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| Year 8 | | *Polygons and Circles* | Calculator Allowed  Test |
| **Skills and Knowledge Assessed:**   * Classify triangles according to their side and angle properties and describe quadrilaterals (ACMMG165) * Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (ACMMG166) * Investigate the relationship between features of  circles such as circumference, area, radius and diameter.  (ACMMG197) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Answer all questions in the spaces provided on this test paper by:  *Writing the answer in the box provided.*  or  *Shading in the bubble for the correct answer from the four choices provided.*  Show any working out on the test paper.Calculators areallowed. | | | |
|  | Which figure shows an obtuse isosceles triangle? | | |
|  | What type of triangle is shown here?  An equilateral triangle.  An obtuse isosceles triangle.  A right isosceles triangle.  A right scalene triangle. | | |
|  | Which figure contains ? | | |
|  | In the pattern below, which types of triangle are unshaded?  Acute isosceles triangles.  Acute scalene triangles.  Obtuse isosceles triangles.  Right scalene triangles. | | |
|  | Which two words from the list provided, could be used to describe this triangle. | | |
|  | Write the names of the quadrilaterals that are used to make this design. | | |
|  | C is the centre of the circle shown.  What are the names of the two features of the circle, indicated by the arrows.    A chord and a diameter  A chord and a radius  A diameter and a radius  A diameter and a tangent | | |
|  | Which is true about the kite shown?    The diagonals EG and FH are equal in length.  The diagonal EG is equal to the side FG.  The side FG is equal to the side FE.  The side EF is equal to the side EH. | | |
|  | What is the size of | | |
|  | In the quadrilateral shown, what is the value of *m*?  80  100  160  260 | | |
|  | Which of the following is true of an right scalene triangle?  The angle sum is 90o.  All the angles are acute.  No two sides are equal.  There are two equal angles. | | |
|  | Which statement is **not** true based on the information shown on this polygon?  BC || FE | | |
|  | Find the value of *x* in the diagram below.    *x =* | | |
|  | What is the size of the exterior angle *MLO*?  o | | |
|  | Find the size of  in the diagram below. | | |
|  | Which of the following is **not** a property of a parallelogram?    It has two axes of line symmetry.  One diagonal bisects the other.  The opposite sides are equal.  The opposite angles are equal. | | |
|  | What is the value of *p* in the diagram below. | | |
|  | What is the size of angle *JKH*? | | |
|  | Which shape below is **not** a convex quadrilateral? | | |
|  | A quadrilateral has these properties.  *The opposite sides are equal.*  *The diagonals are equal in length.*  *The diagonals bisect one another.*  The quadrilateral could be:  A kite A parallelogram A rhombus. A rectangle. | | |
|  | The value of *x* is:  31o  62o  75o  118o | | |
|  | What is the value of *x* ?    *x* = | | |
|  | Find the value of *g* in the diagram below.  *g* = | | |
|  | What is the value of *g* ? | | |
|  | Which statement is true of all quadrilaterals?  The angle sum is 360o and there are two diagonals.  The angle sum is 360o and the diagonals are equal in length.  There are 4 sides and the diagonals intersect at 90o.  There are 4 sides and the diagonals bisect one another. | | |
|  | Find the value of *x* in the kite below.    10o  20o  40o  80o | | |
|  | *KLMN* is a parallelogram.  The diagonal KM meets the side ML at 90o.  What is the value of *y* ? | | |
|  | ABCD is a rectangle and EBFD is a parallelogram.  What is the size of  ? | | |
|  | Which statement is **not** true about a chord in any circle.  It joins two points on the circumference of the circle.  It is never longer than the diameter.  It is always longer than the radius.  It divides the circle into two segments. | | |
|  | *O* is the centre of both circles.  SQ is a straight line segment.    What is the size of  o | | |

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| Year 8 | *Polygons and Circles* | Calculator Allowed  Longer Answer  Section |
|  | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| ***Write all working and answers in the spaces provided on this test paper.***  ***Marks may not be awarded if working out and/or answers are not clear.***  ***Marks allocated are shown beside each question.***  ***Calculators are allowed.*** | | |

|  | | **Marks** |
| --- | --- | --- |
|  | 1. Use a ruler and instruments to draw an accurate diagram of a rhombus ABCD and place markings on the diagram to show any equal sides and angles. | **2** |
|  | 1. Describe any line symmetry or rotational symmetry the rhombus may have. (You may add to your diagram to illustrate your answer.)   ……………………………………………………………………………………..  …………………………………………………………………………………….. | **2** |
|  | 1. ABC is a right isosceles triangle with AB = BC.   D is a point on AC produced.      Find the size of  giving reasons for your answer.  ……………………………………………………………………………………..  ……………………………………………………………………………………..  …………………………………………………………………………………….. | **3** |
|  | (b) PQRS is a rectangle. PR and QS are the diagonals which intersect at T.    Find the value of *x,* giving reasons for your answer..    ……………………………………………………………………………………..  ……………………………………………………………………………………..  …………………………………………………………………………………….. | **3** |

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| Year 8 | | *Polygons and Circles* | Non Calculator  Section |
| ANSWERS | | | |
| No. | WORKING | | ANSWER |
|  | 1st diagram has an obtuse angle and a 2 sides equal | | 1st answer |
|  | It has a right angle and has 2 sides equal | | 3rd answer |
|  | The 4th figure has an angle PQR. | | 4th answer |
|  | They are obtuse isosceles triangles | | 3rd answer |
|  | It is an isosceles acute triangle | | Acute and isosceles |
|  | There are 2 trapezia and a rhombus | | Trapezium and Rhombus |
|  | A chord and a radius are shown | | 2nd answer |
|  | The two adjacent sides are equal | | 4th answer |
|  |  | | 45o |
|  |  | | 2nd answer |
|  | In a scalene triangle, no two sides are equal. | | 3rd answer |
|  | is not true according to the markings on the triangle. | | 4th answer |
|  |  | | 130 |
|  |  | | 143o |
|  |  | | 2nd answer |
|  | A parallelogram has no axes of symmetry. | | 1st answer |
|  |  | | 78 |
|  |  | | 115 |
|  | The third shape has a diagonal which passes outside the shape, so it is not convex. | | 3rd answer |
|  | Only a rectangle has all these properties | | 4th answer |
|  |  | | 1st answer |
|  |  | | 74 |
|  |  | | 48 |
|  |  | | 20 |
|  | Only the first statement is true in both assertions. | | 1st answer |
|  |  | | 2nd answer |
|  |  | | 18 |
|  |  | | 50 |
|  | It can be longer or shorter than the radius. | | 3rd answer |
|  |  | | 24 |

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| Year 8 | | *Polygons and Circles* | Calculator Allowed  Longer Answer  Section | |
| ANSWERS | | | | |
|  | | | | **Marks** |
|  | (a) | | | **1 mark for drawing of rhombus**  **1 mark for markings** |
|  | (b) It has 2 axes of line symmetry (dotted lines) and rotational symmetry order 2. | | | **1 mark for line symmetry**  **1 mark for order of rotational symmetry** |
|  | (a) | | | **3 marks for correct answer with reasons.**  **2 marks for small error in reasons**  **1 mark for obtaining at least one correct angle** |
|  | (b) | | | **3 marks for correct answer with reasons.**  **2 marks for small error in reasons**  **1 mark for obtaining at least one correct angle** |