Australian Mathematics Competition (AMC)

2023 Performance Report

ASDAN China Limited

Planning Assistant

# ⚡ **Difficulty**

There are **5** difficulty levels, suitable for students from Grade 3 to Grade 12. ASDAN China provides exam papers in English and Chinese for Chinese students to participate.

**Applicable grades:**

★ A - Middle Primary ( Grade 3-4 )

★ B - Upper Primary ( Grade 5-6 )

★ C - Junior ( Grade 7-8 )

★ D - Intermediate ( Grade 9-10 )

★ E - Senior ( Grade 11-12 )

# 📊 Scoring Criteria

Each level contains **30** questions, including **25** multiple-choice questions and **5** fill-in-the-blank questions. The exam length for levels **A** and **B** ( Grade 3-6 ) is **60** minutes, and for levels **C**, **D** and **E** ( Grade 7-12 ) is **75** minutes.

**Total 135 points (no points deducted for no answer or wrong answer)**

★ Questions 1 to 10 are worth 3 points each.

★ Questions 11 to 20 are worth 4 points each.

★ Questions 21 to 25 are worth 5 points each.

★ Questions 26 to 30 are worth 6, 7, 8, 9 and 10 points respectively.

# ⊗ Awards

**Global Awards:** Peter O'Halloran Award For Excellence is awarded to any student who achieves a perfect score.

**National Awards:**

★ Prize: Top 0.3% for A-E

★ High Distinction: Top 3% for A - D / Top 5% for E

★ Distinction: Top 20% for A - D/ Top 25% for E

★ Credit: Top 55% for A - D / Top 60% for E

★ Proficiency: Students who achieve a preset score, but have not been awarded a Credit (or higher) certificate. (The cutoff score fluctuates each year, averaging around 32 points.)

*\* Students will be ranked and awarded in each grade group. For example, level A includes grade 3 and 4 students, grade 3 students and grade 4 students will be ranked and awarded respectively in their grade group according to the cut-off percentages, and they will not be ranked and awarded together.*

# 2023 Cut-off Scores

| Level | A | | B | | C | | D | | E | |
|-------|---|---|---|---|---|---|---|---|---|---|
| **Grade** | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Prize | 135 | 135 | 135 | 135 | 132 | 135 | 131 | 131 | 135 | 135 |
| High Distinction | 118 | 130 | 130 | 130 | 115 | 115 | 113 | 113 | 113 | 127 |
| Distinction | 92 | 107 | 112 | 112 | 95 | 96 | 88 | 89 | 81 | 98 |
| Credit | 70 | 85 | 84 | 86 | 78 | 78 | 65 | 67 | 65 | 71 |

*This is the cut-off scores in 2023 according to the cut-off percentages, for reference only !

# Level A Cut-off Scores in the Past Three Years

| A | Year | Prize | High Distinction | Distinction | Credit |
|---|------|-------|------------------|-------------|--------|
| **Grade 3** | 2023 | 135 | 118 | 92 | 70 |
| | 2022 | 130 | 106 | 81 | 64 |
| | 2021 | 130 | 111 | 84 | 60 |
| **Grade 4** | 2023 | 135 | 130 | 107 | 85 |
| | 2022 | 131 | 112 | 88 | 73 |
| | 2021 | 135 | 120 | 96 | 73 |

# Level B Cut-off Scores in the Past Three Years

| B | Year | Prize | High Distinction | Distinction | Credit |
|---|------|-------|------------------|-------------|--------|
| **Grade 5** | 2023 | 135 | 130 | 112 | 84 |
| | 2022 | 135 | 124 | 96 | 74 |
| | 2021 | 131 | 119 | 90 | 70 |
| **Grade 6** | 2023 | 135 | 130 | 112 | 86 |
| | 2022 | 135 | 124 | 100 | 80 |
| | 2021 | 135 | 122 | 95 | 74 |

# Level C Cut-off Scores in the Past Three Years

| C | Year | Prize | High Distinction | Distinction | Credit |
|---|---|---|---|---|---|
| **Grade 7** | 2023 | 132 | 115 | 95 | 78 |
| | 2022 | 135 | 118 | 98 | 78 |
| | 2021 | 135 | 117 | 91 | 72 |
| **Grade 8** | 2023 | 135 | 115 | 96 | 78 |
| | 2022 | 135 | 120 | 100 | 80 |
| | 2021 | 131 | 116 | 94 | 75 |

# Level D Cut-off Scores in the Past Three Years

| D | Year | Prize | High Distinction | Distinction | Credit |
|---|------|-------|------------------|-------------|--------|
| **Grade 9** | 2023 | 131 | 113 | 88 | 65 |
| | 2022 | 125 | 108 | 89 | 73 |
| | 2021 | 110 | 92 | 76 | 61 |
| **Grade 10** | 2023 | 131 | 113 | 89 | 67 |
| | 2022 | 126 | 109 | 92 | 76 |
| | 2021 | 109 | 93 | 77 | 64 |

# Level E Cut-off Scores in the Past Three Years

| E | Year | Prize | High Distinction | Distinction | Credit |
|---|---|---|---|---|---|
| **Grade 11** | 2023 | 135 | 113 | 81 | 65 |
| | 2022 | 135 | 107 | 79 | 61 |
| | 2021 | 109 | 91 | 73 | 56 |
| **Grade 12** | 2023 | 135 | 127 | 98 | 71 |
| | 2022 | 135 | 115 | 82 | 61 |
| | 2021 | 108 | 96 | 75 | 60 |

Australian Mathematics Competition (AMC)

Performance Analysis

Score Distribution – Level A
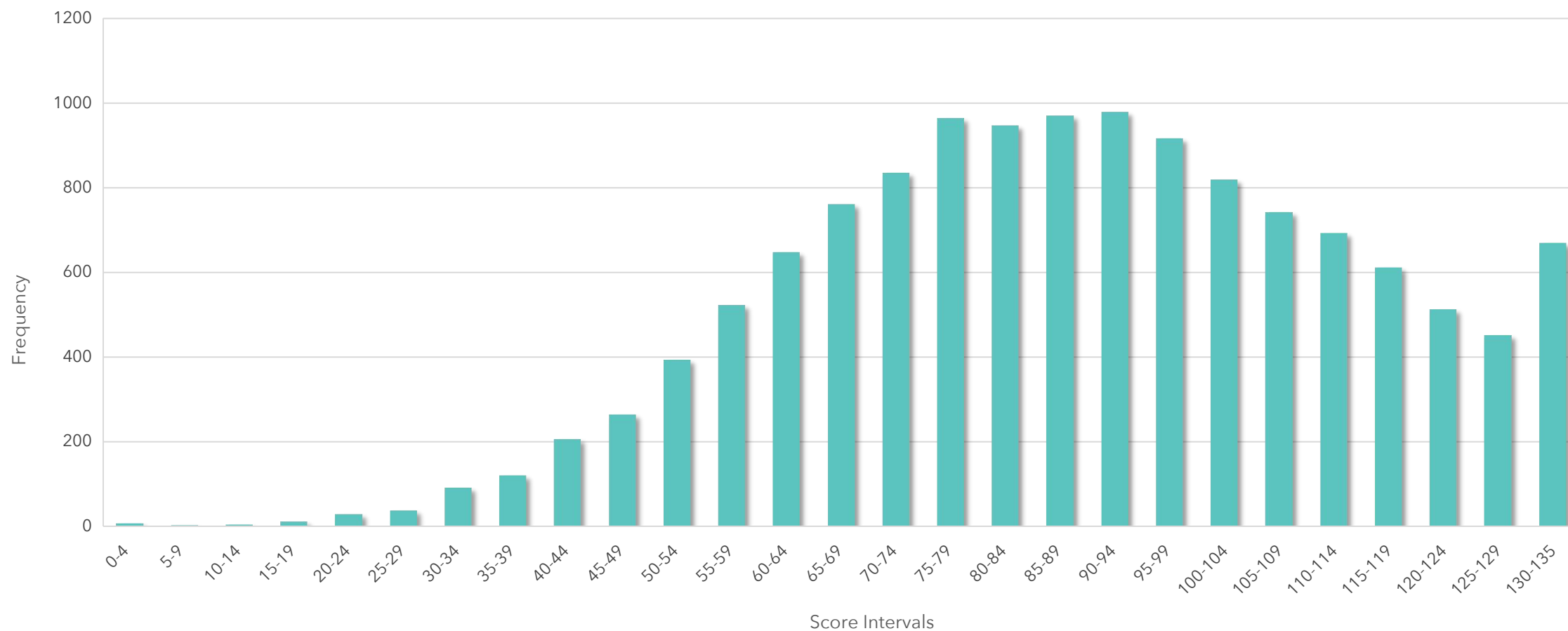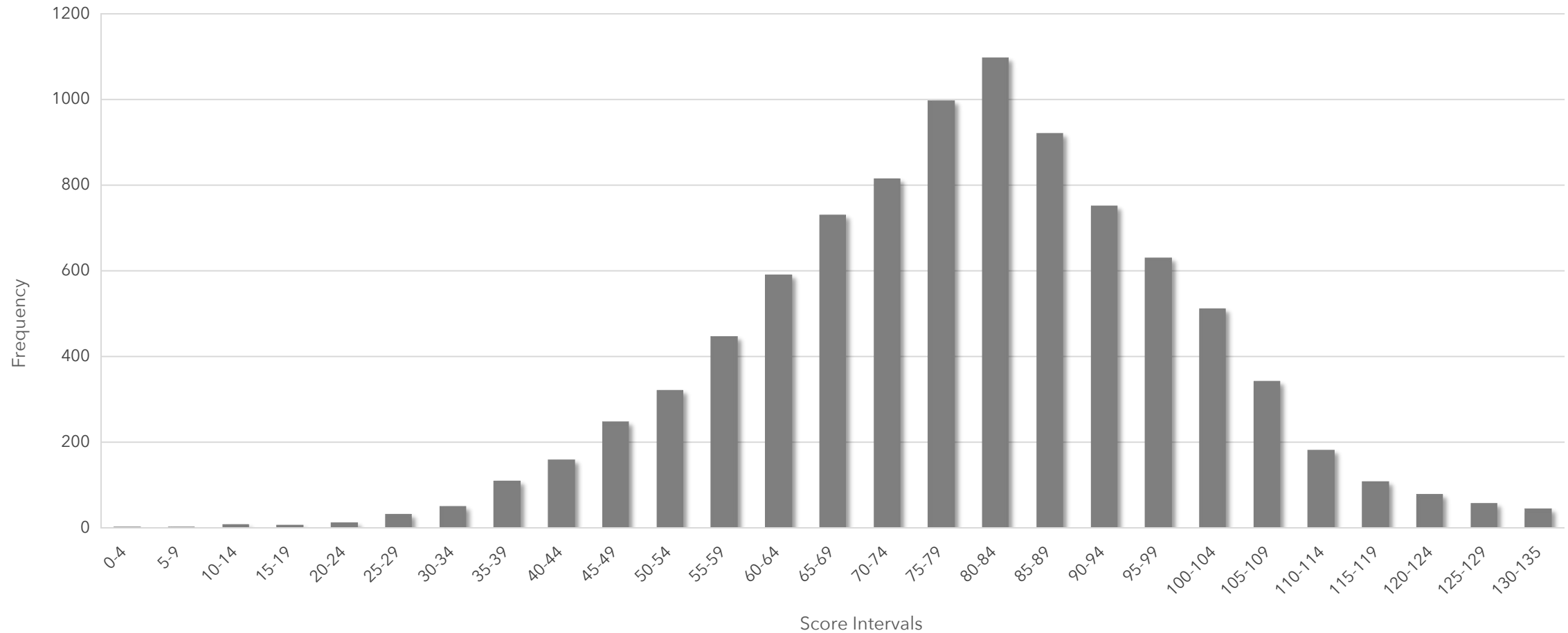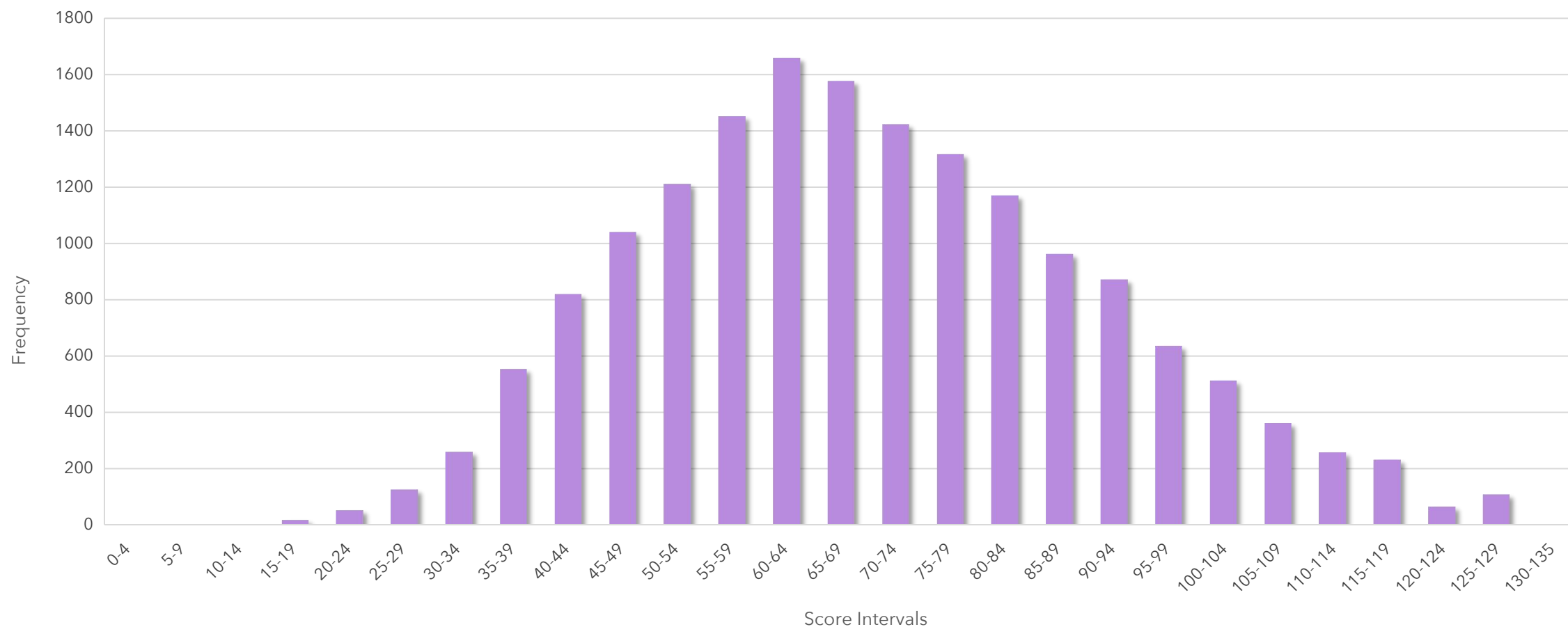
# Score Distribution – Level E
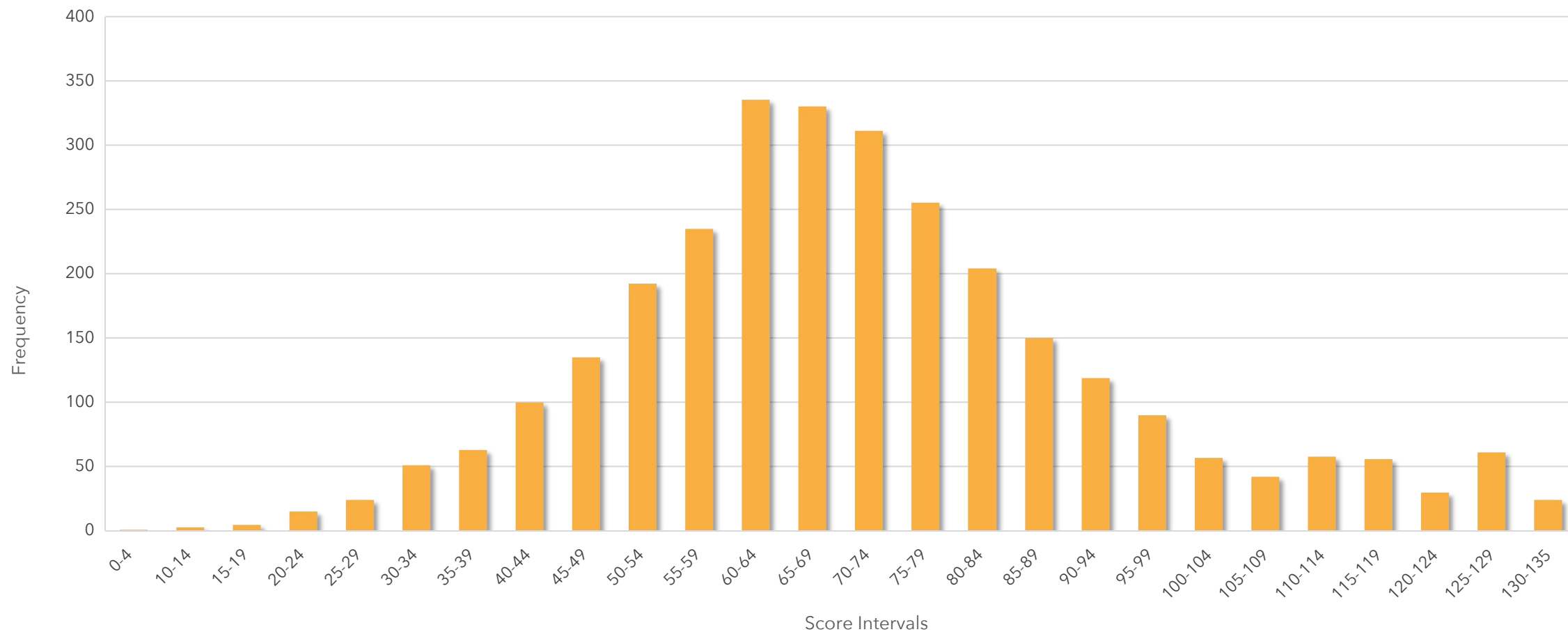
# Highest Scores

