DEPARTMENT FOR CURRICULUM,
LIFELONG LEARNING AND EMPLOYABILITY
Directorate for Learning and Assessment Programmes
Educational Assessment Unit

Track 1

**Annual Examinations for Secondary Schools 2022**

# YEAR 11 MATHEMATICS MARKING SCHEME

## Notes for Marking of Scripts

### *Types of Marks*

Method marks are awarded for knowing a correct method of solution and attempting to apply it. Method marks cannot be lost for arithmetic mistakes. They can only be awarded if the method used would have led to the correct answer had not an arithmetic mistake been made. Unless otherwise stated, any valid method not specified in the marking scheme is to be accepted and marked accordingly.

There are two types of Method marks: **M** marks and **(M)** marks.

- **M marks** are only awarded if method is seen.
- **(M) marks** are awarded even when a correct answer is given and no work is shown.

There are two types of Accuracy marks: **A** marks and **B** marks.

- **A** marks are accuracy marks given for correct answer only (c.a.o.).
  - Incorrect answers, even though nearly correct, score no marks.
  - Accuracy marks are also awarded for incorrect answers which are correctly followed through (f.t.) from an incorrect previous answer, **provided that f.t. is indicated in the marking scheme**.
  - No Method marks **M/(M)** or Accuracy marks **A** are awarded when a wrong method leads to a correct answer.
  - When a question is assigned **M** and **A** marks and students present a correct answer without any working, only **A** marks are awarded.
- **B** marks are accuracy marks awarded for specific results or statements independent of the method used.

### *Misreading*

Method marks can still be earned (unless that part of the question is trivialised) but the final Accuracy marks are lost.

### *Crossed out working*

An answer or working that is crossed out and not replaced is marked as if it were not crossed out. If the answer or working is replaced, then the crossed out answer or working is ignored and should not be considered for marking.

### *Units*

In general, missing or inaccurate units are not penalised unless otherwise indicated in the marking scheme.

### *Other*

- Incorrect working or statement following a correct answer is ignored.
- Marks are not sub-divisible; no half marks may be awarded.
- Other abbreviations used:
  - o.e. (or equivalent)
  - e.e.o.o. (each error or omission)
- Markers are advised to indicate the M, (M), A or B marks awarded in the body of the script and then write their total in the margin. The total mark for each question should be written in the table included at the top of page 1 of the main paper. This measure facilitates the moderation of papers.

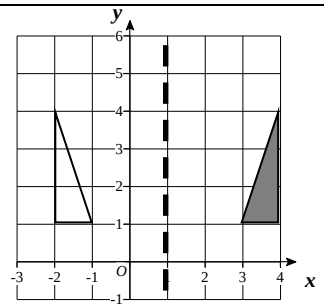
**NON-CALCULATOR PAPER (20 marks – 1 mark each)**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 30 | –14 | 14 | $\frac{63}{100}$ | $\frac{2}{3}$ | 2 | $\frac{20}{3}$ | 60 | $3\frac{3}{8}$ | 400 |
| **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18a** | **18b** | **19** |
| $\frac{11}{24}$ | 4.88 | $\frac{2}{15}$ | 22 | 100 | 320 | $\frac{1}{14}$ | 11 | 6 | 920 |

**MAIN PAPER (80 marks)**

| Que. | | Requirements | Mark | | Additional Guidance |
|---|---|---|---|---|---|
| 1 | a | (i) $7(x-3y)$<br>(ii) $a(8ab-11c)$ | B2<br>B2 | 7 | 1 mark for each correct factor<br>1 mark for each correct factor |
| | b | (i) $4a+24$<br>(ii) $4+8x-3x+21$<br>$25+5x$ | B1<br>M1<br>A1 f.t. | | |
| 2 | a | $\frac{3}{5}\times 100$<br>60 | (M)1<br>A1 | 4 | |
| | b | $\frac{35}{100}\times 260$<br>91 | (M)1<br>A1 | | |
| 3 | a | 16 807 + 81 – 32<br>16 856 | (M)1<br>A1 | 7 | |
| | b | $9\times 2-\frac{3}{4}$<br>$18-\frac{3}{4}$<br>$17\frac{1}{4}$ | (M)1<br>(M)1<br>A1 | | o.e. |
| | c | $\sqrt{46.594}$<br>6.8 | (M)1<br>A1 | | 6.8 or more accurate |

