Practice Questions for **Polygon & Quadrilaterals**

|  |  |
| --- | --- |
| Question | One angle of Pentagon is 60. If all the other angles being equal, find each of other angles? |
| Option A | 120 |
| Option B | 60. |
| Option C | 90 |
| Option D | 150 |
| Answer | Option A |
| Explanation | Sum of interior angles of a polygon  = (2n-4)90 = (10 – 4)90 = 540  One angle is 60, hence sum of the angles = 480  Each of other angles = 480/4 = 120 |

|  |  |
| --- | --- |
| Question | The sum of the interior angles of a polygon is 1620 . How many sides does polygon have? |
| Option A | 9 |
| Option B | 10 |
| Option C | 11 |
| Option D | 12 |
| Answer | Option C |
| Explanation | We have, sum of the interior angles of a polygon  = (2n-4)90 = 1620  Or 2n – 4 =1620/90 = 18  Or 2n = 22 or n = 11 |

|  |  |
| --- | --- |
| Question | Determine the value of ***x*** in the figure below.  A sample problem finding unknown angles in a four-sided polygon |
| Option A | 11 |
| Option B | 15 |
| Option C | 12 |
| Option D | 9 |
| Answer | Option D |
| Explanation | We know that the sum of the interior angles of quadrilateral ***JESK*** is ***360°***, so we have  http://dj1hlxw0wr920.cloudfront.net/userfiles/wyzfiles/1176fee6-013e-4494-9040-35d2e14c43b4.gif  Substitution with the angle measures we were given yields  http://dj1hlxw0wr920.cloudfront.net/userfiles/wyzfiles/5d3a8b5c-f768-4aeb-aa96-6110194928af.gif  Now, we just simplify our equation and solve for ***x***.  http://dj1hlxw0wr920.cloudfront.net/userfiles/wyzfiles/9725b0df-f556-4035-a845-eaefa1e94969.gif  http://dj1hlxw0wr920.cloudfront.net/userfiles/wyzfiles/afca7596-b488-4c81-a5fe-d81f382dc977.gif  http://dj1hlxw0wr920.cloudfront.net/userfiles/wyzfiles/c472a335-5e3a-4a5f-89bf-369ce4e25060.gif  http://dj1hlxw0wr920.cloudfront.net/userfiles/wyzfiles/69703619-ff1b-4748-9943-3e7402e2ce55.gif  http://dj1hlxw0wr920.cloudfront.net/userfiles/wyzfiles/ab8d6794-2a38-4da7-af8f-be0c869c78ff.gif |

|  |  |
| --- | --- |
| Question | Solve for x. Quadrilaterals and Polygons – Angles |
| Option A | 3 |
| Option B | 4 |
| Option C |  |
| Option D | None of the above |
| Answer | Option B |
| Explanation | Again, the object in question is a quadrilateral.  If we add up all four angles in this quadrilateral, the sum will be 360  That is,  (24x+3)+86+75+100 =360 24x+264=360, 24x=96 x=4 |

|  |  |
| --- | --- |
| Question | Diagonals of a parallelogram are 6cm and 8cm respectively. If one side is 5 cm, find its area? |
| Option A | 48 sq. cm. |
| Option B | 30 sq. cm. |
| Option C | 24 sq. cm. |
| Option D | 40 sq. cm. |
| Answer | Option C |
| Explanation | Diagonals of parallelogram divide each other equally,  So half diagonal will be 3 and 4  As side of parallelogram is 5,  So this forms Pythagoras triplet and angle is 90  So parallelogram is rhombus.  Area = ½ X 6 X 8 = 24. |

|  |  |
| --- | --- |
| Question | The rectangular courtyard ABCD of side 50 ft and 42 ft encloses a lawn EFGH surrounded by a 6ft wide gravel path. Find the cost of spreading gravel along the path if gravelling cost is Rs. 10 per sq. ft. |
| Option A | Rs. 96 |
| Option B | Rs. 480 |
| Option C | Rs. 51.60 |
| Option D | Rs. 9600 |
| Answer | Option D |
| Explanation | Area of the gravel path = (50 X 42) – (38 X 30)  = 2100 – 1140 = 960  Total cost of gravelling = 960 X 10 = 9600. |

|  |  |
| --- | --- |
| Question | Which of the following is not correct: |
| Option A | All squares are kite |
| Option B | All rhombus are kite |
| Option C | All rhombus are parallelogram |
| Option D | All parallelogram are trapezium |
| Answer | Option D |
| Explanation | To be a kite a quadrilateral has two pairs of equal and adjacent sides.  Square and rhombus both have all four sides same.  Hence square and rhombus both are kites. Hence [1] and [2] are true.  All the opposite sides of rhombus are parallel hence rhombus is parallelogram. Hence [3] is also true.  For a quadrilateral to be trapezium. One pair of opposite side has to be parallel and the other pair has to be non parallel. |