| | A | B | C | D | E |
|---|---|---|---|---|---|
| Perfect Score | 135 | 135 | 135 | 135 | 135 |
| **National** | **135** | **135** | **135** | **135** | **135** |
| Northern | 135 | 135 | 135 | 135 | 135 |
| Eastern | 135 | 135 | 135 | 135 | 135 |
| Southern | 135 | 135 | 135 | 125 | 132 |
| Western | 135 | 135 | 135 | 125 | 135 |
| Central | 135 | 135 | 120 | 125 | 135 |

*The left table shows the highest scores of each geographical region.*

*\*Competition Regional Division：*

*Northern：Beijing, Tianjin, Heilongjiang, Jilin, Liaoning, Hebei, Inner Mongolia, Shanxi, Shandong*

*Eastern：Shanghai, Zhejiang, Jiangsu*

*Southern：Guangdong, Guangxi, Fujian, Hainan, Hong Kong, Macao, Taiwan*

*Western：Chongqing, Sichuan, Yunnan, Guizhou, Shaanxi, Gansu, Qinghai, Tibet, Ningxia, Xinjiang*

*Central：Hunan, Hubei, Anhui, Jiangxi, Henan*

# Average Scores

| | A | B | C | D | E |
|---|---|---|---|---|---|
| Perfect Score | 135 | 135 | 135 | 135 | 135 |
| **National** | **79.75** | **88.30** | **79.24** | **69.83** | **71.67** |
| Northern | 84.92 | 93.31 | 79.03 | 70.07 | 71.55 |
| Eastern | 80.98 | 90.05 | 80.85 | 72.06 | 74.04 |
| Southern | 78.16 | 86.21 | 78.35 | 64.72 | 67.53 |
| Western | 72.70 | 80.38 | 76.15 | 69.46 | 75.16 |
| Central | 71.60 | 77.63 | 74.95 | 68.49 | 70.38 |

*The left table shows the average scores of each geographical region.*

*\*Competition Regional Division：*

*Northern：Beijing, Tianjin, Heilongjiang, Jilin, Liaoning, Hebei, Inner Mongolia, Shanxi, Shandong*

*Eastern：Shanghai, Zhejiang, Jiangsu*

*Southern：Guangdong, Guangxi, Fujian, Hainan, Hong Kong, Macao, Taiwan*

*Western：Chongqing, Sichuan, Yunnan, Guizhou, Shaanxi, Gansu, Qinghai, Tibet, Ningxia, Xinjiang*

*Central：Hunan, Hubei, Anhui, Jiangxi, Henan*

# Standard Deviations

| | A | B | C | D | E |
|---|---|---|---|---|---|
| **National** | **22.86** | **24.82** | **19.33** | **20.89** | **22.07** |
| Northern | 25.01 | 25.97 | 20.39 | 21.34 | 23.82 |
| Eastern | 21.84 | 23.06 | 18.49 | 21.04 | 21.87 |
| Southern | 21.78 | 25.58 | 20.23 | 20.36 | 21.89 |
| Western | 20.78 | 24.53 | 18.04 | 21.42 | 21.35 |
| Central | 20.81 | 20.69 | 17.30 | 18.73 | 19.60 |

*The smaller the standard deviation is, the smaller the difference of performance among students is.*

*Competition Regional Division：*

*Northern：Beijing, Tianjin, Heilongjiang, Jilin, Liaoning, Hebei, Inner Mongolia, Shanxi, Shandong*

*Eastern：Shanghai, Zhejiang, Jiangsu*

*Southern：Guangdong, Guangxi, Fujian, Hainan, Hong Kong, Macao, Taiwan*

*Western：Chongqing, Sichuan, Yunnan, Guizhou, Shaanxi, Gansu, Qinghai, Tibet, Ningxia, Xinjiang*

*Central：Hunan, Hubei, Anhui, Jiangxi, Henan*

# Degree of Discrimination

| A | B | C | D | E |
|---|---|---|---|---|
| 0.41 | 0.46 | 0.35 | 0.38 | 0.39 |

Paper with higher degree of discrimination can better discriminate the academic performance among students. The value ranges from -1 to 1. The greater the value is, the more obvious the discrimination is.

According to L.Ebel, a famous American surveyor, when the value is above **0.4**, it indicates that the discrimination of this paper is very good; **0.3 ~ 0.39** indicates that the discrimination is good; **0.2 ~ 0.29** indicates that the discrimination is not very good and needs to be modified; lower than **0.19** indicates that the discrimination is not good and should be eliminated.

As shown in the table above, the degree of discrimination of level **A** and **B** is **very good**, and the degree of discrimination of level **C**, **D** and **E** is **good**.

