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| Year 9 | | *Basic Geometry* | Non Calculator |
| **Skills and Knowledge Assessed:**   * Use the language, notation and conventions of geometry * Identify line and rotational symmetries (ACMMG181 * Recognise the geometrical properties of angles at a point. * Identify corresponding, alternate and co­interior angles when two straight lines are crossed by a   transversal (ACMMG163)   * Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning (ACMMG164) * Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (ACMMG166) * Classify triangles according to their side and angle properties and describe quadrilaterals (ACMMG165) * Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related numerical problems using reasoning (ACMMG202) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 1** Short Answer Section | | | |
| **IN ALL QUESTIONS, GIVE REASON(S) FOR YOUR ANSWER.**  **YOU WILL NEED A RULER AND PROTRACTOR FOR THIS TEST.**  Write all working and answers in the spaces provided on this test paper.  **DIAGRAMS ARE NOT TO SCALE. (Unless otherwise stated).** | | | |
|  | What order of rotational symmetry does this shape have?  …………………………………………………………………….. | | |
|  | Name the two angles which are shaded in the diagram below.    ……………………………………………………………………..  …………………………………………………………………….. | | |
|  | Name an acute angle in the diagram below.    ……………………………………………… | | |
|  | Find the value of *x.*  ………………………………………………  ………………………………………………. | | |
|  | Find the size of    ………………………………………………  ………………………………………………. | | |
|  | Find the size of  ………………………………………………  ……………………………………………….  ……………………………………………… | | |
|  | Find the value of *x*.    ………………………………………………  ……………………………………………….  ……………………………………………… | | |
|  | Find the size of  ………………………………………………  ……………………………………………….  ………………………………………………. | | |
|  | Find the value of *x*.  ………………………………………………  ……………………………………………….  ……………………………………………… | | |
|  | Find the value of *a*.  ..........................................................................    .........................................................................  ......................................................................... | | |
|  | Find the value of *p*.  ..........................................................................    .........................................................................  ......................................................................... | | |
|  | Use a protractor to draw | | |
|  | Find the  ………………………………………………  ……………………………………………….  ……………………………………………… | | |
|  | What is the value of *b*?    .........................................................................  ..........................................................................    ......................................................................... | | |
|  | Use the grid provided to draw  which is a right isosceles triangle. | | |
|  | Find the value of *g*.  ………………………………………………  ………………………………………………  ………………………………………………. | | |
|  | Find the value of *x.*    ………………………………………………  ……………………………………………….  ……………………………………………… | | |
|  | What name could be used to describe the quadrilateral shown?  ……………………………………………… | | |
|  | Find the value of *s*.  .........................................................................  ..........................................................................    ........................................................................ | | |
|  | Find the value of *c*.  ..........................................................................    .........................................................................  ......................................................................... | | |
|  | *GDHI* is a trapezium and *HEFI* is a parallelogram.  *DE* is a straight line segment.  Find the value of *n*.  ………………………………………………  ……………………………………………….  ……………………………………………… | | |
|  | What is the value of *x*?    .........................................................................  ..........................................................................    ......................................................................... | | |
|  | *BC = BE*.    Find the value of *z*.  .........................................................................  ..........................................................................    .........................................................................  ......................................................................... | | |
|  | Find the value of *h*.    ………………………………………………  ……………………………………………….  ……………………………………………… | | |
|  | An irregular pentagon is shown.  What is the value of *q*?  .........................................................................  ..........................................................................    ......................................................................... | | |
|  | Complete the missing spaces in the table of properties of quadrilaterals, by placing a tick or a cross in the appropriate spaces.   |  |  |  |  | | --- | --- | --- | --- | | PROPERTY | Square | Parallelogram | Rectangle | | Diagonals are perpendicular |  |  |  | | Diagonals bisect one another. |  |  |  | | | |

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| Year 9 | | *Basic Geometry* | 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 UNLESS OTHERWISE STATED** | | | |
|  | Which of the shapes shown has rotational symmetry but no line symmetry? | | |
|  | What are the names of the quadrilaterals that are used to make this design?    A. Kite and parrallelogram.  B. Kite and rhombus.  C. Parralelogram and rhombus.  D. Rectangle and Rhombus. | | |
|  | Which diagram includes a pair of vertically opposite angles  and  ?  A. B.  C. D. | | |
|  | What is the size of  A. 35o.  B. 45o  C. 55o.  D. 65o. | | |
|  | Which figure shows an obtuse scalene triangle? (These figures are to scale)  A. B. C. D. | | |
|  | What is the value of *s*?  A. *s* = 30o  B. *s* = 35o  C. *s* = 40o  D. *s* = 45o | | |
|  | Measure the size of  with a protractor.  A. 39o  B. 41o  C. 44o  D. 49o | | |
|  | What is the size of  A. 36o  B. 54o  C. 116o  D. 126o | | |
|  | What is the value of *x*?  A. *x* = 25  B. *x* = 65  C. *x* = 75  D. *x* = 125 | | |
|  | and  are non-congruent isosceles triangles.  What type of quadrilateral is *ABCD*?  A. A kite.  B. A parallelogram.  C. A rhombus  D. A trapezium. | | |
|  | What is the value of  A. 24  B. 102  C. 156  D. 204 | | |
|  | What is the value of *x*?  A. *x* = 29  B. *x* = 42  C. *x* = 45  D. *x* = 87 | | |
|  | Find the value of *q*.  A. *q* = 45  B. *q* = 70  C. *q* = 80  D. *q* = 85 | | |
|  | The value of *e* in the diagram below is:  A. *e* = 68 B. *e* = 74 C. *e* = 80 D. *e* = 210 | | |
|  | Find the value of *c*.  A.  B.  C.  D. | | |
|  | Which two quadrilaterals both have the property below?  *Both diagonals bisect one another at right angles.*  A. A kite and a square  B. A kite and a parallelogram.  C. A rectangle and a rhombus.  D. A rhombus and a square. | | |
|  | What is the value of  A. 51  B. 99  C. 129  D. 261 | | |
|  | *ABCD* is a kite whose diagonals intersect at *F*.  *E* is a point on *AB* such that *AE = EF.*  What is the value of *y*?  A.  B.  C.  D. | | |
|  | Which lines are parallel?  A.  B.  C.  D. No lines are parallel. | | |
|  | *PQ* and *R* are points on a circle, centre *O*.  *PO* and *QO* are radii and *PR = QR* .  What is the size of  ?  A. 35 o  B. 45 o  C. 65 o  D. 130o | | |

