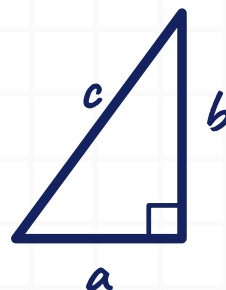
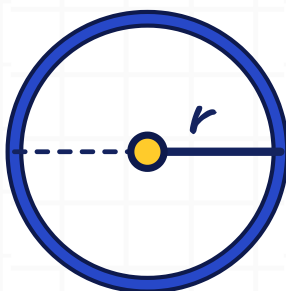


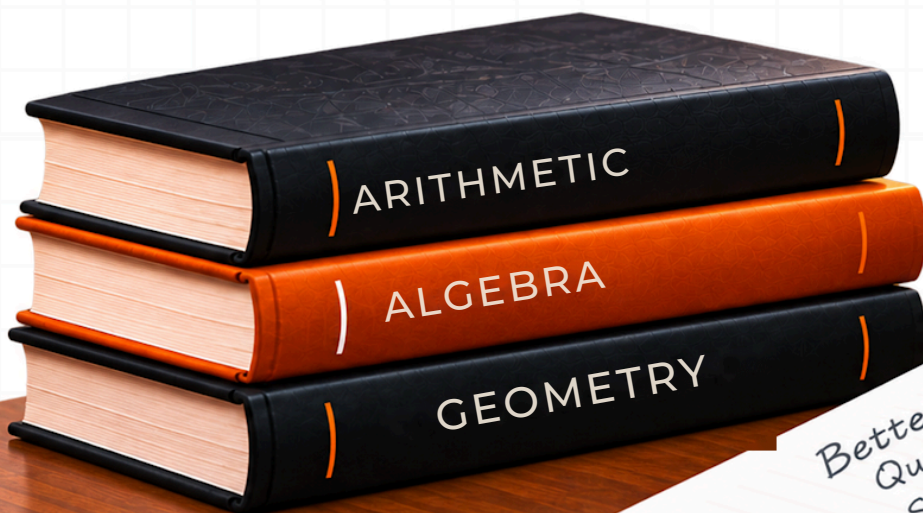
CAT PYQ

Polygons & Quadrilaterals

$$a^2 + b^2 = c^2$$



$$D = S \times T$$



Better
Questions
Stronger
Concepts
Brighter Future

Polygons & Quadrilaterals CAT PYQ



Common Admission Test - Indian Institutes of Management

22 Questions

Quantitative Aptitude

Years: 1991-2024

General Instructions

- (i) This collection contains **22 Quantitative Aptitude questions** classified under **Polygons & Quadrilaterals**, following the supplied CD PYQ sheet.
- (ii) **Coverage:** CAT 1991-2024. Questions are grouped by their source year and sitting, with continuous numbering from **1 to 22**.
- (iii) This collection has **16 multiple choice questions (MCQs)** and **6 Type In The Answer (TITA) questions**. Read every option before choosing the answer. Enter a response for questions marked "Type in the answer."
- (iv) All required shared passages and data sets for the selected questions are included. Blue range labels refer to the question numbers **in this collection**. Read the full passage, chart, table or conditions before answering.
- (v) Each question carries its original year or exam date, sitting where available, and source question number. References distinguish the two CAT 2003 sittings.
- (vi) Use this collection for practice. Follow the timing and marking scheme of the original sitting when attempting a timed exercise.
- (vii) Answer keys and solutions are not included. Passages and questions may continue onto the following page.

1. A regular octagon ABCDEFGH has sides of length 6 cm each. Then the area, in sq. cm, of the square ACEG is

24 Nov 2024, Slot 3, Q61

- (A) $72(2 + \sqrt{2})$ (B) $36(1 + \sqrt{2})$
(C) $72(1 + \sqrt{2})$ (D) $36(2 + \sqrt{2})$
-

CAT 2023 Slot 3 - Questions 2-2

2. In a regular polygon, any interior angle exceeds the exterior angle by 120 degrees. Then, the number of diagonals of this polygon is

26 Nov 2023, Slot 3, Q63

Type in the answer.

CAT 2022 Slot 2 - Questions 3-3

3. Regular polygons A and B have number of sides in the ratio 1 : 2 and interior angles in the ratio 3 : 4. Then the number of sides of B equals

27 Nov 2022, Slot 2, Q55

Type in the answer.