# 💡 Topics & Skills

| Topics | Skills | Descriptions |
|---|---|---|
| Algebra & Function | Logic Reasoning | Including deductive reasoning (applying general rules to specific problems) and inductive reasoning (combining pieces of information to form general rules or conclusions). |
| Geometry | Dimensional Imagination | 2-D and 3-D geometry analysis; analyze problems using graphics based on descriptions. |
| Number Theory | Arithmetic Capability | Understand the meaning of operations, master the rules of operations, and choose appropriate methods of calculation. |
| Permutation and Combination | Statistical Analysis | Permutations and combinations (arranging objects or actions in a certain order or pattern based on specific rules or a set of rules), probability and statistics. |
| Statistics & Probability | Mathematical Application | Solve practical problems; use mathematical knowledge and methods to construct models to solve problems; identify complex problems and review relevant information to formulate and evaluate options and implement solutions. |

# Level A Topics & Skills

| No. | Topics | Skills |
|:---:|:---:|:---:|
| 1 | Algebra & Function | Arithmetic Capability |
| 2 | Algebra & Function | Arithmetic Capability |
| 3 | Geometry | Mathematical Application |
| 4 | Algebra & Function | Mathematical Application |
| 5 | Statistics & Probability | Statistical Analysis Mathematical Application |
| 6 | Geometry | Logic Reasoning |
| 7 | Algebra & Function | Mathematical Application Arithmetic Capability |
| 8 | Geometry | Dimensional Imagination |
| 9 | Geometry | Mathematical Application Logic Reasoning |
| 10 | Geometry | Dimensional Imagination |

# Level A Topics & Skills

| No. | Topics | Skills |
|:---:|:---:|:---:|
| 11 | Permutation and Combination | Logic Reasoning<br>Mathematical Application<br>Statistical Analysis |
| 12 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 13 | Algebra & Function | Logic Reasoning<br>Arithmetic Capability |
| 14 | Number Theory | Logic Reasoning |
| 15 | Algebra & Function | Mathematical Application<br>Logic Reasoning |
| 16 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 17 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 18 | Permutation and Combination | Mathematical Application<br>Logic Reasoning<br>Statistical Analysis<br>Dimensional Imagination |
| 19 | Algebra & Function | Mathematical Application<br>Logic Reasoning<br>Arithmetic Capability |
| 20 | Algebra & Function | Mathematical Application<br>Logic Reasoning<br>Arithmetic Capability |

# Level A Topics & Skills

| No. | Topics | Skills |
|:---:|:---:|:---:|
| 21 | Number Theory | Mathematical Application<br>Logic Reasoning |
| 22 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 23 | Permutation and Combination | Logic Reasoning<br>Statistical Analysis |
| 24 | Geometry | Dimensional Imagination |
| 25 | Algebra & Function | Mathematical Application<br>Arithmetic Capability<br>Logic Reasoning |
| 26 | Number Theory | Mathematical Application<br>Logic Reasoning<br>Statistical Analysis |
| 27 | Algebra & Function | Arithmetic Capability<br>Logic Reasoning |
| 28 | Number Theory | Logic Reasoning<br>Arithmetic Capability |
| 29 | Number Theory | Mathematical Application<br>Logic Reasoning<br>Arithmetic Capability |
| 30 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |

# Percentages of Correct Answer & Skills Map – Level A
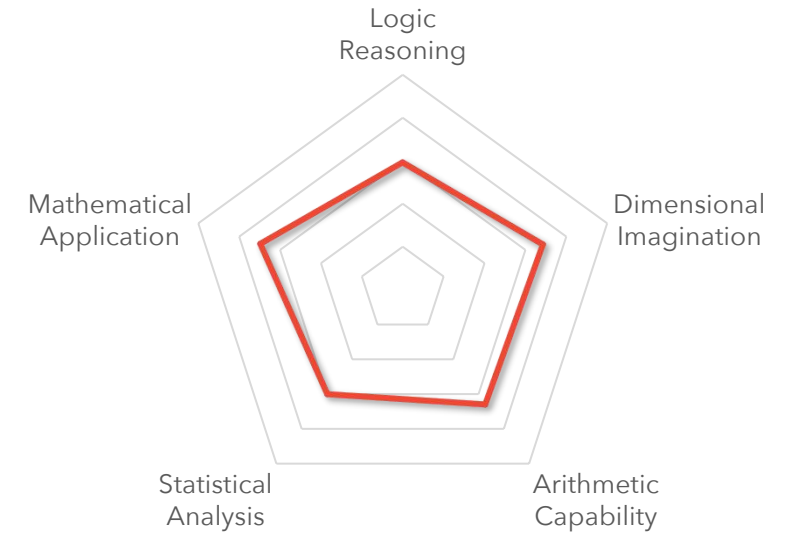
## Percentages of Correct Answer
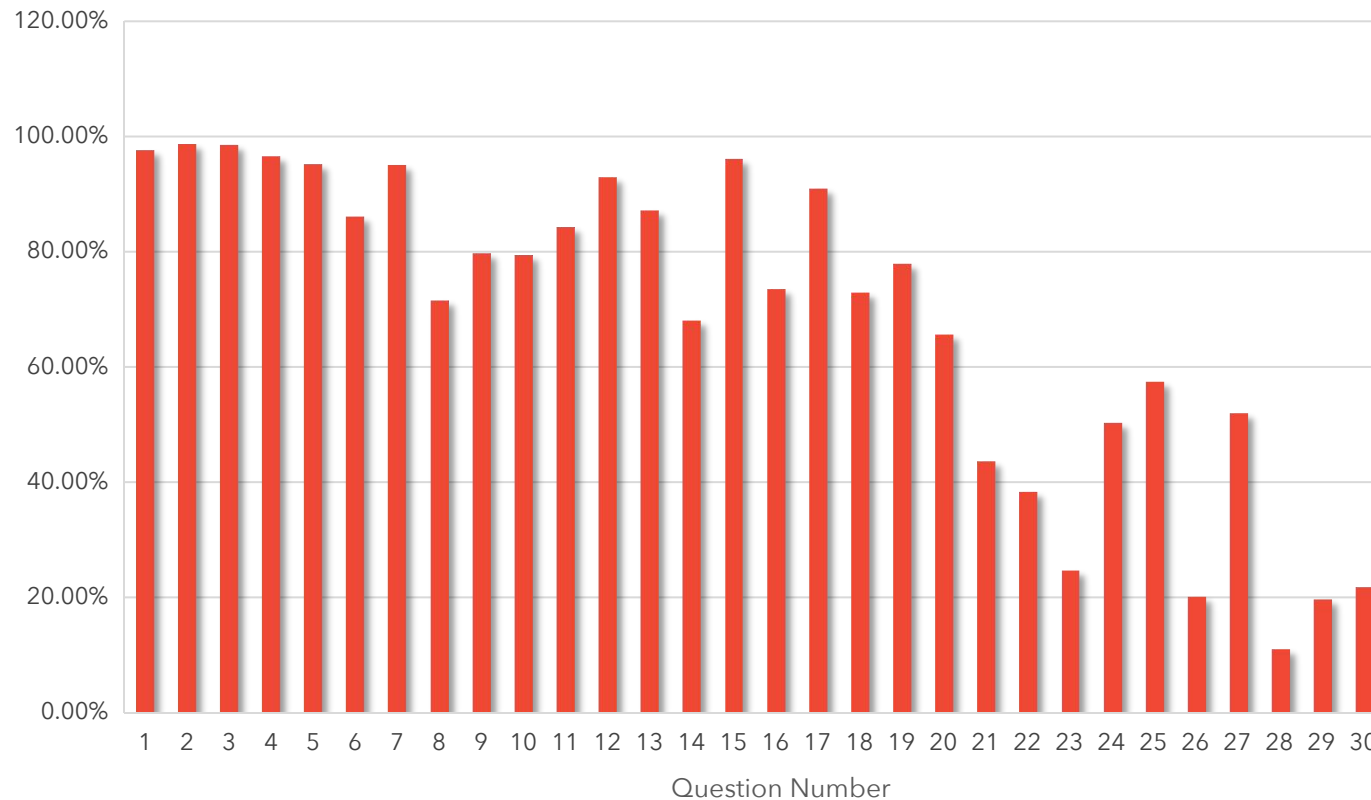


## Skills Map



Logic Reasoning（16Qs：6,9,11,13-15,18-21,23,25-29）
Dimensional Imagination（4Qs：8,10,18,24）
Arithmetic Capability（15Qs:1,2,7,12,13,16,17,19,20,22,24,27-30）
Statistical Analysis（5Qs：5,11,18,23,26）
Mathematical Application（19Qs：3-5,7,9,10,11,15-22,25,26,29,30）

# Answer Distribution – Level A

| No. | Correct Answer | A (%) | B (%) | C (%) | D (%) | E (%) | Blank (%) |
|---|---|---|---|---|---|---|---|
| 1 | D | 0.23% | 0.54% | 0.87% | **97.65%** | 0.26% | 0.43% |
| 2 | B | 0.28% | **98.72%** | 0.40% | 0.05% | 0.02% | 0.51% |
| 3 | A | **98.50%** | 0.34% | 0.35% | 0.06% | 0.04% | 0.51% |
| 4 | C | 0.39% | 1.30% | **96.60%** | 0.22% | 0.67% | 0.79% |
| 5 | E | 0.43% | 1.33% | 1.22% | 0.99% | **95.22%** | 0.77% |
| 6 | D | 2.65% | 7.90% | 1.52% | **86.08%** | 1.30% | 0.51% |
| 7 | C | 0.78% | 0.57% | **95.05%** | 2.16% | 0.76% | 0.65% |
| 8 | E | 14.40% | 3.70% | 7.87% | 1.33% | **71.56%** | 0.97% |
| 9 | D | 2.34% | 4.11% | 7.79% | **79.67%** | 4.73% | 1.33% |
| 10 | B | 4.88% | **79.39%** | 0.85% | 12.02% | 1.83% | 1.01% |
| 11 | C | 1.17% | 9.27% | **84.20%** | 2.67% | 2.08% | 0.60% |
| 12 | C | 1.08% | 1.16% | **92.91%** | 2.47% | 1.68% | 0.68% |
| 13 | E | 1.26% | 3.18% | 4.19% | 3.16% | **87.16%** | 0.95% |
| 14 | D | 7.32% | 10.11% | 7.75% | **68.02%** | 4.96% | 1.77% |
| 15 | A | **96.11%** | 0.56% | 0.23% | 1.82% | 0.45% | 0.79% |

| No. | Correct Answer | A (%) | B (%) | C (%) | D (%) | E (%) | Blank (%) |
|---|---|---|---|---|---|---|---|
| 16 | B | 4.33% | **73.48%** | 13.20% | 4.24% | 3.70% | 1.01% |
| 17 | E | 0.95% | 2.14% | 2.01% | 3.14% | **90.85%** | 0.77% |
| 18 | E | 8.20% | 2.71% | 4.99% | 10.22% | **72.88%** | 0.86% |
| 19 | B | 8.48% | **77.91%** | 5.83% | 4.74% | 1.94% | 1.07% |
| 20 | C | 1.63% | 6.07% | **65.61%** | 9.22% | 15.61% | 1.82% |
| 21 | D | 7.83% | 8.12% | 12.50% | **43.67%** | 25.71% | 2.15% |
| 22 | E | 15.20% | 10.92% | 21.73% | 10.39% | **38.37%** | 3.25% |
| 23 | A | **24.75%** | 20.41% | 24.36% | 11.13% | 15.11% | 4.15% |
| 24 | B | 7.53% | **50.30%** | 29.48% | 6.94% | 3.98% | 1.70% |
| 25 | C | 9.19% | 17.47% | **57.45%** | 6.03% | 6.66% | 3.18% |
| 26 | 214 | | | percentage of correct answer | | 20.22% | |
| 27 | 285 | | | | | 51.99% | |
| 28 | 023 | | | | | 11.10% | |
| 29 | 674 | | | | | 19.73% | |
| 30 | 630 | | | | | 21.84% | |

*\* Bold figures are percentages of correct answer of each question. The lighter the background is, the better the results are.*

# Level B Topics & Skills

| No. | Topics | Skills |
|---|---|---|
| 1 | Geometry | Arithmetic Capability |
| 2 | Geometry | Mathematical Application |
| 3 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 4 | Geometry | Logic Reasoning |
| 5 | Algebra & Function | Mathematical Application<br>Logic Reasoning |
| 6 | Number Theory | Arithmetic Capability |
| 7 | Statistics & Probability | Mathematical Application<br>Logic Reasoning |
| 8 | Algebra & Function | Arithmetic Capability<br>Mathematical Application |
| 9 | Geometry | Dimensional Imagination |
| 10 | Number Theory | Mathematical Application<br>Arithmetic Capability<br>Logic Reasoning |

# Level B Topics & Skills

| No. | Topics | Skills |
|---|---|---|
| 11 | Statistics & Probability | Mathematical Application<br>Statistical Analysis |
| 12 | Geometry | Mathematical Application<br>Dimensional Imagination |
| 13 | Geometry | Dimensional Imagination |
| 14 | Algebra & Function | Mathematical Application<br>Arithmetic Capability<br>Logic Reasoning |
| 15 | Geometry | Dimensional Imagination |
| 16 | Geometry | Dimensional Imagination |
| 17 | Number Theory | Mathematical Application<br>Logic Reasoning |
| 18 | Geometry | Dimensional Imagination<br>Mathematical Application |
| 19 | Algebra & Function | Mathematical Application<br>Logic Reasoning |
| 20 | Number Theory | Logic Reasoning<br>Arithmetic Capability<br>Mathematical Application |

