant conclusions, and explains the significance and reasonableness of results
- is able to integrate knowledge, understanding and skills from different areas of the curriculum in handling a range of tasks
Level 3

- demonstrates satisfactory knowledge and understanding of the Mathematics contents and concepts by applying them successfully to familiar and some unfamiliar situations
- communicates and expresses views appropriately using mathematical language, notations, tables, diagrams and graphs
- recognizes patterns, makes generalizations with partial justification, draws some relevant conclusions, and is aware of the significance and reasonableness of results
- is able to integrate knowledge, understanding and skills from different areas of the curriculum in handling mathematical tasks in explicit situations
Level 2

- demonstrates basic knowledge and understanding of the Mathematics contents and concepts by employing simple algorithms, formulas or procedures in performing routine tasks
- demonstrates the ability to communicate and express relevant ideas using mathematical language, notations, tables, diagrams and graphs
- recognizes patterns and draws some conclusions in routine tasks involving mathematical contexts or real-life situations

Level 1

- demonstrates elementary knowledge and understanding of the Mathematics contents and concepts by performing straightforward algebraic, geometric and data-handling procedures according to direct instructions
- is able to communicate and express simple ideas using mathematical language, notations, tables, diagrams and graphs
- recognizes patterns in simple tasks involving mathematical contexts or real-life situations
Level 5
- demonstrates **comprehensive** knowledge and understanding of the Mathematics contents and concepts by applying them successfully at a **sophisticated level** to a **wide range of unfamiliar situations**

Level 4
- demonstrates **good** knowledge and understanding of the Mathematics contents and concepts by applying them successfully to **unfamiliar situations**

Level 3
- demonstrates **satisfactory** knowledge and understanding of the Mathematics contents and concepts by applying them successfully to **familiar and some unfamiliar situations**

Level 2
- demonstrates **basic** knowledge and understanding of the Mathematics contents and concepts by employing **simple** algorithms, formulas or procedures in performing routine tasks

Level 1
- demonstrates **elementary** knowledge and understanding of the Mathematics contents and concepts by performing **straightforward** algebraic, geometric and data-handling procedures according to direct instructions
Level 5
- communicates and expresses views precisely and logically using mathematical language, notations, tables, diagrams and graphs

Level 4
- communicates and expresses views accurately using mathematical language, notations, tables, diagrams and graphs

Level 3
- communicates and expresses views appropriately using mathematical language, notations, tables, diagrams and graphs

Level 2
- demonstrates the ability to communicate and express relevant ideas using mathematical language, notations, tables, diagrams and graphs

Level 1
- is able to communicate and express simple ideas using mathematical language, notations, tables, diagrams and graphs
Level 5
- recognizes patterns, makes generalizations with complete justification, draws full and relevant conclusions, and evaluate the significance and reasonableness of results

Level 4
- recognizes patterns, makes generalizations with partial justification, draws full and relevant conclusions, and explains the significance and reasonableness of results

Level 3
- recognizes patterns, makes generalizations with partial justification, draws some relevant conclusions, and is aware of the significance and reasonableness of results

Level 2
- recognizes patterns and draws some conclusions in routine tasks involving mathematical contexts or real-life situations

Level 1
- recognizes patterns in simple tasks involving mathematical contexts or real-life situations
Level 5
- is able to integrate knowledge, understanding and skills from different areas of the curriculum in handling **complex tasks using a variety of strategies**

Level 4
- is able to integrate knowledge, understanding and skills from different areas of the curriculum in handling **a range of tasks**

Level 3
- is able to integrate knowledge, understanding and skills from different areas of the curriculum in handling **mathematical tasks in explicit situations**
19. In Figure 9, the circle passes through four points \(A, B, C\) and \(D\). \(PQ\) is the tangent to the circle at \(C\) and is parallel to \(BD\). \(AC\) and \(BD\) intersect at \(E\). It is given that \(AB = AD\).

(a) (i) Prove that \(\triangle ABE \cong \triangle ADE\).

(ii) Are the in-centre, the orthocentre, the centroid and the circumcentre of \(\triangle ABD\) collinear? Explain your answer.

(b) A rectangular coordinate system is introduced in Figure 9 so that the coordinates of \(A, B\) and \(D\) are \((14, 4), (8, 12)\) and \((4, 4)\) respectively. Find the equation of the tangent \(PQ\).

(i) \(\angle PCB = \angle CBE\) (alt \(\angle s, PQ \parallel BD\))

\(\angle PCB = \angle BAC\) (\(\angle s\) in alt. \(\angle s\) seq.)