|  |  |
| --- | --- |
| Question | How many square stones with sides measuring 80cm will be required to form a footpath 6 meters wide around the boundary of a lawn 50m long and 50m board? |
| Option A | 1200 |
| Option B | 2100 |
| Option C | 2345 |
| Option D | 2200 |
| Answer | Option B |
| Explanation | Area of outer space – Area of inner space  = (62X62) – (50X50) =  Number of stones = 1344/0.64 = 2100 |

|  |  |
| --- | --- |
| Question | In a nonagon the maximum interior angle is . The maximum possible value of ? |
| Option A | 120 |
| Option B | 130 |
| Option C | 140 |
| Option D | 160 |
| Answer | Option C |
| Explanation | Nonagon will have 9 sides. For minimum value of all interior angles should be equal.  In that case the nonagon will be a regular one.  Hence minimum = (n – 2)/n  For Nonagon n = 9;  = (9 – 2)/9 = 7/9 = 140 |

|  |  |
| --- | --- |
| Question | The perimeter of a regular hexagon is 36 cm. Find its area. |
| Option A | 18 |
| Option B | 36 |
| Option C | 27 |
| Option D | 54 |
| Answer | Option D |
| Explanation | Side of hexagon = 36/6 = 6cm.  Area = 3/2 X = 54 |

|  |  |
| --- | --- |
| Question | Angles of a quadrilateral when arranged in ascending /descending order the difference between any two consecutive angle is constant. If the largest angle is 150 then what is the value of smallest angle in radians? |
| Option A | π/2 |
| Option B | π/4 |
| Option C | π/6 |
| Option D | 30 |
| Answer | Option C |
| Explanation | Let the four angles be a – 3d, a – d, a + d & a + 3d respectively.  Sum of all angles of a quadrilateral = 360  Or 4a = 360  Or a = 90 ………(1)  Also a + 3d = 150  So 3d = 60 using (1)  Or d = 20 …………(2)  Hence smallest angel is a – 3d = 90 - 60 = 30 or π/6 radians. |

|  |  |
| --- | --- |
| Question | Solve for x. Quadrilaterals and Polygons – Angles |
| Option A | 5 |
| Option B | 15 |
| Option C | 10 |
| Option D | 8 |
| Answer | Option A |
| Explanation | The figure in this problem is a quadrilateral.  Then all four of the angles in this quadrilateral will add up to 360. That is,  70+(23x−5)+110+(14x)=360  Simplifying the left side of this equation, we obtain  70+(23x−5)+110+(14x)=360 37x+175=360 37x=185  x=5 |

|  |  |
| --- | --- |
| Question | Vertices of a quadrilateral ABCD are A(0, 0), B(4, 5), C(9, 9) and D(5, 4). What is the shape of the quadrilateral? |
| Option A | Square |
| Option B | Rectangle but not a square |
| Option C | Rhombus |
| Option D | Parallelogram but not a rhombus |
| Answer | Option C |
| Explanation | The lengths of the four sides, AB, BC, CD and DA are all equal to  .  Hence, the given quadrilateral is either a Rhombus or a Square. Now let us compute the lengths of the two diagonals AC and BD.  The length of AC is  and the length of BD is  .  As the diagonals are not equal and the sides are equal, the given quadrilateral is a Rhombus. |

|  |  |
| --- | --- |
| Question | ABCD is an isosceles trapezoid (isosceles trapezium). What is the size of angle A? [image] |
| Option A | 59 |
| Option B | 91 |
| Option C | 111 |
| Option D | 121 |
| Answer | Option D |
| Explanation | The interior angles of a quadrilateral add up to 360° We also know that an isosceles trapezoid has two pairs of equal angles, so ∠C = ∠D  and ∠A = ∠B Angle C + Angle D = 59° + 59° = 118° So Angle A + Angle B = 360° - 118° = 242° So Angle A = Angle B = ½ × 242° = 121° (Note that this also means that ∠A + ∠D = 180° and that ∠B + ∠C = 180°) |

|  |  |
| --- | --- |
| Question | Which of the following statements is **false**? |
| Option A | A rectangle is also a parallelogram |
| Option B | A trapezoid (trapezium) is also a parallelogram |
| Option C | A rhombus is also a parallelogram |
| Option D | A rhombus is also a kite |
| Answer | Option B |
| Explanation | A rectangle has opposite sides that are parallel and equal in length. Therefore a rectangle is also a parallelogram. **A is true**. A trapezoid (called a trapezium in the UK) has just one pair of opposite sides parallel. A trapezoid is, therefore, not a parallelogram. **B is false**. A rhombus has opposite sides parallel, so it is also a parallelogram. **C is true**. A rhombus also has adjacent sides equal. So a rhombus is also a kite. **D is true**. |