# Level B Topics & Skills

| No. | Topics | Skills |
|-----|--------|--------|
| 21 | Number Theory | Mathematical Application<br>Logic Reasoning |
| 22 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 23 | Permutation and Combination | Logic Reasoning<br>Dimensional Imagination |
| 24 | Number Theory | Logic Reasoning<br>Arithmetic Capability |
| 25 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 26 | Algebra & Function | Logic Reasoning<br>Arithmetic Capability |
| 27 | Algebra & Function | Arithmetic Capability |
| 28 | Algebra & Function | Logic Reasoning<br>Arithmetic Capability |
| 29 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 30 | Permutation and Combination | Mathematical Application<br>Logic Reasoning<br>Statistical Analysis<br>Dimensional Imagination |

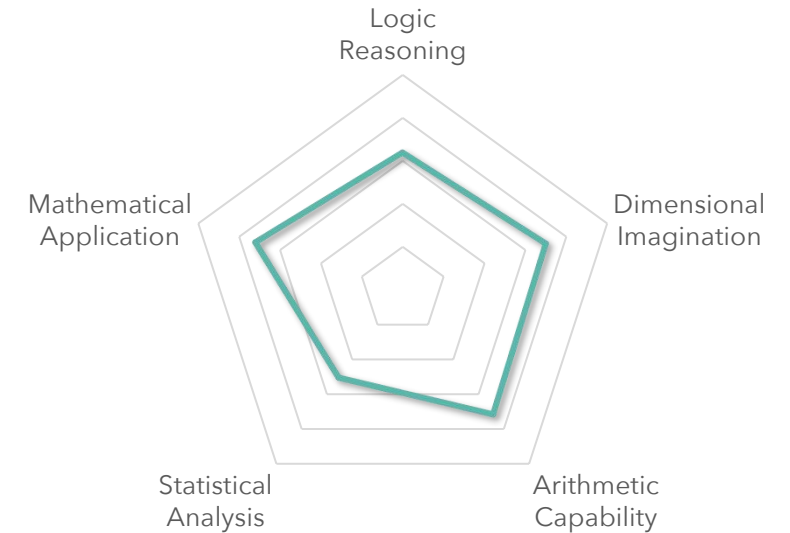# Percentages of Correct Answer & Skills Map – Level B



Skills Map

Percentages of Correct Answer

Question Number
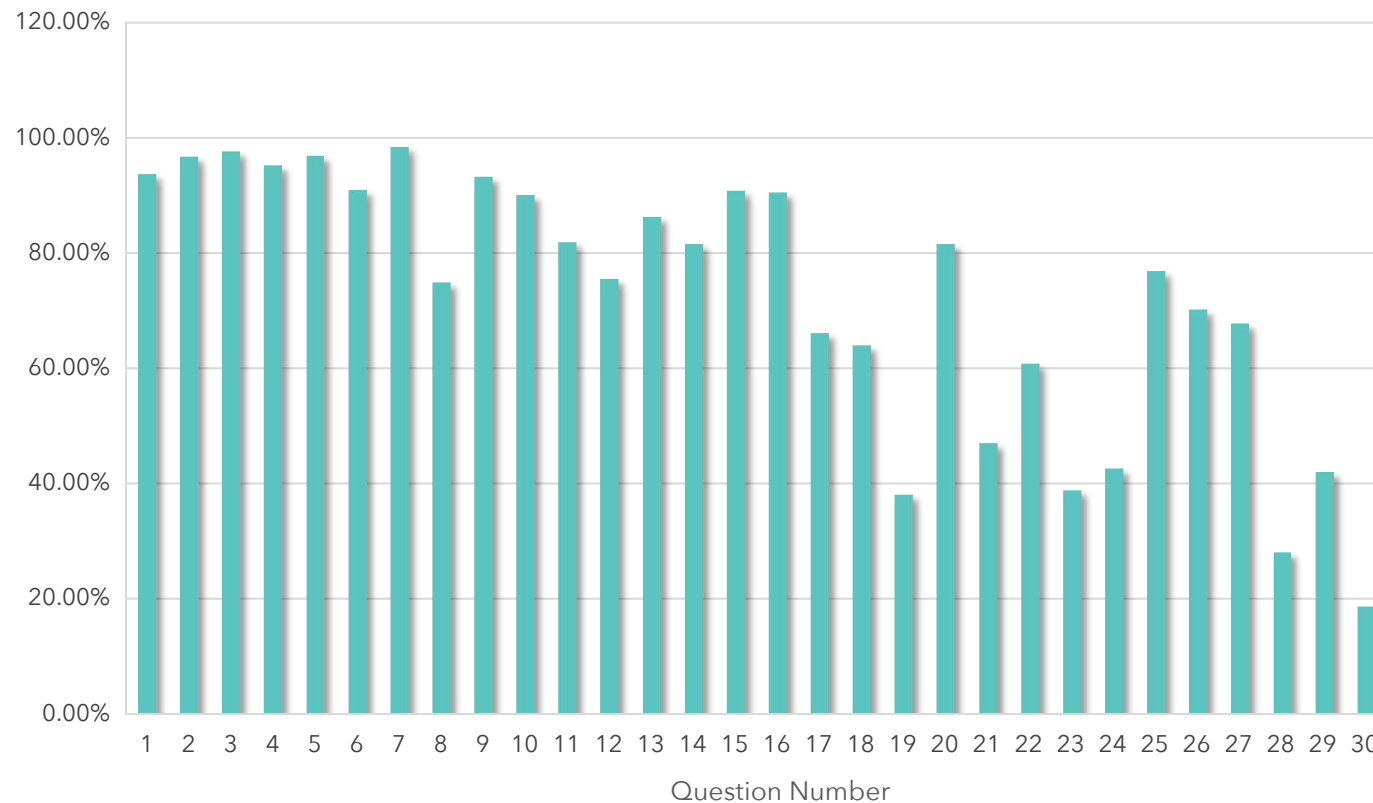
Logic Reasoning（14Qs：4,5,7,10,14,17,19-21,23,24,26,28, 30）

Dimensional Imagination（8Qs：9,12,13,15,16,18,23,30）

Arithmetic Capability（14Qs：1,3,6,8,10,14,20,21,24-29）

Statistical Analysis（2Qs：11,30）

Mathematical Application（18Qs：2,3,5,7,8,10-12,14,17-22,25,29,30）

# Answer Distribution – Level B

| No. | Correct Answer | A (%) | B (%) | C (%) | D (%) | E (%) | Blank (%) |
|-----|----------------|-------|-------|-------|-------|-------|-----------|
| 1 | D | 1.89% | 0.82% | 2.55% | 93.77% | 0.81% | 0.16% |
| 2 | B | 1.99% | 96.83% | 0.33% | 0.42% | 0.23% | 0.17% |
| 3 | C | 0.20% | 0.21% | 97.62% | 1.33% | 0.39% | 0.25% |
| 4 | B | 0.14% | 95.24% | 3.48% | 0.72% | 0.20% | 0.22% |
| 5 | C | 1.16% | 0.65% | 96.89% | 0.57% | 0.32% | 0.40% |
| 6 | D | 0.28% | 0.29% | 5.45% | 91.06% | 2.70% | 0.20% |
| 7 | A | 98.44% | 0.11% | 0.19% | 0.83% | 0.17% | 0.25% |
| 8 | D | 0.71% | 22.30% | 0.79% | 74.99% | 0.92% | 0.26% |
| 9 | B | 1.32% | 93.22% | 0.14% | 4.61% | 0.47% | 0.25% |
| 10 | B | 3.65% | 90.03% | 3.14% | 1.23% | 1.47% | 0.47% |
| 11 | E | 1.46% | 1.47% | 6.28% | 8.65% | 81.90% | 0.22% |
| 12 | A | 75.57% | 4.50% | 1.36% | 0.96% | 17.35% | 0.26% |
| 13 | D | 0.54% | 5.83% | 5.50% | 86.29% | 1.44% | 0.39% |
| 14 | C | 0.74% | 2.81% | 81.66% | 4.19% | 10.12% | 0.48% |
| 15 | D | 3.88% | 1.05% | 1.32% | 90.89% | 2.23% | 0.60% |

| No. | Correct Answer | A (%) | B (%) | C (%) | D (%) | E (%) | Blank (%) |
|-----|----------------|-------|-------|-------|-------|-------|-----------|
| 16 | E | 1.14% | 1.89% | 2.62% | 2.71% | 90.62% | 0.97% |
| 17 | C | 5.39% | 8.37% | 66.11% | 16.84% | 2.27% | 0.98% |
| 18 | B | 6.36% | 64.06% | 21.16% | 5.60% | 2.18% | 0.61% |
| 19 | E | 15.99% | 16.54% | 10.21% | 17.17% | 38.18% | 1.88% |
| 20 | A | 81.61% | 1.70% | 10.04% | 4.87% | 1.14% | 0.55% |
| 21 | E | 2.87% | 29.01% | 13.38% | 6.75% | 47.02% | 0.82% |
| 22 | D | 6.09% | 10.89% | 14.19% | 60.87% | 6.69% | 1.25% |
| 23 | C | 14.33% | 19.11% | 38.84% | 13.11% | 12.87% | 1.62% |
| 24 | D | 13.52% | 17.64% | 16.89% | 42.74% | 5.05% | 4.03% |
| 25 | D | 4.87% | 7.37% | 5.70% | 76.86% | 2.89% | 2.23% |
| 26 | 285 | percentage of correct answer | | | 70.23% | | |
| 27 | 252 | | | | 67.85% | | |
| 28 | 711 | | | | 28.07% | | |
| 29 | 630 | | | | 42.02% | | |
| 30 | 925 | | | | 18.70% | | |

*\* Bold figures are percentages of correct answer of each question. The lighter the background is, the better the results are.*

# Level C Topics & Skills

| No. | Topics | Skills |
|-----|--------|--------|
| 1 | Algebra & Function | Mathematical Application<br>Dimensional Imagination |
| 2 | Algebra & Function | Arithmetic Capability |
| 3 | Algebra & Function | Arithmetic Capability<br>Mathematical Application |
| 4 | Geometry | Dimensional Imagination |
| 5 | Algebra & Function | Arithmetic Capability<br>Mathematical Application |
| 6 | Algebra & Function | Arithmetic Capability |
| 7 | Geometry | Dimensional Imagination |
| 8 | Statistics & Probability | Mathematical Application<br>Statistical Analysis |
| 9 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 10 | Geometry | Arithmetic Capability |

# Level C Topics & Skills

| No. | Topics | Skills |
|-----|--------|--------|
| 11 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 12 | Permutation and Combination | Logic Reasoning<br>Statistical Analysis |
| 13 | Number Theory | Logic Reasoning<br>Arithmetic Capability |
| 14 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 15 | Permutation and Combination | Logic Reasoning<br>Statistical Analysis |
| 16 | Algebra & Function | Mathematical Application<br>Logic Reasoning |
| 17 | Number Theory | Arithmetic Capability<br>Statistical Analysis |
| 18 | Geometry | Mathematical Application<br>Arithmetic Capability<br>Dimensional Imagination |
| 19 | Permutation and Combination | Mathematical Application<br>Logic Reasoning<br>Statistical Analysis |
| 20 | Algebra & Function | Mathematical Application<br>Arithmetic Capability<br>Logic Reasoning |

# Level C Topics & Skills

| No. | Topics | Skills |
|-----|--------|--------|
| 21 | Algebra & Function | Arithmetic Capability |
| 22 | Number Theory | Logic Reasoning |
| 23 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 24 | Permutation and Combination | Logic Reasoning<br>Statistical Analysis<br>Mathematical Application |
| 25 | Geometry | Dimensional Imagination |
| 26 | Number Theory | Arithmetic Capability<br>Logic Reasoning |
| 27 | Algebra & Function | Logic Reasoning<br>Statistical Analysis |
| 28 | Permutation and Combination | Dimensional Imagination<br>Statistical Analysis |
| 29 | Permutation and Combination | Arithmetic Capability<br>Logic Reasoning<br>Statistical Analysis |
| 30 | Number Theory | Logic Reasoning<br>Statistical Analysis |