\(\angle CBE = \angle CAD\) (\(\angle s\) in the same segment)

\(\therefore \angle BAC = \angle CAD\)

AE = EA (common side)

AB = AD (given)

\(\triangle ABE \cong \triangle ABD\) (SAS)

(ii) \(\angle AEB = \angle AED\) (corr \(\angle s, \cong \angle s\))

\(\angle AEB + \angle AED = 180^\circ\)

\(2 \angle AEB = 180^\circ\)

\(\angle AEB = \angle AED = 90^\circ\)

\(\therefore AE\) is the perpendicular bisector of \(BD\). \(\therefore\) the circumcentre must lie on \(AE\). Moreover, \(AE\) is one
of height of $\triangle ABD$, so the orthocentre must lie on $AE$. In addition, $AE$ is the angle bisector of $\angle BAE$, so the in-centre will also lie on $AE$. Since $BE = DE$ (corr. sides $\Rightarrow \triangle 1 = \triangle 2$) so $AE$ is one of the medians of $\triangle B$, so the centroid will also lie on $AE$. Therefore, the in-centre, orthocentre, centroid and circumcentre of $\triangle ABD$ are all collinear.

(b) Let $x^2 + y^2 + Dz + Ey + F = 0$ be the equation of circle

\[
8D + 12E + F = -208 \quad \text{(1)}
\]

\[
14^2 + 4^2 + D(14) + E(4) + F = 0 \quad \text{(2)}
\]

\[
14D + 4E + F = -212 \quad \text{(3)}
\]

\[
4D + 4E + F = -32 \quad \text{(4)}
\]

\[
D = -18 \quad \text{(5)}
\]

\[
6D - 8E = 4 \quad \text{(6)}
\]

\[
b(-18) - 8E = -4 \quad \text{(7)}
\]

\[
E = -13 \quad \text{(8)}
\]

\[
C = -\frac{1131 + 133 - 4(129)}{2}
\]

\[
= -153 \pm \sqrt{23336}
\]

\[
F = 92
\]

i'. the equation of circle is $x^2 + y^2 - 18x - 13y - 92 = 0$

\[
MP = MB = \frac{12}{-4} = 2
\]

Let the equation of $PQ$ be $y = 2x + C$

\[
x^2 + (2x + C)^2 - 18x - 13(2x + C) + 92 = 0
\]
19. In Figure 9, the circle passes through four points $A$, $B$, $C$ and $D$. $PQ$ is the tangent to the circle at $C$ and is parallel to $BD$. $AC$ and $BD$ intersect at $E$. It is given that $AB = AD$.

(a) (i) Prove that $\triangle ABE \cong \triangle ADE$.

(ii) Are the in-centre, the orthocentre, the centroid and the circumcentre of $\triangle ABD$ collinear? Explain your answer.

(b) A rectangular coordinate system is introduced in Figure 9 so that the coordinates of $A$, $B$ and $D$ are $(4, 4)$, $(8, 12)$ and $(4, 4)$ respectively. Find the equation of the tangent $PQ$. (7 marks)

(a) Consider $\triangle ABC$ and $\triangle ACD$

$\angle PCB = \angle CBE$ (alt $\angle$s, $PQ \parallel BD$)

$\angle PCB = \angle BAC$ (ls in $\angle$, seg)

$\angle CBE = \angle CAD$ (ls in the same segment)

$\therefore \angle BAC = \angle CAD$

In $\triangle ABE$, $\triangle ADE$

$\angle BAC = \angle CAD$ (proved)

$AB = AD$ (given)

$\angle ABE = \angle ADE$ (base $\angle$s, isos $\triangle$)

$\therefore \triangle ABE \cong \triangle ADE$ (ASA)

(b) The in-centre, orthocentre, centroid and circumcentre of $\triangle ABD$ are all collinear. Since $AE$ is perpendicular to $BD$, $E$ the orthocentre lies on $AE$. Also,
attempts to find the equations of the circle and the tangent using a correct method

demonstrates good knowledge and understanding on coordinate geometry by attempting to find the equations of the circle and the tangent using a correct method.

(b) let \((x-h)^2 + (y-k)^2 = r^2\) be the equation of the circle

\[
\begin{align*}
(8-h)^2 + (12-k)^2 &= (4-h)^2 + (4-k)^2 \quad \text{①} \\
(8-h)^2 + (12-k)^2 &= (4-h)^2 + (4-k)^2 \quad \text{②}
\end{align*}
\]

\[
64-16h+k^2+144-24k+k^2 = 16-8h+h^2+16-8k+k^2
\]

\[
12h - 16k - 4 = 0 \\
3h - 4k - 1 = 0 \quad \text{③}
\]

\[
64-16h+h^2+144-24k+k^2 = 16-8h+h^2+16-8k+k^2
\]

\[
8h + 16k - 176 = 0 \\
h + 2k - 22 = 0 \quad \text{④}
\]

\[
5h - 4k = 0 \\
5h - 4k = 0
\]

\[
\begin{align*}
2h &= 9 \\
\text{and} \quad k &= \frac{13}{2}
\end{align*}
\]

\[
k^2 = (8 - 9)^2 + (12 - \frac{13}{2})^2 \quad \frac{125}{4}
\]

