## **TERM 2-2022**

## **MATHEMATICS (MARKING SCHEME)**

## **FORM 4**

## **TIME 2½ HOURS**

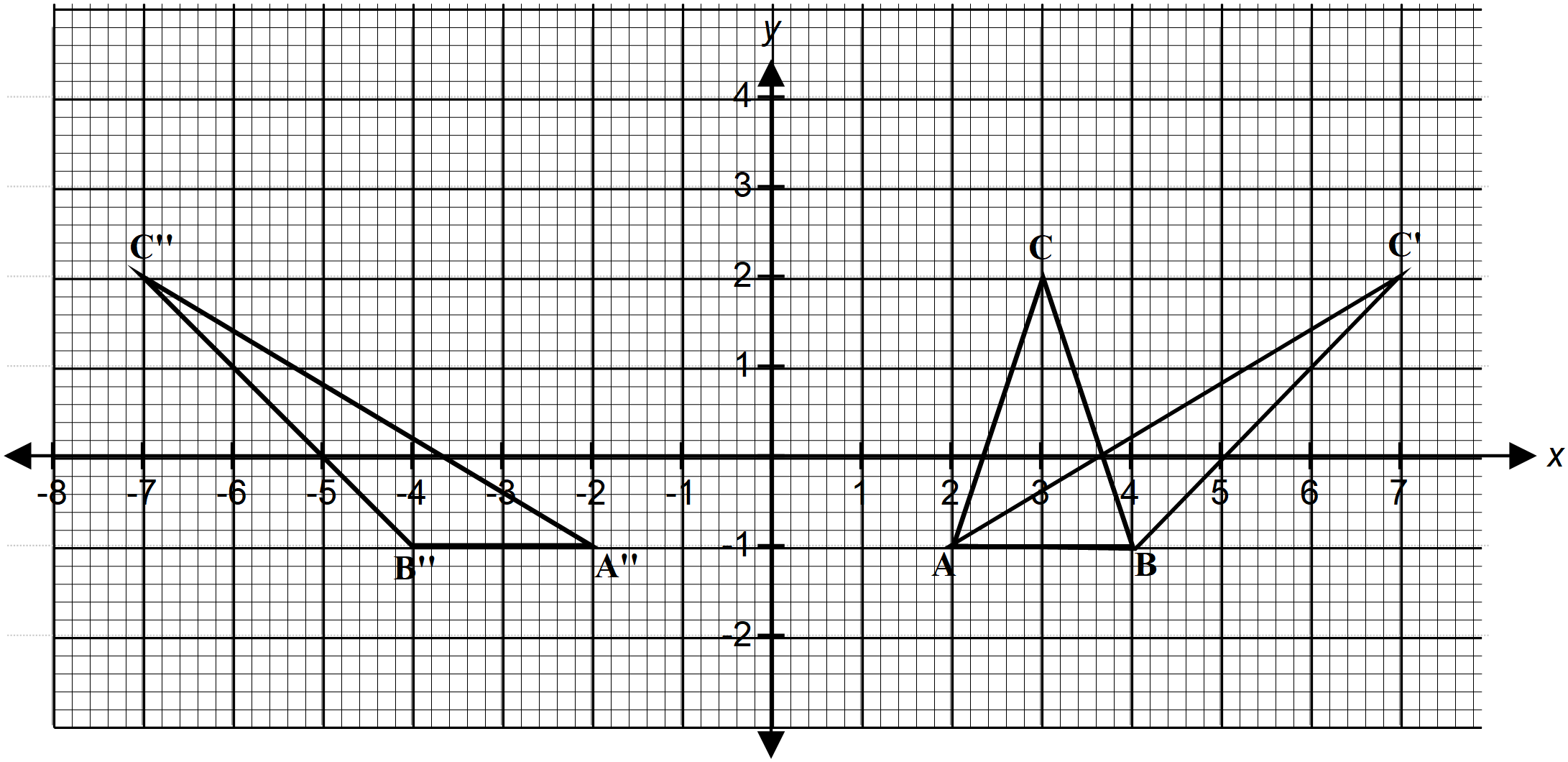
PAPER 2

|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  |  | M1  M1  A1 | Factorization by grouping  Expansion  seen |
|  | **Total** | **3** |  |
|  |  | M1  A1 |  |
|  | **Total** | **2** |  |
|  |  | B1  M1  A1 | Identifying and in terms of numbers  Multiplying by  seen |
|  | **Total** | **3** |  |
|  |  | M1  M1  A1 | Write 2 as |
|  | **Total** | **3** |  |
|  |  | M1  M1  A1 |  |
|  | **Total** | **3** |  |

|  |  |  |  |
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| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  |  | B1  M1  A1 | or equivalent in column form seen  10.198 seen |
|  | **Total** | **3** |  |
|  |  | M1  A1 |  |
|  | **Total** | **2** |  |
|  |  | M1  M1  A1 |  |
|  | **Total** | **3** |  |
|  | Centre  Radius = units | B1  B1  B1 | Equation of the circle in the form  Centre seen  seen |
|  | **Total** | **3** |  |
|  | 1. Binomial co-efficients | M1  M1  A1 |  |
|  | **Total** | **3** |  |