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| Year 9 | *Basic Geometry* | Calculator Allowed |
| Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 3** Longer Answer Section | | |
| Write all working and answers in the spaces provided on this test paper. | | |

|  | | **Marks** |
| --- | --- | --- |
| 1. | Complete the following using geometric instruments.  Do not erase any of your construction lines. |  |
|  | 1. Use a protractor to help determine the size of the reflex angle marked below. | **1** |
|  | 1. Draw a right angled triangle which has one angle equal to 56o. | **2** |
| 2. | Complete the following using geometric instruments.  Do not erase any of your construction lines. |  |
|  | 1. Draw a line which passes through N and is perpendicular to LM. | **2** |
|  | 1. Draw a rhombus which has 6 cm sides and an internal angle of 125o. | **2** |

*Multiple Choice Answer Sheet*

*Basic Geometry*

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

11. A B C D

12. A B C D

13. A B C D

14. A B C D

15. A B C D

16. A B C D

17. A B C D

18. A B C D

19. A B C D

20. A B C D

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| Year 9 | | *Basic Geometry* | Non Calculator |
| **Section 1** Short Answer Section | | | |
| ANSWERS | | | |
| No. | WORKING | | ANSWER |
|  | Order 6 as each point can be rotated to the next to look the same. | | Order 6 |
|  |  | | or in reverse order. |
|  |  | | or |
|  | Vertically opposite angles | | *x* = 66 |
|  | (Supplementary Angles on Straight Line) | |  |
|  | (Complementary Angles) | |  |
|  | (Angles at a point) | |  |
|  | Corresponding angles on || lines are equal | |  |
|  | (Angle sum of triangle) | |  |
|  | (Cointerior angles are supplementary on || lines) | |  |
|  | (Supplementary Angles on Straight Line) | |  |
|  |  | | See diagram |
|  |  | |  |
|  |  | |  |
|  |  | | Many possible triangles, two examples shown. |
|  |  | |  |
|  |  | |  |
|  | All sides are equal so it is a rhombus | | Rhombus |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  | |  |  |  |  | | --- | --- | --- | --- | | PROPERTY | Square | Parallelogram | Rectangle | | Diagonals are perpendicular | ✓ | 🞬 | 🞬 | | Diagonals bisect one another. | ✓ | ✓ | ✓ | | | |

|  |  |  |  |  |
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| Year 9 | | *Basic Geometry* | Calculator Allowed | |
| **Section 2** Multiple Choice Section | | | | |
| ANSWERS | | | | |
| No. | WORKING | | | ANSWER |
|  | B and D have rotational symmetry but B also has line symmetry | | | D |
|  | Kite and Parallelogram | | | A |
|  | C are vertically opposite | | | C |
|  |  | | | B |
|  | C has all sides different and an obtuse angle | | | C |
|  |  | | | C |
|  |  | | | D |
|  |  | | | D |
|  |  | | | C |
|  | 2 pairs of adjacent sides equal so it is a kite | | | A |
|  |  | | | B |
|  |  | | | A |
|  |  | | | C |
|  |  | | | B |
|  |  | | | D |
|  | Only the rhombus and square have both parts of the property | | | D |
|  |  | | | A |
|  |  | | | B |
|  |  | | | B |
|  |  | | | A |

*Multiple Choice Answer Sheet*

*Basic Geometry*

Name \_\_\_\_\_\_\_ANSWERS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

11. A B C D

12. A B C D

13. A B C D

14. A B C D

15. A B C D

16. A B C D

17. A B C D

18. A B C D

19. A B C D

20. A B C D

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year 9 | | *Basic Geometry* | Calculator Allowed | |
| **Section 3** Longer Answer Section | | | | |
| ANSWERS | | | | |
|  | | | | **Marks** |
| 1. | (a) | | | **1** |
|  | (b) A right angled triangle which also has an angle of 56o. | | |  |
| 2. | (a) | | | **2** |
|  | (b) | | | **2** |