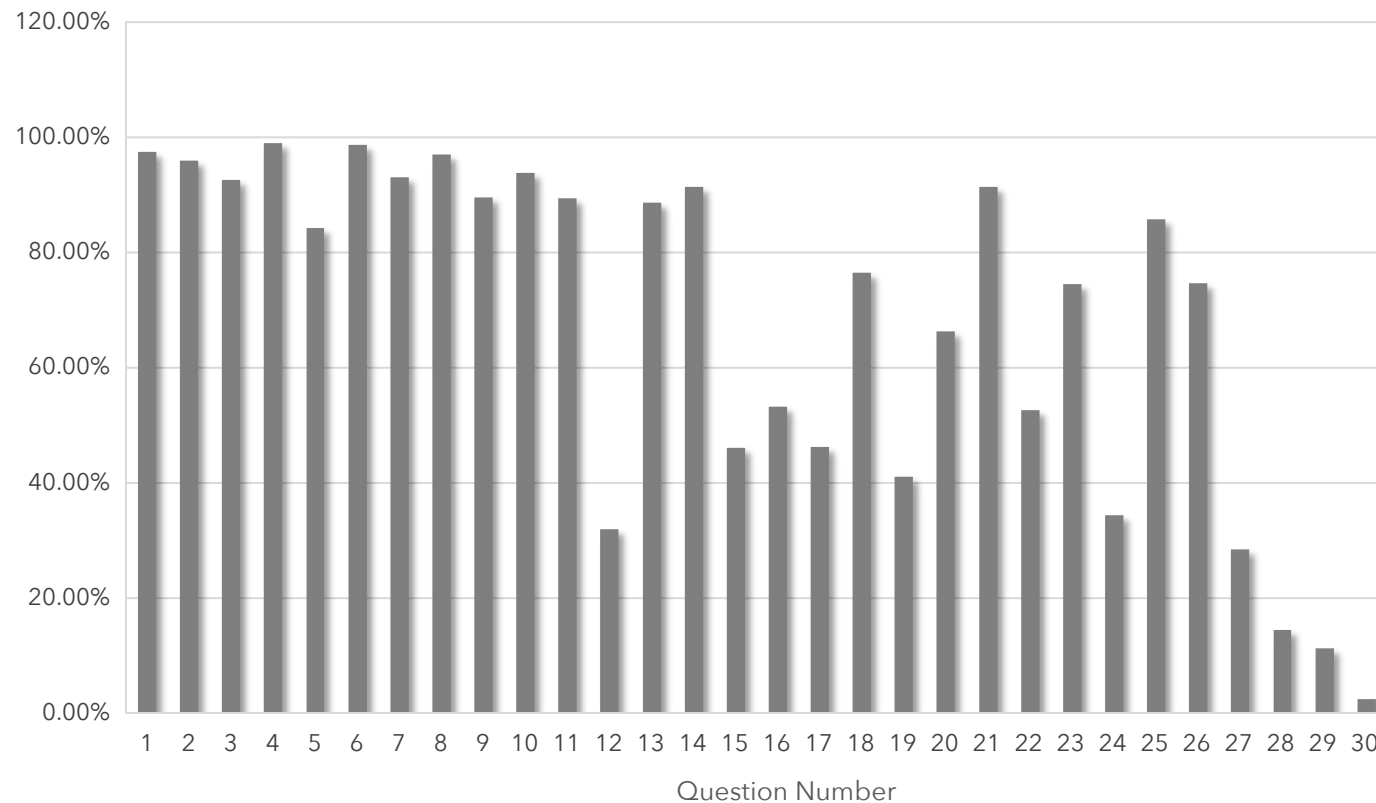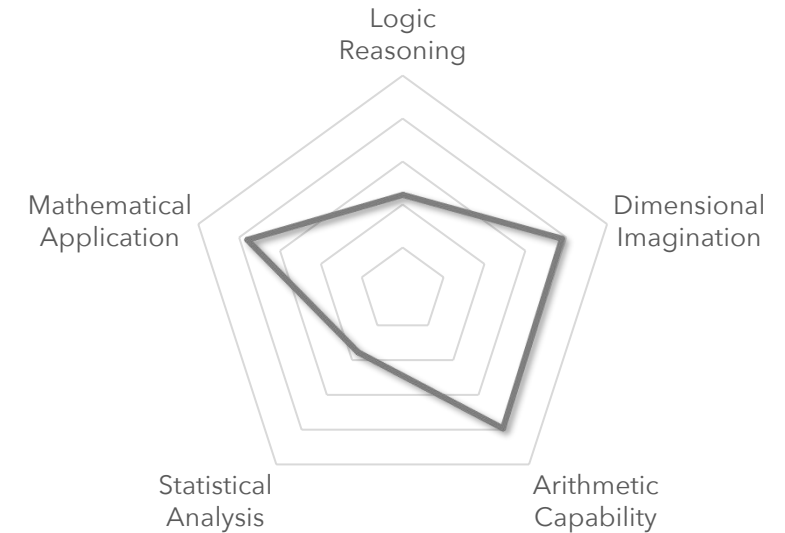# Percentages of Correct Answer & Skills Map – Level C

## Skills Map



## Percentages of Correct Answer



Logic Reasoning（12Qs：12,13,15,16,19,20,22,24,26,27,29,30）

Dimensional Imagination（6Qs：1,4,7,18,25,28）

Arithmetic Capability（16Qs：2,3,5,6,9-11,13,14,17,18,20,21,23,25,29）

Statistical Analysis（10Qs：8,12,15,17,19,24,27-30）

Mathematical Application（13Qs：1,3,5,8,9,11,14,16,18-20,23,24）

# Answer Distribution – Level C

| No. | Correct Answer | A (%) | B (%) | C (%) | D (%) | E (%) | Blank (%) |
|---|---|---|---|---|---|---|---|
| 1 | A | 97.22% | 0.73% | 1.48% | 0.15% | 0.35% | 0.06% |
| 2 | B | 0.15% | 95.75% | 0.22% | 3.13% | 0.65% | 0.06% |
| 3 | A | 92.37% | 6.92% | 0.31% | 0.24% | 0.09% | 0.08% |
| 4 | A | 98.79% | 0.48% | 0.05% | 0.26% | 0.34% | 0.09% |
| 5 | B | 5.30% | 84.13% | 4.58% | 4.96% | 0.80% | 0.23% |
| 6 | C | 0.28% | 0.39% | 98.43% | 0.29% | 0.38% | 0.17% |
| 7 | E | 0.99% | 2.03% | 2.56% | 1.29% | 92.94% | 0.12% |
| 8 | A | 96.77% | 1.07% | 0.34% | 1.16% | 0.39% | 0.24% |
| 9 | D | 0.23% | 6.25% | 2.79% | 89.42% | 1.13% | 0.18% |
| 10 | D | 3.93% | 0.83% | 0.80% | 93.67% | 0.55% | 0.21% |
| 11 | C | 0.34% | 7.71% | 89.24% | 1.95% | 0.63% | 0.13% |
| 12 | C | 7.94% | 22.18% | 31.94% | 25.02% | 12.26% | 0.66% |
| 13 | D | 1.63% | 2.80% | 4.14% | 88.50% | 2.19% | 0.72% |
| 14 | D | 0.45% | 3.84% | 3.11% | 91.27% | 1.09% | 0.22% |
| 15 | B | 7.87% | 46.04% | 21.52% | 6.88% | 16.49% | 1.20% |

| No. | Correct Answer | A (%) | B (%) | C (%) | D (%) | E (%) | Blank (%) |
|---|---|---|---|---|---|---|---|
| 16 | B | 3.13% | 53.25% | 19.20% | 11.44% | 12.26% | 0.63% |
| 17 | C | 6.75% | 2.79% | 46.22% | 2.75% | 41.04% | 0.44% |
| 18 | E | 5.35% | 8.87% | 3.47% | 5.45% | 76.43% | 0.40% |
| 19 | A | 41.05% | 22.01% | 4.50% | 11.50% | 20.44% | 0.50% |
| 20 | B | 4.43% | 66.17% | 18.25% | 5.11% | 5.22% | 0.76% |
| 21 | D | 1.33% | 2.15% | 3.59% | 91.24% | 1.39% | 0.28% |
| 22 | A | 52.56% | 18.91% | 13.93% | 8.82% | 3.56% | 2.20% |
| 23 | B | 5.04% | 74.37% | 11.95% | 5.05% | 2.53% | 1.01% |
| 24 | B | 19.44% | 34.39% | 16.90% | 13.55% | 14.49% | 1.17% |
| 25 | E | 1.66% | 3.64% | 6.47% | 1.72% | 85.67% | 0.73% |
| 26 | 541 | | | percentage of correct answer | 74.60% | | |
| 27 | 034 | | | | 28.51% | | |
| 28 | 351 | | | | 14.62% | | |
| 29 | 164 | | | | 11.43% | | |
| 30 | 810 | | | | 2.68% | | |

*Bold figures are percentages of correct answer of each question. The lighter the background is, the better the results are.*

# Level D Topics & Skills

| No. | Topics | Skills |
|-----|--------|--------|
| 1 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 2 | Geometry | Arithmetic Capability |
| 3 | Algebra & Function | Arithmetic Capability |
| 4 | Geometry | Arithmetic Capability |
| 5 | Algebra & Function | Arithmetic Capability |
| 6 | Geometry | Arithmetic Capability |
| 7 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 8 | Algebra & Function | Arithmetic Capability |
| 9 | Algebra & Function | Arithmetic Capability |
| 10 | Geometry | Arithmetic Capability |

# Level D Topics & Skills

| No. | Topics | Skills |
|---|---|---|
| 11 | Permutation and Combination | Statistical Analysis |
| 12 | Number Theory | Logic Reasoning<br>Arithmetic Capability |
| 13 | Geometry | Arithmetic Capability |
| 14 | Permutation and Combination | Logic Reasoning<br>Arithmetic Capability |
| 15 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 16 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 17 | Geometry | Arithmetic Capability |
| 18 | Algebra & Function | Arithmetic Capability |
| 19 | Geometry | Arithmetic Capability<br>Mathematical Application |
| 20 | Algebra & Function | Mathematical Application<br>Arithmetic Capability<br>Logic Reasoning |

# Level D Topics & Skills

| No. | Topics | Skills |
|-----|--------|--------|
| 21 | Geometry | Mathematical Application<br>Dimensional Imagination |
| 22 | Number Theory | Arithmetic Capability |
| 23 | Geometry | Arithmetic Capability |
| 24 | Number Theory | Arithmetic Capability |
| 25 | Geometry | Arithmetic Capability |
| 26 | Number Theory | Arithmetic Capability<br>Logic Reasoning<br>Mathematical Application |
| 27 | Geometry | Arithmetic Capability |
| 28 | Number Theory | Logic Reasoning<br>Arithmetic Capability |
| 29 | Geometry | Arithmetic Capability<br>Dimensional Imagination<br>Mathematical Application |
| 30 | Permutation and Combination | Logic Reasoning<br>Statistical Analysis |

