



## MATHS

# BOOKS - HT Olympiad Previous Year Paper

## UNDERSTANDING ELEMENTARY SHAPES

### Mathematical Reasoning

1. How many degrees does the hour hand of a clock turn in 5 minutes?

A.  $\left(\frac{1}{2}\right)^\circ$

B.  $\left(3\frac{1}{2}\right)^\circ$

C.  $5^\circ$

D.  $\left(2\frac{1}{2}\right)^\circ$

**Answer: D**



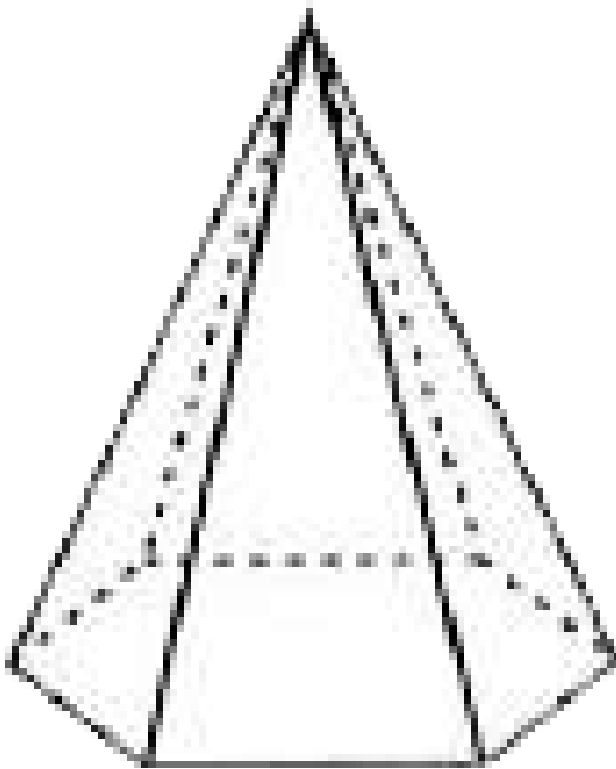
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2. The given figure has

(i) Faces : \_\_\_\_\_

(ii) Edges : \_\_\_\_\_

(iii) Corners : \_\_\_\_\_



A. 8, 12, 7

B. 6, 11, 6

C. 7, 12, 7

D. 5, 11, 7

**Answer: C**



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**3.** Which of the following statement(s) is/are correct?

A. A parallelogram in which two adjacent angles are equal is a rectangle.

B. A quadrilateral in which both pairs of opposite angles are equal is a parallelogram.

C. In a parallelogram, the maximum number of acute angles can be two.

D. All of these

**Answer: D**



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4. A square pyramid has a \_\_\_\_ base, \_\_\_\_ faces, edges and corners.

A. Square, 4, 10, 5

B. Rectangle, 5, 10, 5

C. Square, 5, 8,5

D. Rectangle, 6, 10, 5

**Answer: C**



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5. Find the measure of an angle for one-fourth revolution.

A.  $360^\circ$

B.  $180^\circ$

C.  $270^\circ$

D.  $90^\circ$

**Answer: D**



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**6.** How many degrees does the hour hand of a clock turn in 5 minutes?

A. Two

B. Three

C. One

D. Five

**Answer: B**



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7.  $\overleftrightarrow{PQ}$  perpendicular to  $\overleftrightarrow{RS}$  is symbolically written as \_\_\_\_\_

A.  $\overleftrightarrow{PQ} \perp \overleftrightarrow{RS}$

B.  $\overleftrightarrow{PQ} \parallel \overleftrightarrow{RS}$

C.  $\overleftrightarrow{PQ} \neq \overleftrightarrow{RS}$

D.  $\overleftrightarrow{PQ} = \overleftrightarrow{RS}$

**Answer: A**





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8. The perpendicular bisector of a line segment is a perpendicular to the line segment that divides it into \_\_\_\_\_ equal parts.