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| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  | |  |  | **1.25** | **1** | **1.25** | 2 | **3.25** | 5 | **7.25** | **10** |   square units | B1  M1  A1 | Missing values of all correct |
|  | **Total** | **3** |  |
|  | Change in longitude | B1  M1  A1 |  |
|  | **Total** | **3** |  |
|  |  | B1  B1  B1  B1  B1 | Bisecting line AB  Parallel line 2cm away from AB  Bisecting angle at C  Arc radius 1.5 cm and centre C  R shaded and labeled |
|  | **Total** | **5** |  |
|  | Shaded Area    (4 significant figures) | B1  M1  M1  A1 |  |
|  | **Total** | **4** |  |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  |  | B1  B1  B1  B1 |  |
|  | **Total** | **4** |  |
|  |  | M1  M1  A1 | Work done by and together in 1 day  Work done by and together in 2 days |
|  | **Total** | **3** |  |

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| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | 1. drawn   Shear; line invariant, mapped onto   1. ∆ drawn   and   1. Let the matrix be | M1  A1  B1  B1, B1  B1  B1 |  |
|  | **Total** | **10** |  |



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| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | 1. Number of terms | B1  M1  M1, A1  M1  A1  M1  M1  A1  B1 | All first 3 terms correct  Ratio of 6th to 3rd terms  Taking , 3 seen  Expression for common ratio  Simplification  1.5 seen |
|  | **Total** | **10** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | 1. (i) Relationship   Hence  (ii) when and     1. A, B, C and D   and    A decrease of 20% | M1  M1  A1  B1  M1  A1  M1  M1  M1  A1 | Forming 2 equations in and  Correct attempt to solve the equations simultaneously  Values of and  Relationship between and  Values of and in terms of and  Expression for  A0 if left as |
|  | **Total** | **10** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | 1. Velocity at 2. Time at   seconds   1. at | M1  A1  M1  M1  A1  M1  A1  B1  M1  A1 | Differentiation  Substitution  Equation to 0  Both values of  discriminated  Differentiating |
|  | **Total** | **10** |  |
|  | (2 decimal places)   1. Volume of pyramid 2. Consider ΔVMN where M is the midpoint of AD 3. Consider ΔVDO | M1  M1  A1  B1  M1  M1  A1  B1  M1  A1 |  |
|  | **Total** | **10** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | 1. Table Values  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | **0.50** | 0.87 | 1 | **0.87** | 0.87 | **0.00** | -0.5 | **-0.87** | -1.00 | -0.87 | **-0.50** | 0.00 | **0.50** | |  | **1.73** | 1.00 | **0.00** | -1.00 | **-1.73** | -2.00 | **-1.73** | -1.00 | **0.00** | 1.00 | 1.73 | **2.00** | **1.73** |   B2 – all table values correct (B1 for at least 10 table values correct)   1. Graphs     S1 – given scales used  P1 – plotting  C1 – drawing  P1 – plotting  C1 – drawing | | |
|  | 1. and | B1  B1 |  |
|  | **Total** | **10** |  |

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| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | 1. (i)     (ii)     1. (i)     Also        (ii)    Also       1. and | B1  B1  B1  B1  B1  B1  M1  M1  A1  B1 | Comparing coefficients of and  Correct attempt to solve the two equations  Value of  Value of |
|  | **Total** | **10** |  |

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| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | Frequency Table   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Marks |  |  |  |  |  |  |  | U.C.B | | 61 – 65 | 4 | 63 |  |  | 100 | 400 | 4 | 65.5 | | 66 – 70 | 5 | 68 |  |  | 25 | 125 | 9 | 70.5 | | 71 – 75 | 9 | 73 |  |  | 0 | 0 | 18 | 75.5 | | 76 – 80 | 8 | 78 |  |  | 25 | 200 | 26 | 80.5 | | 81 – 85 | 8 | 83 |  |  | 100 | 800 | 34 | 85.5 | | 86 – 90 | 6 | 88 |  |  | 225 | 1350 | 40 | 90.5 | |  | **40** |  |  | **145** |  | **2875** |  |  |   All correct – B1  All correct – B1   1. (i) Mean   – A1  (ii) Standard Deviation   1. (i) Ogive   (ii) 25th Student | | |
|  | **Total** | **10** |  |