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| Year  10 | | *Congruence* | Non Calculator |
| **Skills and Knowledge Assessed:**   * Define congruence of plane shapes using transformations (ACMMG200) * Develop the conditions for congruence of triangles (ACMMG201) * Formulate proofs involving congruent triangles and angle properties (ACMMG243) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 1** Short Answer Section | | | |
| Write all working and answers in the spaces provided on this test paper.  **DIAGRAMS ARE NOT TO SCALE** | | | |
|  | A quadrilateral *ABCD* is shown.  Draw a congruent quadrilateral by reflecting the vertices of the quadrilateral in the line *EF*. | | |
|  | A pentagon *GHIJK* is shown.  Draw a congruent pentagon by rotating the vertices through 90o in an anticlockwise direction about the point *O*. | | |
|  | A hexagon *PQRSTU* is shown.  Draw a congruent hexagon by translating the vertices of the hexagon in the direction and distance of the arrow. | | |
|  | *UVWX* is a parallelogram.  Name a pair of congruent triangles in the diagram.  ………………………………………………………………  ………………………………………………………………. | | |
|  | Which two triangles below have enough information provided to show they are congruentto one another.  Explain your answer.  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Which of the conditions AAS, RHS, SAS or SSS could be used to show congruence of the triangles shown? Explain your answer.  ………………………………………………………………  ……………………………………………………………… | | |
|  | Which of the conditions AAS, RHS, SAS or SSS could be used to show congruence of the triangles shown? Explain your answer.  ………………………………………………………………  ……………………………………………………………… | | |
|  | Complete the proof below (including the congruence test used) to show that | | |
|  | Complete the proof below (including the congruence test used)to show that | | |
|  | Complete the reasons in this congruence proof.  Data :  is isosceles, with *KM* = *LM*.  *NM* bisects  Aim : Prove that  Proof : In  and | | |

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| Year  10 | | *Congruence* | Calculator Allowed |
|  | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 2** Multiple Choice Section | | | |
| Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section.  **DIAGRAMS ARE NOT TO SCALE** | | | |
|  | What additional information is needed to prove that  A.  B.  C.  D.  cm | | |
|  | Which congruence test could be used to prove that  A. AAS  B. RHS  C. SAS  D. SSS | | |
|  | Which triangles are congruent?  A. All three triangles.  B. Triangles P and Q.  C. Triangles P and R.  D. Triangles Q and R. | | |
|  | Figure 1 and Figure 2 are congruent.  What could transform Figure 1 to Figure 2?  A. A clockwise rotation of 180o.  B. An anticlockwise rotation of 90o.  C. A reflection.  D. A translation. | | |
|  | Triangle *DEF* is rotated in a clockwise direction through 90o.  Which figure could be the result?       1. B. C. D. | | |
|  | Which of the triangles is congruent to  A. B. C. D. | | |
|  | Which statement is true?  A. Triangle *I* is congruent to triangle *IV*.  B. Triangle *II* is congruent to triangle *III*.    C. Triangle *I* is congruent to triangle *II* and triangle *III* is congruent to triangle *IV*.  D. Triangle *I* is congruent to triangle *III* and triangle *II* is congruent to triangle *IV*. | | |
|  | Which of the congruence tests is sufficient to prove that  ?    A. AAS B. RHS C. SAS D. SSS | | |
|  | Which triangles are congruent?  A. *I* and *II* only. B. *I* and *III* only.  C. *II* and *III* only. D. *I, II* and *III*. | | |
|  | Which is not a pair of congruent triangles?  A. Triangles E and F.  B. Triangles E and I.  C. Triangles F and H.  D. Triangles H and J. | | |

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| Year  10 | *Congruence* | Calculator Allowed |
|  | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 3** Longer Answer Section | | |
| Write all working and answers in the spaces provided on this test paper.  **DIAGRAMS ARE NOT TO SCALE** | | |

|  | | **Marks** |
| --- | --- | --- |
|  | a) Prove that  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | **3** |
|  | b) Prove that  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | **3** |
|  | c) *QRST* is a rhombus.  Given that the diagonals bisect one another, use congruent triangles to prove that the diagonals meet at right angles.  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | **4** |

*Multiple Choice Answer Sheet*

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

*Congruence*

ANSWERS

|  |  |
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| Section 1 | |
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|  | Triangle 1 and Triangle 3 have enough to show congruence.  Using the angle sum of Triangle 3 gives the angle of 100o between the two equal sides, so can use SAS to show congruence. Triangle 2 is not shown as isosceles. |
|  | AAS, since there are a pair of vertically opposite angles (which are equal) to go with the pairs of equal angles and sides given. |
|  | RHS, since there is a common side QS to go with the pairs of equal right angles and other sides given. |
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| Section 2 | |
|  | C |
|  | C |
|  | B |
|  | D |
|  | D |
|  | C |
|  | B |
|  | A |
|  | B |
|  | A |

|  |  |
| --- | --- |
| Section 3 | |
|  | a) |
|  | b) |
|  | c) |

*Multiple Choice Answer Sheet*

Name Marking Sheet

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D