# Percentages of Correct Answer & Skills Map – Level D

## Percentages of Correct Answer
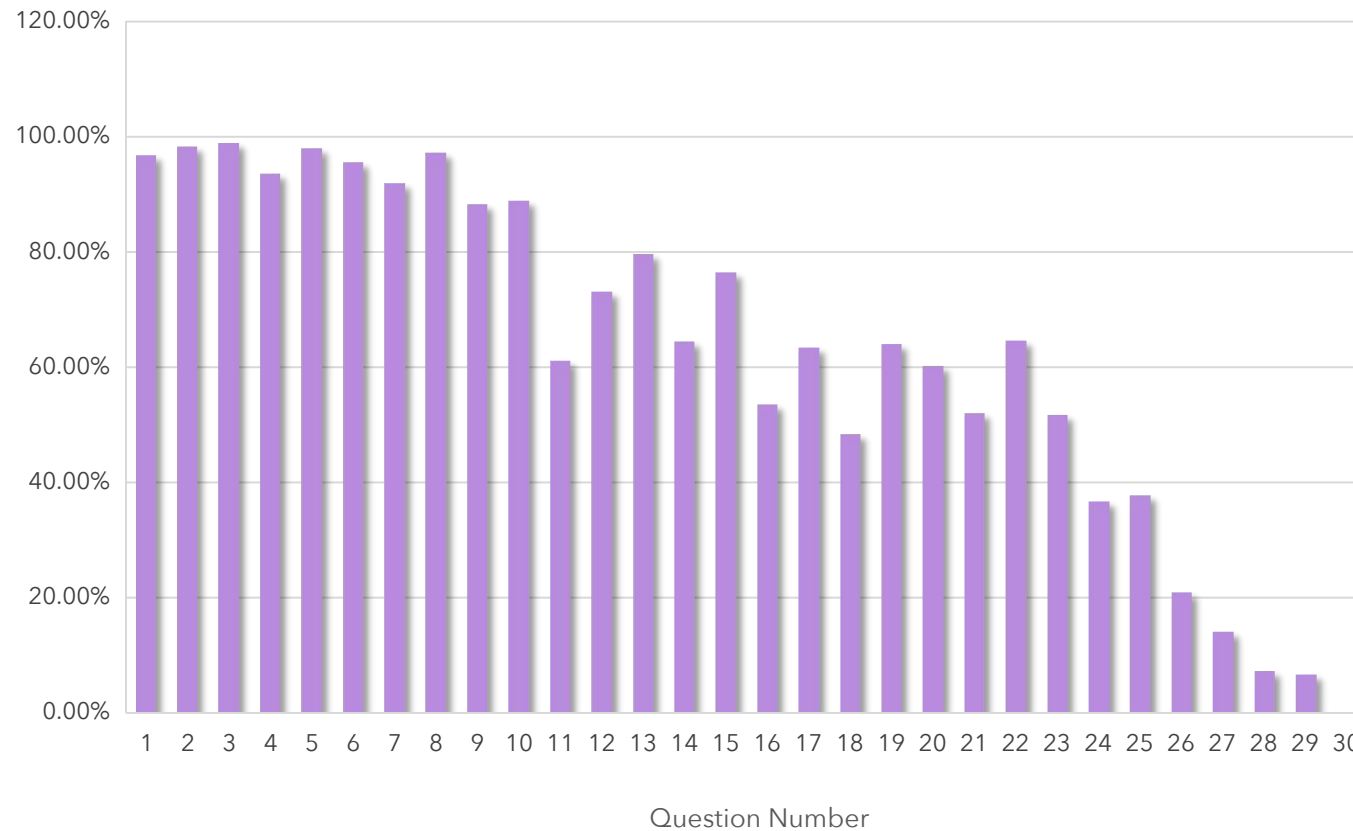


## Skills Map
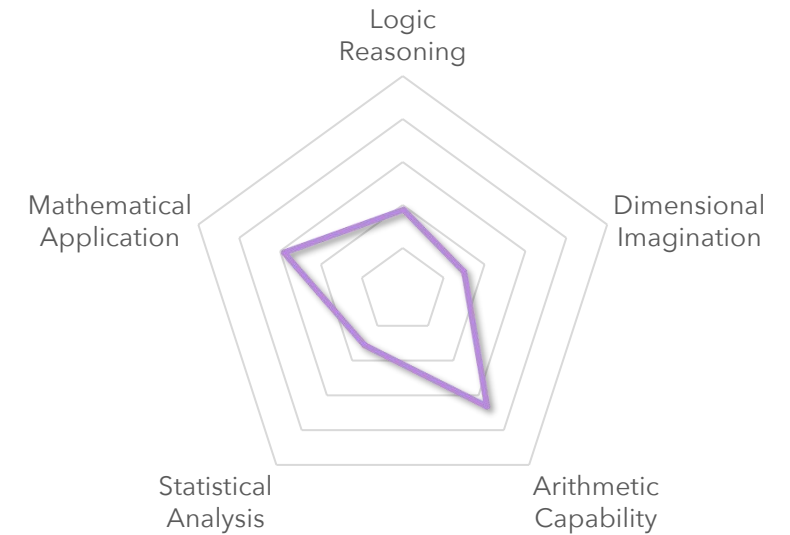


Logic Reasoning（6Qs：12,14,20,26,28,30）
Dimensional Imagination（2Qs：21,29）
Arithmetic Capability（27Qs：1-10,12-20,22-29）
Statistical Analysis（2Qs：11,30）
Mathematical Application（9Qs：1,7,15,16,19-21,26,29）

# Answer Distribution – Level D

| No. | Correct Answer | A (%) | B (%) | C (%) | D (%) | E (%) | Balnk (%) |
|---|---|---|---|---|---|---|---|
| 1 | C | 0.30% | 0.68% | 96.81% | 1.02% | 1.13% | 0.04% |
| 2 | E | 0.07% | 0.27% | 0.38% | 0.94% | 98.27% | 0.06% |
| 3 | C | 0.19% | 0.11% | 98.91% | 0.47% | 0.23% | 0.08% |
| 4 | E | 0.92% | 1.71% | 2.40% | 1.21% | 93.63% | 0.13% |
| 5 | C | 0.04% | 0.22% | 98.00% | 1.49% | 0.11% | 0.16% |
| 6 | D | 2.73% | 0.59% | 0.59% | 95.62% | 0.38% | 0.07% |
| 7 | C | 0.14% | 5.87% | 91.91% | 1.64% | 0.36% | 0.08% |
| 8 | A | 97.19% | 0.20% | 0.38% | 1.98% | 0.13% | 0.09% |
| 9 | D | 6.36% | 0.72% | 0.83% | 88.31% | 3.68% | 0.10% |
| 10 | C | 0.78% | 0.71% | 88.96% | 6.19% | 3.14% | 0.20% |
| 11 | C | 7.76% | 13.93% | 61.21% | 11.63% | 4.94% | 0.49% |
| 12 | E | 16.40% | 3.96% | 3.37% | 2.64% | 73.20% | 0.37% |
| 13 | E | 4.19% | 7.54% | 2.93% | 5.50% | 79.62% | 0.14% |
| 14 | B | 4.79% | 64.53% | 9.57% | 17.84% | 2.52% | 0.69% |
| 15 | D | 1.85% | 4.49% | 11.01% | 76.44% | 5.64% | 0.50% |

| No. | Correct Answer | A (%) | B (%) | C (%) | D (%) | E (%) | Balnk (%) |
|---|---|---|---|---|---|---|---|
| 16 | B | 9.95% | 53.57% | 18.85% | 11.66% | 4.94% | 0.89% |
| 17 | A | 63.45% | 8.10% | 13.91% | 5.26% | 8.25% | 0.93% |
| 18 | B | 7.74% | 48.43% | 24.82% | 12.04% | 5.41% | 1.37% |
| 19 | B | 14.79% | 64.09% | 7.71% | 5.22% | 7.31% | 0.76% |
| 20 | E | 2.06% | 7.81% | 20.17% | 8.97% | 60.30% | 0.60% |
| 21 | E | 7.14% | 8.23% | 10.53% | 21.24% | 52.09% | 0.63% |
| 22 | D | 6.29% | 8.01% | 14.55% | 64.63% | 5.08% | 1.20% |
| 23 | A | 51.83% | 14.26% | 16.02% | 11.43% | 5.13% | 1.12% |
| 24 | C | 14.01% | 20.70% | 36.73% | 18.78% | 6.99% | 2.42% |
| 25 | C | 7.25% | 21.76% | 37.82% | 15.14% | 16.46% | 1.29% |
| 26 | 301 | | percentage of correct answer | | 9.49% | | |
| 27 | 097 | | | | 8.55% | | |
| 28 | 062 | | | | 8.64% | | |
| 29 | 375 | | | | 7.68% | | |
| 30 | 170 | | | | 2.70% | | |

*Bold figures are percentages of correct answer of each question. The lighter the background is, the better the results are.*

# Level E Topics & Skills

| No. | Topics | Skills |
| --- | --- | --- |
| 1 | Algebra & Function | Arithmetic Capability |
| 2 | Geometry | Arithmetic Capability |
| 3 | Algebra & Function | Arithmetic Capability |
| 4 | Algebra & Function | Arithmetic Capability |
| 5 | Geometry | Arithmetic Capability |
| 6 | Geometry | Arithmetic Capability |
| 7 | Number Theory | Logic Reasoning<br>Arithmetic Capability |
| 8 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 9 | Geometry | Arithmetic Capability |
| 10 | Number Theory | Logic Reasoning<br>Arithmetic Capability |

# Level E Topics & Skills

| No. | Topics | Skills |
|-----|--------|--------|
| 11 | Algebra & Function | Arithmetic Capability |
| 12 | Permutation and Combination | Statistical Analysis<br>Mathematical Application |
| 13 | Algebra & Function | Arithmetic Capability |
| 14 | Permutation and Combination | Statistical Analysis<br>Mathematical Application |
| 15 | Algebra & Function | Logic Reasoning |
| 16 | Algebra & Function | Arithmetic Capability |
| 17 | Geometry | Arithmetic Capability |
| 18 | Statistics & Probability | Statistical Analysis<br>Mathematical Application<br>Arithmetic Capability |
| 19 | Algebra & Function | Arithmetic Capability<br>Logic Reasoning |
| 20 | Geometry | Dimensional Imagination<br>Arithmetic Capability |

# Level E Topics & Skills

| No. | Topics | Skills |
| --- | --- | --- |
| 21 | Number Theory | Arithmetic Capability |
| 22 | Algebra & Function | Mathematical Application<br>Arithmetic Capability |
| 23 | Number Theory | Arithmetic Capability |
| 24 | Geometry | Dimensional Imagination<br>Arithmetic Capability<br>Mathematical Application |
| 25 | Geometry | Dimensional Imagination<br>Arithmetic Capability |
| 26 | Permutation and Combination | Statistical Analysis |
| 27 | Algebra & Function | Arithmetic Capability<br>Logic Reasoning |
| 28 | Geometry | Mathematical Application<br>Arithmetic Capability<br>Dimensional Imagination |
| 29 | Permutation and Combination | Statistical Analysis<br>Mathematical Application |
| 30 | Permutation and Combination | Statistical Analysis<br>Mathematical Application |