CAT 2022 Slot 3 - Questions 4-4

4. The lengths of all four sides of a quadrilateral are integer valued. If three of its sides are of length 1 cm, 2 cm and 4 cm, then the total number of possible lengths of the fourth side is

27 Nov 2022, Slot 3, Q56

(A) 3

(B) 4

(C) 6

(D) 5

CAT 2021 Slot 1 - Questions 5-5

5. Suppose the length of each side of a regular hexagon ABCDEF is 2 cm. If T is the mid point of CD, then the length of AT, in cm, is

28 Nov 2021, Slot 1, Q47

(A) $\sqrt{13}$

(B) $\sqrt{14}$

(C) $\sqrt{12}$

(D) $\sqrt{15}$

CAT 2021 Slot 3 - Questions 6-7

6. A park is shaped like a rhombus and has area 96 sq m. If 40 m of fencing is needed to enclose the park, the cost, in INR, of laying electric wires along its two diagonals, at the rate of ₹125 per m, is

28 Nov 2021, Slot 3, Q55

Type in the answer.

7. Let ABCD be a parallelogram. The lengths of the side AD and the diagonal AC are 10cm and 20cm, respectively. If the angle $\angle ADC$ is equal to 30° then the area of the parallelogram, in sq.cm is

28 Nov 2021, Slot 3, Q65

(A) $\frac{25(\sqrt{5} + \sqrt{15})}{2}$

(B) $25(\sqrt{3} + \sqrt{15})$

(C) $\frac{25(\sqrt{3} + \sqrt{15})}{2}$

(D) $25(\sqrt{5} + \sqrt{15})$

CAT 2019 Slot 1 - Questions 8-9

8. Corners are cut off from an equilateral triangle T to produce a regular hexagon H. Then, the ratio of the area of H to the area of T is

24 Nov 2019, Slot 1, Q94

(A) 2 : 3

(B) 4 : 5

(C) 5 : 6

(D) 3 : 4

9. Let S be the set of all points (x, y) in the x-y plane such that $|x| + |y| \leq 2$ and $|x| \geq 1$. Then, the area, in square units, of the region represented by S equals

24 Nov 2019, Slot 1, Q96

Type in the answer.

CAT 2019 Slot 2 - Questions 10-10

10. Let A and B be two regular polygons having a and b sides, respectively. If $b = 2a$ and each interior angle of B is $\frac{3}{2}$ times each interior angle of A, then each interior angle, in degrees, of a regular polygon with $a + b$ sides is

24 Nov 2019, Slot 2, Q97

Type in the answer.

CAT 2018 Slot 1 - Questions 11-12

11. Points E, F, G, H lie on the sides AB, BC, CD, and DA, respectively, of a square ABCD. If EFGH is also a square whose area is 62.5% of that of ABCD and CG is longer than EB, then the ratio of length of EB to that of CG is

25 Nov 2018, Slot 1, Q71

- (A) 3 : 8
(B) 2 : 5
(C) 4 : 9
(D) 1 : 3

12. In a parallelogram ABCD of area 72 sq cm, the sides CD and AD have lengths 9 cm and 16 cm, respectively. Let P be a point on CD such that AP is perpendicular to CD. Then the area, in sq cm, of triangle APD is

25 Nov 2018, Slot 1, Q90

- (A) $32\sqrt{3}$
(B) $18\sqrt{3}$
(C) $24\sqrt{3}$
(D) $12\sqrt{3}$

CAT 2017 Slot 2 - Questions 13-14

13. Let ABCDEF be a regular hexagon with each side of length 1 cm. The area (in sq cm) of a square with AC as one side is

26 Nov 2017, Slot 2, Q81

(A) $3\sqrt{2}$

(B) 3

(C) 4

(D) $\sqrt{3}$

14. If three sides of a rectangular park have a total length 400 ft, then the area of the park is maximum when the length (in ft) of its longer side is

26 Nov 2017, Slot 2, Q85

Type in the answer.

15. Consider a square ABCD with midpoints E, F, G, H of AB, BC, CD and DA respectively. Let L denote the line passing through F and H. Consider points P and Q, on L and inside ABCD such that the angles APD and BQC both equal 120° . What is the ratio of the area of ABQCDP to the remaining area inside ABCD?