A. Three

B. Two

C. Four

D. None of these

**Answer: B**



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9. Which of the following statements is incorrect?

A. Each diagonal of a quadrilateral divides it into two triangles.

B. Each side of a quadrilateral is less than the sum of the remaining three sides.

C. A quadrilateral can have at most three angles.

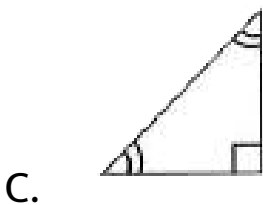
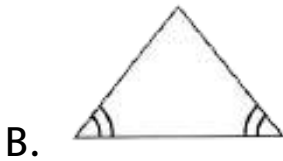
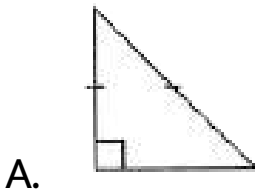
D. A quadrilateral has two diagonals.

Answer: C

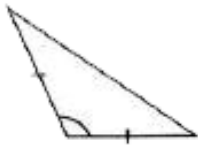


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10. Which of the following triangles is isosceles right angled triangle?



D.

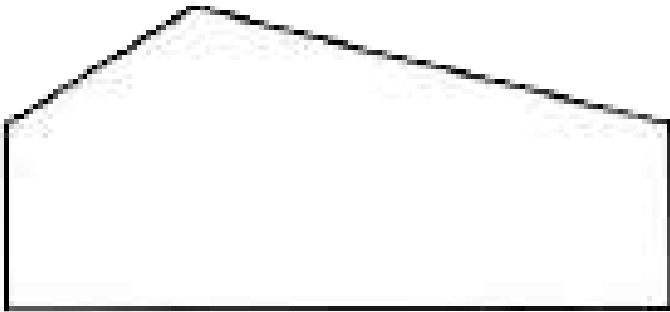


Answer: C



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11. Name the given figure.



A. Hexagon

B. Octagon

C. Pentagon

D. Septagon

**Answer: C**



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**12.** Find the sum of number of faces, edges and vertices of a tetrahedron.

A. 16

B. 14

C. 24

D. 20

**Answer: B**



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**13.** The measure of a reflex angle is than  $180^\circ$  and than  $360^\circ$ .

A. Smaller, greater

B. Smaller, smaller

C. Greater, smaller

D. Greater, greater

**Answer: C**



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**14.** Which of the following quadrilaterals does not have any difference in measurement between its length and breadth?

A. Square

B. Rectangle

C. Trapezium

D. Both (A) and (B)

**Answer: A**



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**15.** A parallelogram with all equal sides is called

\_\_\_\_\_

A. Rhombus

B. Rectangle

C. Square

D. Both (A) and (C)



**Answer: D**



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**16.** A bicycle wheel makes four and a half turns. Find the number of right angles through which it turns.

A. 16

B. 18

C. 20

D. 8

**Answer: B**



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**17.** A quadrilateral having one and only one pair of parallel sides is called

- A. a parallelogram
- B. a rectangle
- C. a rhombus
- D. None of these

**Answer: D**



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**18.** How many triangles are there in the net of a triangular pyramid?

A. 4

B. 5

C. 3

D. 6

**Answer: A**



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**19.** Select the correct option.

A. Two pairs of parallel sides - Trapezium

B. A rhombus with 4 right angles - Rectangle

C. Parallelogram with 4 right angles -  
Rectangle

D. None of these

**Answer: C**



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**20.** Which of the following shapes has all the faces identical?

A. Square Pyramid

B. Triangular Prism

C. Cube

D. Cylinder

**Answer: C**



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21. How many right angles are formed when hour hand of a clock moves from

(a) 2 to 8 (b) 6 to 9?

A. (a) (b)  
1 1

B. (a) (b)  
1 2

C. (a) (b)  
2 2

D. (a) (b)  
2 1

**Answer: D**



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22. Which of the following can be divided into two triangles?