The equation of the circle is

\[
(x-9)^2 + (y - \frac{13}{2})^2 = \frac{125}{4}
\]

The slope of tangent \(= \frac{12}{8-4} = 2\)

Let the equation of PL to be \(y=2x+k\)

\[
2x + y + k = 0
\]

\[
\left| \frac{2(0) + 1(\frac{13}{2}) + k}{\sqrt{4^2 + 1^2}} \right| = \frac{\sqrt{125}}{4}
\]

\[
18 + \frac{13}{2} + k = \frac{\sqrt{125}}{2}
\]

\[
k = -12
\]

The equation of PL is \(2x+y-12=0\)
proves congruent triangles in an appropriate way although the proof is incomplete

cannot make a correct judgment on the relationship between the in-centre, circumcentre, orthocentre and centroid of the triangle
uses an appropriate method to find the equation of the circle

demonstrates satisfactory knowledge and understanding on deductive geometry and coordinate geometry

the circle

\[ 14^2 + 4^2 + D(14) + E(4) + F = 0 \]
\[ 8^2 + 12^2 + D(8) + E(12) + F = 0 \]
\[ 4^2 + 4^2 + D(4) + E(4) + F = 0 \]
\[ \therefore 14D + 4E + F = -212 \] ①
\[ 8D + 12E + F = -208 \] ②
\[ 4D + 4E + F = -32 \] ③

② - ③ : \[ 10D = 180 \]
\[ D = 18 \]

② - ① : \[ 6D - 8E = -4 \]
\[ 6(18) - 8E = -4 \]
\[ 6(18) - 8E = -4 \]
\[ E = 14 \]

\[ 4(18) + 4(14) + F = -32 \]
\[ F = -160 \]

The equation of the circle is \[ x^2 + y^2 + 18x + 14y - 160 = 0 \]
9. In Figure 4, the pie chart shows the distribution of the numbers of traffic accidents occurred in a city in a year. In that year, the number of traffic accidents occurred in District A is 20% greater than that in District B.

The distribution of the numbers of traffic accidents occurred in the city

Figure 4

(a) Find $x$.
(b) Is the number of traffic accidents occurred in District A greater than that in District C? Explain your answer.

\[
(\text{a}) \quad x = 72^\circ \times (1 - 20\%) \\
= 57.6^\circ
\]

\[
(\text{b}) \quad \text{District C} = 360^\circ - 120^\circ - 72^\circ - 30^\circ - 72^\circ \\
= 80.4^\circ
\]

\[
\therefore 80.4^\circ > 57.6^\circ \\
\therefore \text{District C > District A}
\]
Level 1

2. Make $b$ the subject of the formula $a(b + 7) = a + b$.

\[ a(b + 7) = a + b \]
\[ ab + 7a = a + b \]
\[ 7a - a = b - ab \]
\[ 6a = b \]

- applies distributive law
- the algebraic operation is incorrect

demonstrates elementary knowledge and understanding in change of subject of the formula and demonstrates some ability to communicate using mathematical language and notations
Some selected questions

Section A

9. The solution of $5 - 2x < 3$ and $4x + 8 > 0$ is
   A. $x > -2$ .
   B. $x > -1$ .
   C. $x > 1$ .
   D. $-2 < x < 1$ .
19. \[ \frac{\sin \theta}{\cos 60^\circ} + \frac{\cos(270^\circ - \theta)}{\tan 45^\circ} = \]

A. \( \sin \theta \)  
B. \( 3 \sin \theta \)  
C. \( 2 \sin \theta - \cos \theta \)  
D. \( 2 \sin \theta + \cos \theta \)  

22. In the figure, \( O \) is the centre of the circle \( ABCDE \). If \( \angle ABE = 30^\circ \) and \( \angle CDE = 105^\circ \), then \( \angle AOC = \)

A. \( 120^\circ \)  
B. \( 135^\circ \)  
C. \( 150^\circ \)  
D. \( 165^\circ \)
Section B

34. If $k$ is a real number, then $4k - \frac{6+ki}{i} =$
   
   A. $3k + 6i$.
   
   B. $3k - 6i$.
   
   C. $5k + 6i$.
   
   D. $5k - 6i$.

44. If 2 girls and 5 boys randomly form a queue, find the probability that the two girls are next to each other in the queue.