# Percentages of Correct Answer & Skills Map – Level E

## Skills Map



## Percentages of Correct Answer



Question Number
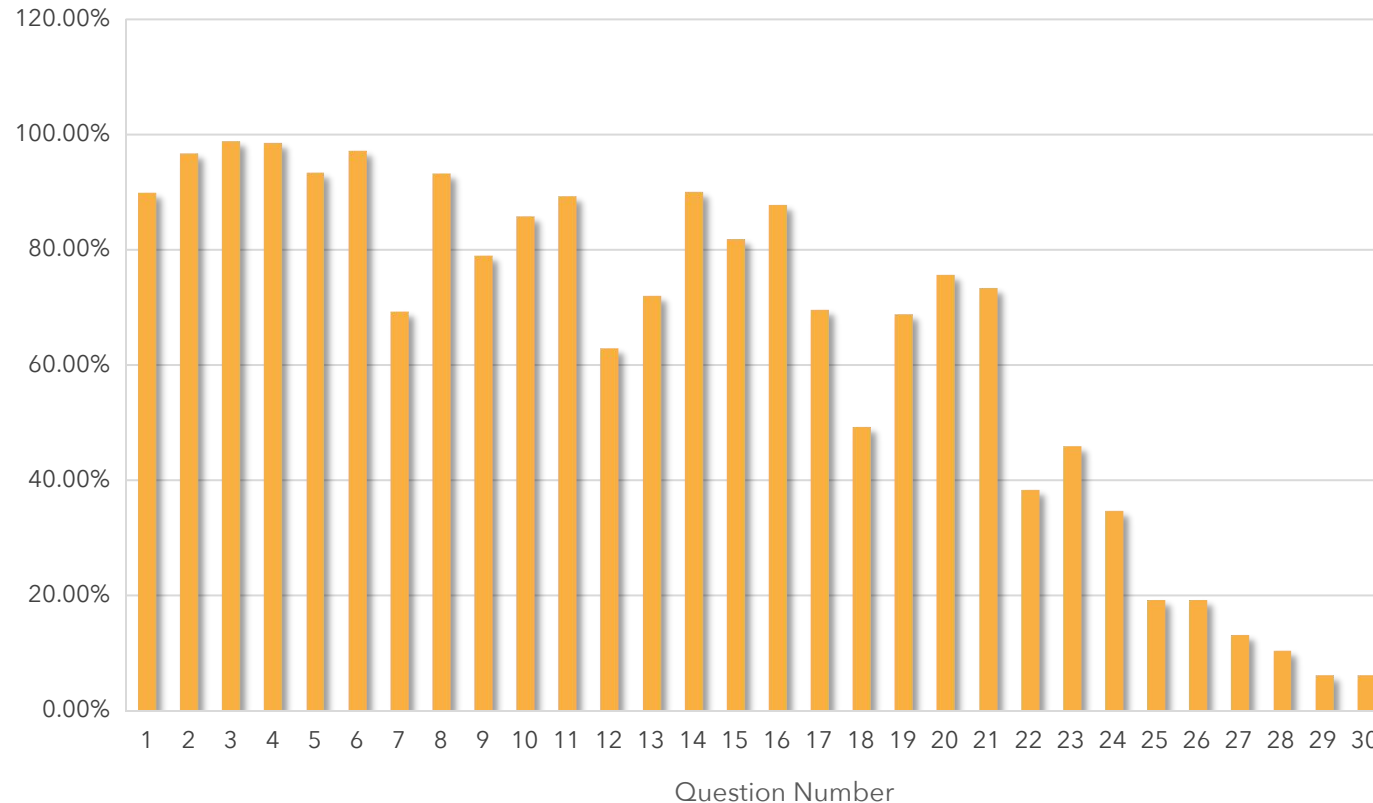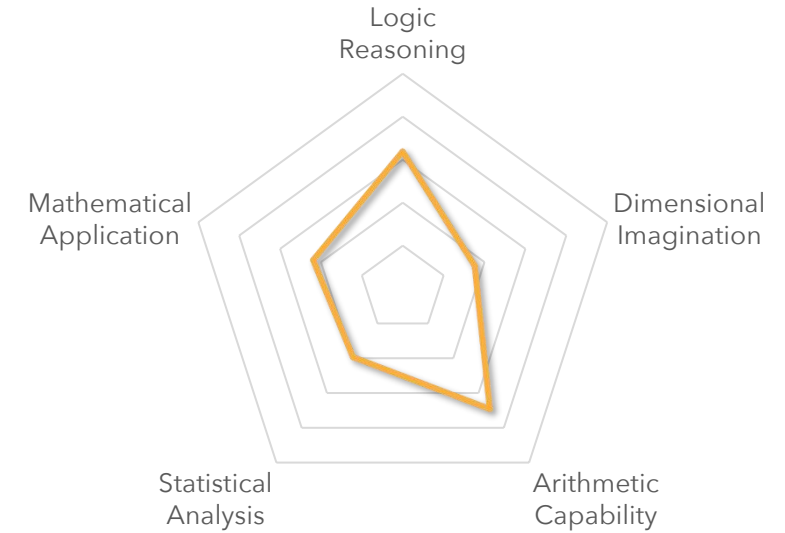
Logic Reasoning（5Qs：7,10,15,19,27）
Dimensional Imagination（4Qs：20,24,25,28）
Arithmetic Capability（24Qs：1-11,13,16-25,27,28）
Statistical Analysis（6Qs：12,14,18,26,29,30）
Mathematical Application（9Qs：8,12,14,18,22,24,28-30）

# Answer Distribution – Level E

| No. | Correct Answer | A (%) | B (%) | C (%) | D (%) | E (%) | Blank (%) |
|-----|----------------|-------|-------|-------|-------|-------|-----------|
| 1 | B | 7.88% | 89.92% | 1.97% | 0.10% | 0.07% | 0.07% |
| 2 | D | 1.73% | 0.75% | 0.48% | 96.74% | 0.27% | 0.03% |
| 3 | C | 0.03% | 0.20% | 98.78% | 0.61% | 0.27% | 0.10% |
| 4 | E | 0.17% | 0.24% | 0.41% | 0.48% | 98.51% | 0.20% |
| 5 | A | 93.41% | 2.44% | 3.02% | 0.44% | 0.61% | 0.07% |
| 6 | B | 0.58% | 97.22% | 0.88% | 0.64% | 0.64% | 0.03% |
| 7 | A | 69.31% | 4.01% | 7.20% | 8.08% | 10.22% | 1.02% |
| 8 | D | 0.24% | 2.41% | 2.89% | 93.21% | 1.02% | 0.20% |
| 9 | A | 79.02% | 7.74% | 9.50% | 2.99% | 0.48% | 0.24% |
| 10 | E | 1.09% | 2.78% | 3.19% | 6.92% | 85.74% | 0.17% |
| 11 | B | 4.18% | 89.31% | 3.77% | 1.60% | 0.98% | 0.14% |
| 12 | B | 4.34% | 63.00% | 18.77% | 9.37% | 4.18% | 0.27% |
| 13 | C | 5.30% | 5.06% | 72.10% | 12.80% | 4.11% | 0.54% |
| 14 | C | 1.73% | 2.14% | 89.99% | 3.84% | 2.00% | 0.24% |
| 15 | D | 3.70% | 4.62% | 6.82% | 81.84% | 2.48% | 0.48% |

| No. | Correct Answer | A (%) | B (%) | C (%) | D (%) | E (%) | Blank (%) |
|-----|----------------|-------|-------|-------|-------|-------|-----------|
| 16 | D | 2.38% | 1.19% | 3.56% | 87.78% | 4.85% | 0.14% |
| 17 | A | 69.65% | 8.69% | 15.27% | 3.39% | 2.27% | 0.54% |
| 18 | E | 9.84% | 11.07% | 7.81% | 21.01% | 49.32% | 0.61% |
| 19 | B | 10.93% | 68.91% | 9.10% | 5.36% | 5.09% | 0.44% |
| 20 | B | 6.79% | 75.66% | 9.61% | 4.65% | 2.68% | 0.51% |
| 21 | D | 6.25% | 5.70% | 9.95% | 73.42% | 4.07% | 0.31% |
| 22 | A | 38.32% | 21.69% | 16.43% | 14.56% | 6.82% | 1.49% |
| 23 | C | 6.31% | 13.48% | 45.93% | 22.13% | 10.18% | 1.32% |
| 24 | B | 13.82% | 34.83% | 15.34% | 20.57% | 12.70% | 1.66% |
| 25 | E | 29.40% | 25.80% | 15.92% | 6.55% | 19.35% | 1.97% |
| 26 | 247 | | | | 19.25% | | |
| 27 | 185 | percentage of correct answer | | | 13.27% | | |
| 28 | 375 | | | | 10.59% | | |
| 29 | 330 | | | | 6.28% | | |
| 30 | 198 | | | | 6.28% | | |

*\* Bold figures are percentages of correct answer of each question. The lighter the background is, the better the results are.*
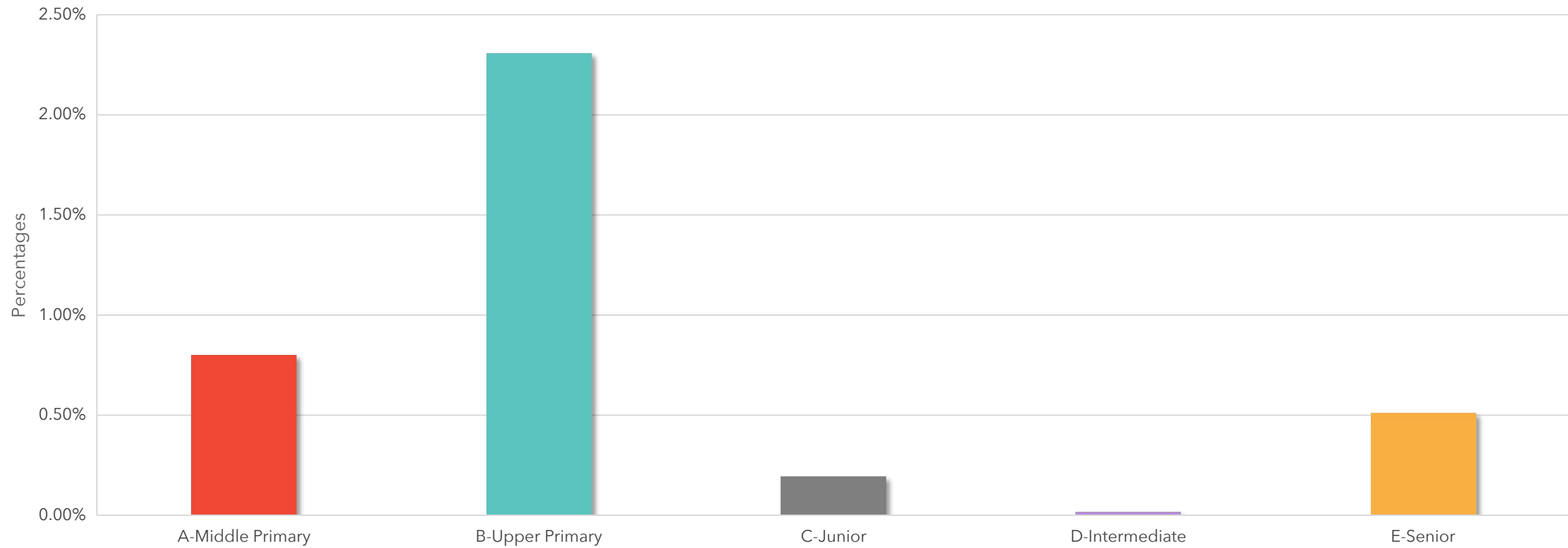
**Australian Mathematics Competition (AMC)**

**Award-winning Results**
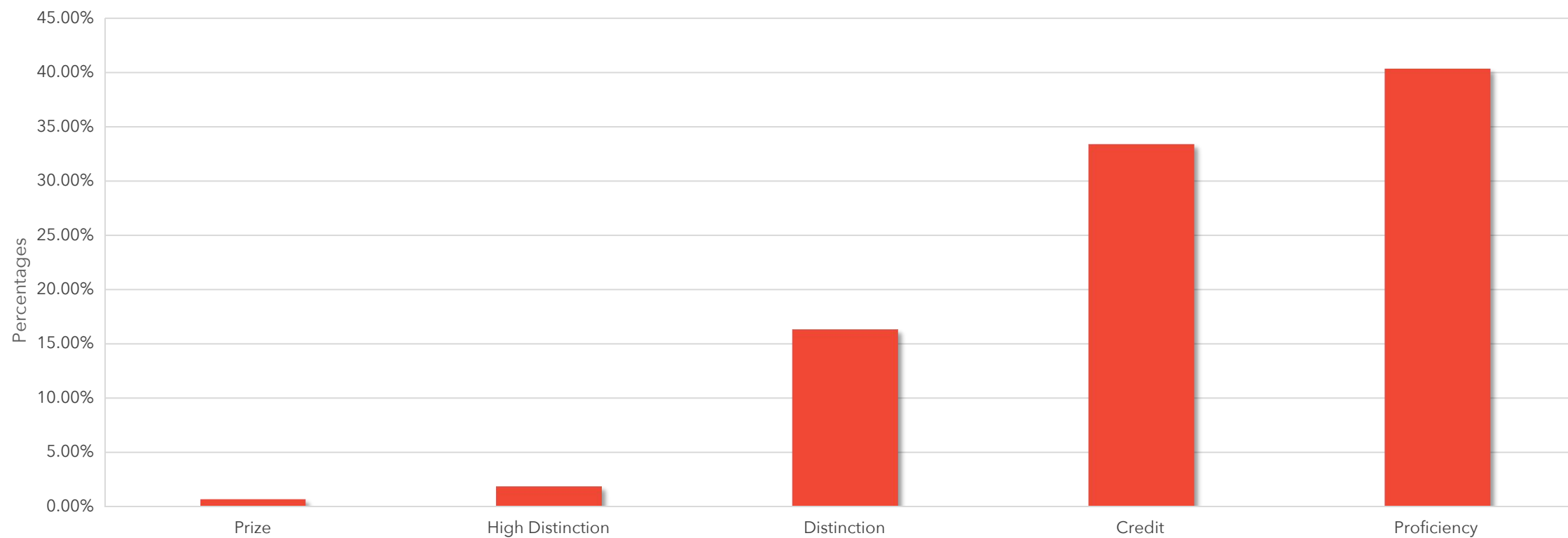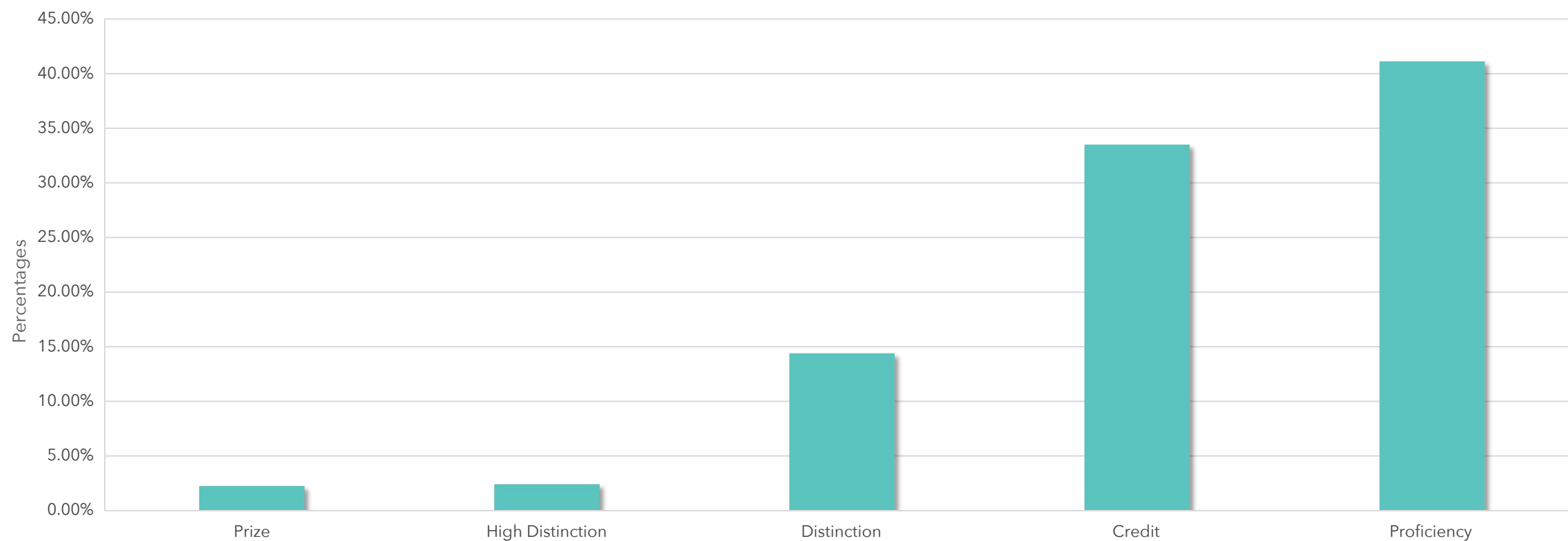
# National Awards Distribution