| | | | | | |
|---|---|---|---|---|---|
| 4 | a | $4 + 7 - 5$<br>$= 6$ | M1<br>A1 | | |
| | b | $2 \times \frac{13}{4}$<br>$= 6\frac{1}{2}$ | M1<br>A1 | 4 | o.e. |
| 5 | a | $\frac{30}{150} \times 100$<br>20% | M1<br>A1 | | |
| | b | 100 – 15 = 85%<br>$\frac{85}{100} \times 150$<br>127.50 | (M)1<br>M1<br>A1 | 8 | |
| | c | Increase = €300<br>$\frac{300}{1200} \times 100$<br>25 | (M)1<br>M1<br>A1 | | |
| 6 | a | $5 + 20 = 6x - x$<br>$25 = 5x$<br>$5 = x$ | M1<br>A1 | 5 | one correct step |
| | b | $x + 8x = 36$<br>$9x = 36$<br>$x = 4$ | M1<br>M1<br>A1 | | one correct step |
| 7 | a | $5x + 4 = 94$ (accept $2x + 2x + x + 4 = 94$) | B1 | 4 | |
| | b | $5x = 90$<br>$x = 18$ | M1<br>A1 | | |
| | c | 36 | A1 f.t. | | |

| | | | | | |
|---|---|---|---|---|---|
| 8 | a | (i) $C = 2\pi r$<br>$C = 2 \times \pi \times 40$<br>251.327…<br>(ii) $A = \pi r^2$<br>$A = \pi \times 40^2$<br>5026.548… | <br>M1<br>A1<br><br>M1<br>A1 | 10 | <br><br>251 or more accurate<br><br><br>5027 or more accurate |
| | b | (i) $251.327 \ldots \div 4$<br>62.831…<br>(ii) 62.8 + 40 + 40<br>142.831…<br>(iii) $5026.548 \ldots \div 4$<br>1256.637… | M1<br>A1<br>M1<br>A1 f.t.<br>M1<br>A1 | | <br>63 or more accurate<br><br>143 or more accurate<br><br>1257 or more accurate |
| 9 | a | $S = 180(n - 2)$<br>$180(5 - 2)$<br>$180 \times 3$<br>540 | M1<br><br>M1<br>A1 | 5 | o.e. |
| | b | 100 + 80 + 110 + 90 = 380<br>540 – 380<br>160 | <br>M1<br>A1 f.t. | | <br><br>from 9(a) |
| 10 | a | $V = L \times B \times H$<br>$1440000 = 150 \times 120 \times H$<br>$1440000 = 18000H$<br>$80 = H$ | (M)1<br>M1<br><br>A1 | 5 | |
| | b | $2\,630 \div 100$<br>26.3 | (M)1<br>A1 | | |
| 11 | |  | M1<br>A1 | 2 | Correct orientation<br>Correct position |

| | | | | | |
|---|---|---|---|---|---|
| 12 | | PQ = 9 cm<br>QR = 5 cm<br>PR = 7 cm | M1<br>M1<br>A1 | 3 | (±0.1 cm)<br>(±0.1 cm)*<br>(±0.1 cm)*<br>*Construction arcs seen |
| 13 | | Adventure = $\frac{30}{100} \times 360 =$<br>108°<br>Action = 144°<br>Comedy = 54°<br>Drama = 36°<br>Horror = 18°<br>Correct drawing of each sector<br>Labelling of pie chart with category and angle in each sector | M1<br>A1<br><br><br><br>B1<br>B2<br><br>A1 | 6 | finding the angle for any category<br><br><br><br><br>correct angles for remaining categories. |
| 14 | a | Addition of values = 120<br>Mean = $\frac{120}{15}$<br>8 | (M)1<br>M1<br>A1 | 5 | |
| | b | Numbers arranged in order of size<br>= 7 | M1<br>A1 | | |
| 15 | a | 180 – 30 – 40<br>= 110 | M1<br>A1 | 5 | |
| | b | 60 + 120 + 100 = 280<br>360 – 280 = 80<br>180 – 80<br>= 100 | (M)1<br>M1<br><br>A1 | | |