   A. $\frac{1}{7}$
   
   B. $\frac{2}{7}$
   
   C. $\frac{6}{7}$
   
   D. $\frac{1}{21}$
45. A set of numbers has a mode of 32, an inter-quartile range of 27 and a variance of 25. If 3 is added to each number of the set and each resulting number is then doubled to form a new set of numbers, find the mode, the inter-quartile range and the variance of the new set of numbers.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Inter-quartile range</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>64</td>
<td>60</td>
</tr>
<tr>
<td>B.</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>C.</td>
<td>70</td>
<td>54</td>
</tr>
<tr>
<td>D.</td>
<td>70</td>
<td>54</td>
</tr>
</tbody>
</table>
Questions with good performance

1. \((3a)^2 \cdot a^3 = \)
   
   A. \(3a^5\).
   
   B. \(6a^6\).
   
   C. \(9a^5\).
   
   D. \(9a^6\).

2. If \(5 - 3m = 2n\), then \(m = \)
   
   A. \(n\).
   
   B. \(\frac{2n-5}{3}\).
   
   C. \(\frac{-2n+5}{3}\).
   
   D. \(\frac{-2n+15}{3}\).
5. Let \( f(x) = x^3 + 2x^2 - 7x + 3 \). When \( f(x) \) is divided by \( x + 2 \), the remainder is

A. 3.
B. 5.
C. 17.
D. 33.

25. In the figure, the two 6-sided polygons show

A. a rotation transformation.
B. a reflection transformation.
C. a translation transformation.
D. a dilation transformation.
10. Mary sold two bags for $240 each. She gained 20% on one and lost 20% on the other. After the two transactions, Mary

A. lost $20. (33.28%) *

B. gained $10. (8.70%)

C. gained $60. (3.34%)

D. had no gain and no loss. (54.01%)

Students cannot realize that the costs are different in the two transactions.
30. The students’ union of a school of 950 students wants to investigate the opinions of students in the school on the services provided by the tuck shop. A questionnaire is designed by the students’ union and only the chairperson and vice-chairperson of the students’ union are selected as a sample to fill in the questionnaire. Which of the following are the disadvantages of this sampling method?

I. The sample size is very small.

II. Not all students in the school are selected.

III. Not all students in the school have an equal chance of being selected.

A. I and II only (16.36%)

B. I and III only (25.54%)

C. II and III only (17.20%)

D. I, II and III (39.73%)

Students are not familiar with sampling methods.
32. The graph in the figure shows the linear relation between $x$ and $\log_5 y$. If $y = ab^x$, then $a =$

A. 1. (11.73%)  
B. 2. (33.67%)  
C. 5. (23.79%)  
D. 25. (29.48%) *

Students are not familiar with transforming a non-linear relationship to a linear relationship by using logarithm.
Peter invests $P$ at the beginning of each month in a year at an interest rate of 6% per annum, compounded monthly. If he gets $10000$ at the end of the year, find $P$ correct to 2 decimal places.

A. 806.63. (25.13%) *
B. 829.19. (28.33%)
C. 833.33. (25.97%)
D. 882.18. (17.71%)

Students are not familiar with the application of geometric series to real-life situations.
40. The figure shows a cuboid $ABCDEFGH$. If the angle between the triangle $ACE$ and the plane $ABCD$ is $\theta$, then $\tan \theta =$

A. $2$  \hspace{1cm} (11.64%)

B. $\frac{3}{2}$  \hspace{1cm} (18.04%)

C. $\frac{5}{2}$  \hspace{1cm} (31.87%) *

D. $\frac{12}{5}$  \hspace{1cm} (36.76%)

Students are weak in 3D problems.
Onscreen Marking
Advantages of OSM

- Flexibility
- Security
- Marking quality
- Efficiency
- Accuracy
Flexibility

- Minimum marking load
- Can mark more if marking is good and efficiency
- Can choose Section A(1), Section A(2) or Section B to mark
- Assessment Centre opens from Monday to Sunday
Security

- Backup of scripts available after scanning
- Security of scripts ensured because kept within HKEAA premises
- Avoids marking in public
- Eliminates script movement between markers or checkmarkers
- Easy and secure storage and retrieval of scripts for future use
Marking Quality

- Real-time monitoring of markers’ performance
- Capacity for prompt remedial action if markers are found to be unreliable
- Increased accuracy and reliability resulting from marking by section
Efficiency

- Increased speed resulting from marking by section
- Marking and capture of marks in one single process
- Eliminates check-addition process
- Reduced processing time
Accuracy

- Eliminates errors in mark entry
- Eliminates errors in manual addition of marks by markers/checkers