## Level B

# National Awards Distribution
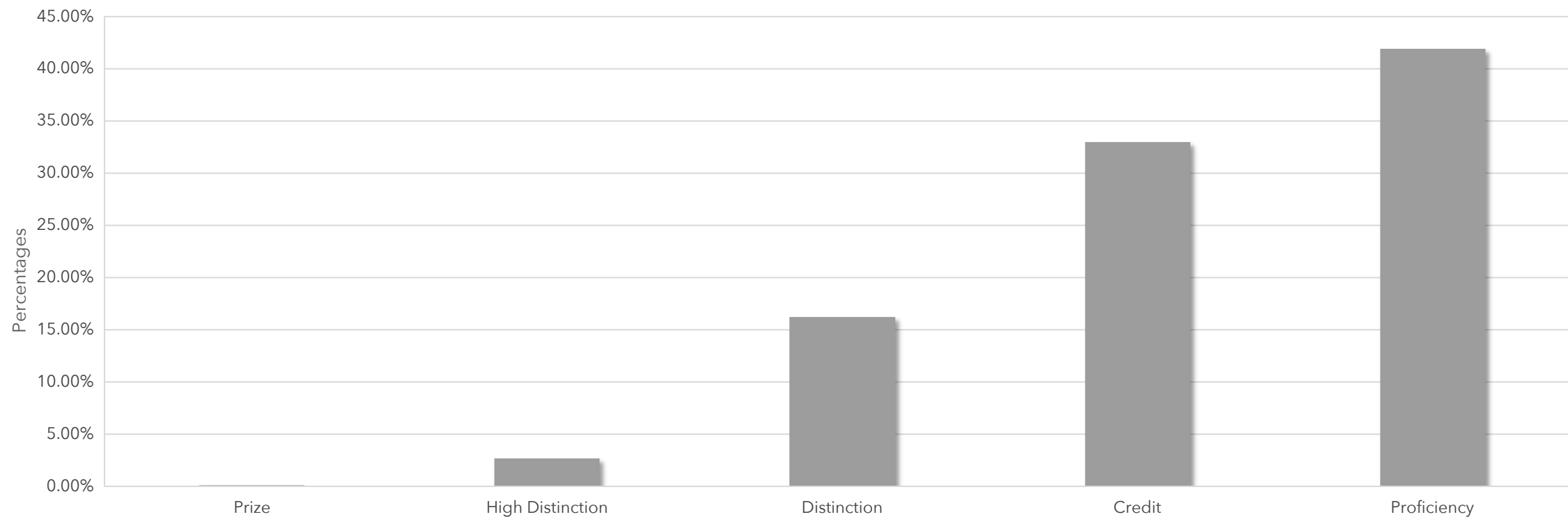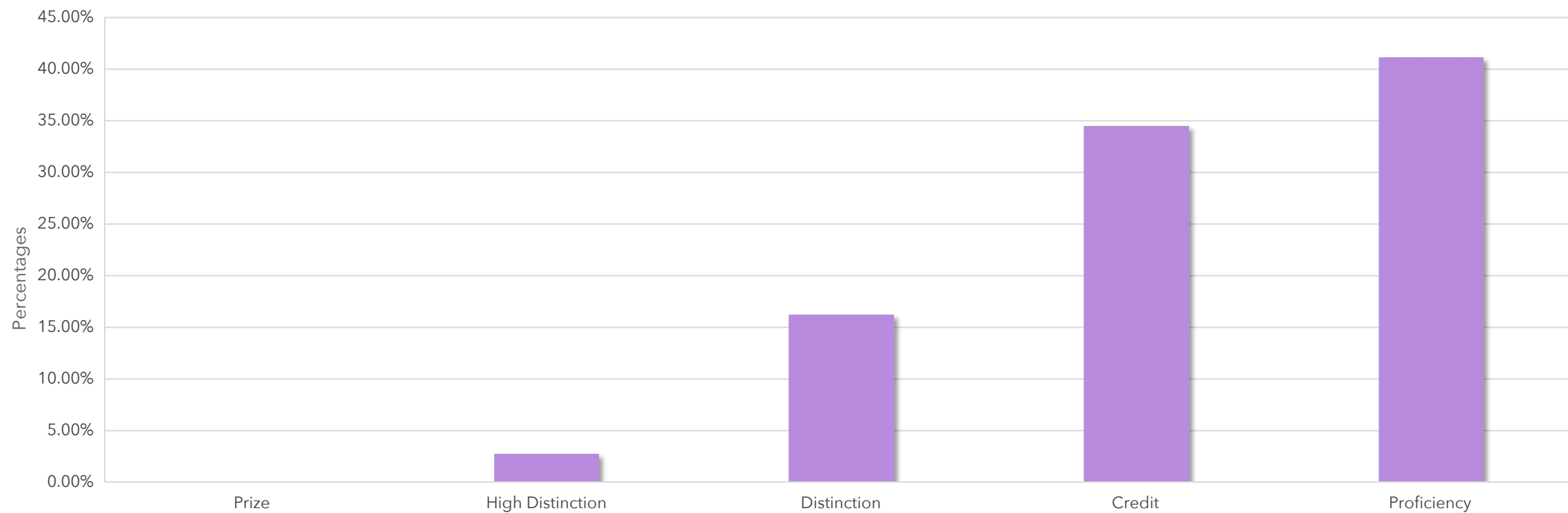
## Level D
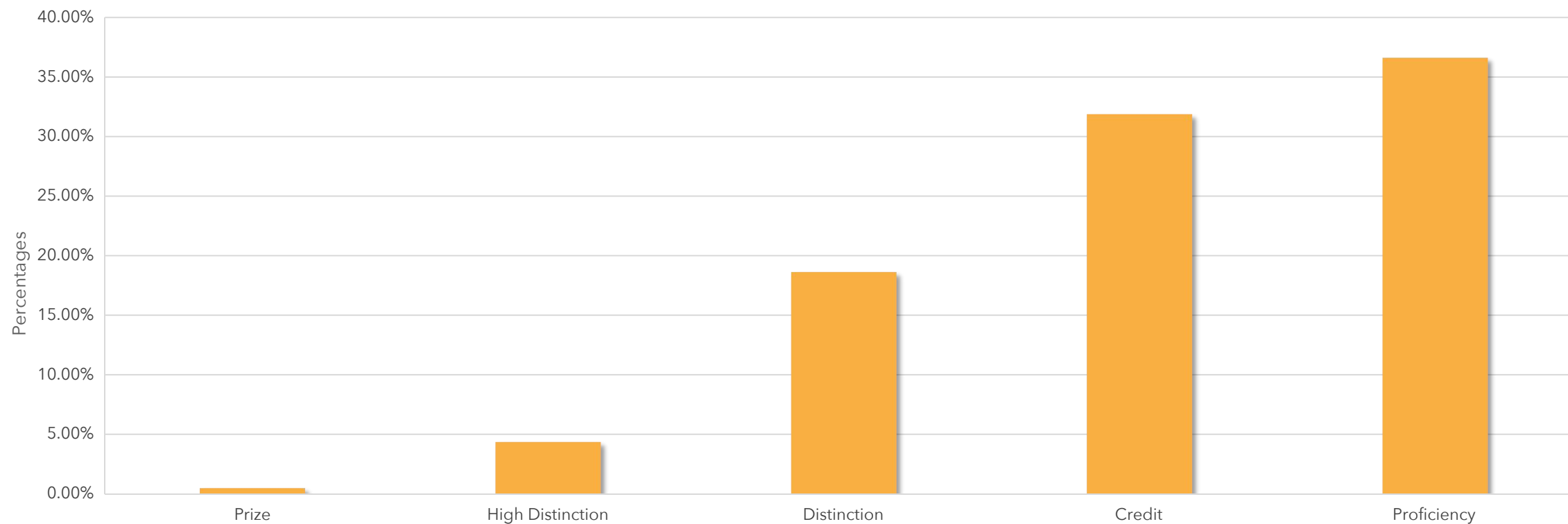
# Conclusion

The Australian Mathematics Competition (AMC) is a world-wide interschool mathematics competition for students with a history of 44 years. The competition boasts the innovative questions and multilingual versions, which enable math lovers across the world to learn from each other and understand the importance of mathematics in life deeply. This competition aims to enrich the mathematical education for students in all ages, and provide more advanced mathematical ideas, theoretical trends and educational resources. And it encourages mathematical reasoning, precision of thought, and using basic mathematical techniques to solve interesting problems. As shown in the skills map, students in all levels shows great arithmetic capability, and 5 skills tend to be balanced among students in level A. But statistical analysis and logical reasoning skills are to be improved in higher levels, and questions about dimensional imagination are difficult in level D and E, where students aming for higher scores should pay attention. In terms of global performance, the perfect scores appear in all levels, which show their love and great enthusiasm for math as well as the increasing demand for quality international education!

Mathematics and other basic subject education is a major concern for schools and students.The active participation of schools in the AMC also reflects the importance and necessity of top international resources in STEM. ASDAN China Limited will continue to provide more quality international education resources for Chinese students, help the development of science education and international education, and stimulate students' interest in mathematics. We hope more students will participate in our various challenges in the future!

The competition went smoothly and successfully. We look forward to seeing you next year!

# American Mathematics Competitions (AMC 10 / 12)

**Language**
**English/Chinese**

**Version A Date**
**2023.11.9**

**Version B Date**
**2023.11.15**

★ Organized by the Mathematics Association of America (MAA)

★ Global authoritative youth math competition

★ Over 300,000 students participating annually in over 6,000 schools from 30 countries and regions

★ Set up Global awards and School awards

★ Excellent score to participate in AIME, a more challenging competition

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