16 Nov 2008, Q15

(A) $\frac{4\sqrt{2}}{3}$

(B) $2 + \sqrt{3}$

(C) $\frac{10 - 3\sqrt{3}}{9}$

(D) $1 + \frac{1}{\sqrt{3}}$

(E) $2\sqrt{3} - 1$

16. Let ABCDEF be a regular hexagon. What is the ratio of the area of the $\triangle ACE$ to that of the hexagon ABCDEF?

15 Feb 2004, CAT 2003 Re-test, Q81

(A) $\frac{1}{3}$
(C) $\frac{2}{3}$

(B) $\frac{1}{2}$
(D) $\frac{5}{6}$

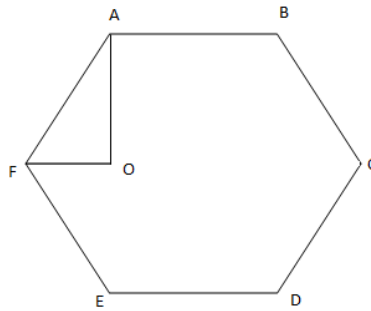
CAT 2003 Original sitting (23 Nov 2003) - Questions 17-18

17. Each side of a given polygon is parallel to either the X or the Y axis. A corner of such a polygon is said to be convex if the internal angle is 90° or concave if the internal angle is 270° . If the number of convex corners in such a polygon is 25, the number of concave corners must be

23 Nov 2003, CAT 2003 Original sitting, Q127

- (A) 20 (B) 0
(C) 21 (D) 22

18. In the figure below, ABCDEF is a regular hexagon and $\angle AOF = 90^\circ$. FO is parallel to ED. What is the ratio of the area of the triangle AOF to that of the hexagon ABCDEF?



23 Nov 2003, CAT 2003 Original sitting, Q133

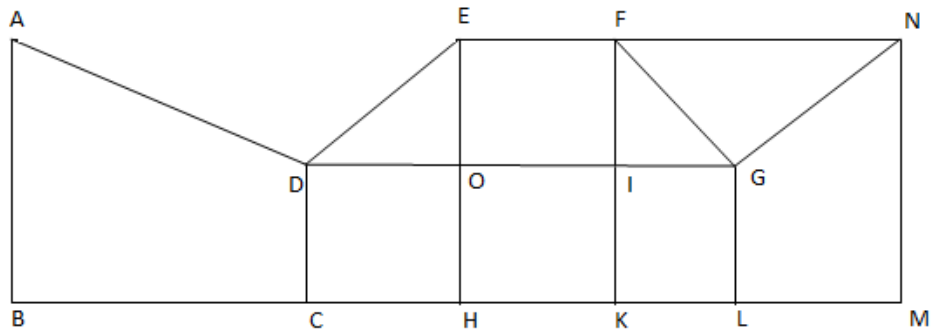
- (A) $1/12$ (B) $1/6$
(C) $1/24$ (D) $1/18$

Questions 19 to 20

Directions for the next two questions: Answer the questions based on the following diagram

In the following diagram, $\angle ABC = 90^\circ = \angle DCH = \angle DOE = \angle EHK = \angle FKL = \angle GLM = \angle LMN$

$AB = BC = 2CH = 2CD = EH = FK = 2HK = 4KL = 2LM = MN$



19. The magnitude of $\angle FGO =$

CAT 2002, Q98

- (A) 30° (B) 45°
(C) 60° (D) None of these

20. What is the ratio of the areas of the two quadrilaterals ABCD to DEFG?

CAT 2002, Q99

- (A) 1 : 2 (B) 2 : 1
(C) 12 : 7 (D) None of these

21. In a rectangle, the difference between the sum of the adjacent sides and the diagonal is half the length of the longer side. What is the ratio of the shorter to the longer side?

CAT 1997, Q136

(A) $\sqrt{3} : 2$

(B) $1 : \sqrt{3}$

(C) $2 : 5$

(D) $3 : 4$

CAT 1991 - Questions 22-22

22. Let the consecutive vertices of a square S be A, B, C & D . Let E, F & G be the mid-points of the sides AB , BC & AD respectively of the square. Then the ratio of the area of the quadrilateral $EFDG$ to that of the square S is nearest to

CAT 1991, Q69

- (A) $1/2$
- (C) $1/4$

- (B) $1/3$
- (D) $1/8$

- End of PYQ Collection -