A. Parallelogram

B. Square

C. Rectangle

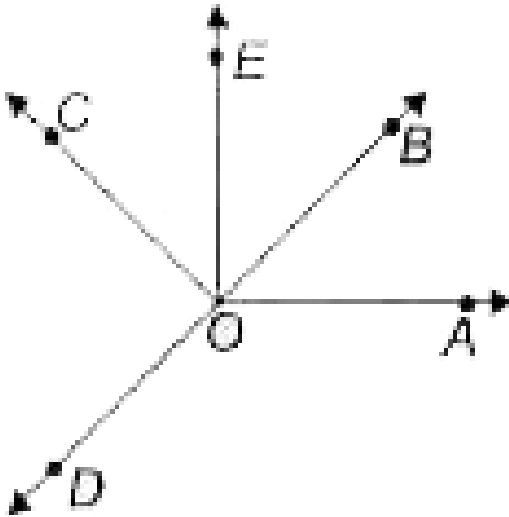
D. All of these

**Answer: D**



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23. Study the given figure carefully and match the following.



Column 1	Column II
(a) $\angle AOB$	(i) Straight angle
(b) $\angle AOE$	(ii) Acute angle
(c) $\angle AOC$	(iii) Right angle
(d) $\angle BOD$	(iv) Obtuse angle

A.

(a)  $\rightarrow$  (i), (b)  $\rightarrow$  (iv), (c)  $\rightarrow$  (ii), (d)  $\rightarrow$  (iii)



B.

$(a) \rightarrow (ii), (b) \rightarrow (i), (c) \rightarrow (iii), (d) \rightarrow (iv)$

C.

$(a) \rightarrow (ii), (b) \rightarrow (iii), (c) \rightarrow (iv), (d) \rightarrow (i)$

D.

$(a) \rightarrow (i), (b) \rightarrow (ii), (c) \rightarrow (iii), (d) \rightarrow (iv)$

**Answer: C**



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24. Number of vertices of a triangular prism is \_\_\_\_\_ the number of vertices of a square pyramid.

- A. Always less than
- B. Always greater than
- C. Always equal to
- D. Sometimes less & sometimes greater

**Answer: B**



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25. A man is standing facing North. In which direction will he face if he makes,

(i)  $1\frac{1}{2}$  revolution clockwise ?

(ii)  $\frac{3}{4}$  revolution anti-clockwise ?

A. (a) East (b) East

B. (a) South (b) West

C. (a) South (b) East

D. (a) West (b) West

**Answer: C**



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## Achievers Section Hots

1. State 'T' for true and 'F' for false.

(a) A quadrilateral is a five sided polygon.

(b) All the four sides of a rhombus are equal.

(c) A trapezium has all angles equal.

(d) Half of a revolution is a straight angle.

A. (a) (b) (c) (d)  
*F F T T*

B. (a) (b) (c) (d)  
*F T F T*

C. (a) (b) (c) (d)  
*T T F F*

D. (a) (b) (c) (d)  
*T F T F*

**Answer: B**



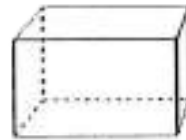
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**2. Select the incorrect option.**

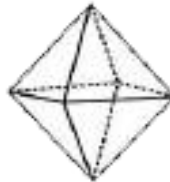
**Solids**

**Figures**

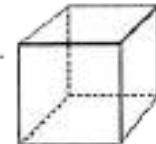
(A) Rectangular prism -



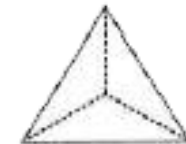
(B) Octahedron -



(C) Triangular prism -



(D) Tetrahedron -



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3. Fill in the blanks.

(i) The opposite sides of a parallelogram are

$P$  and  $Q$

(ii) A quadrilateral having only one pair of

opposite sides parallel is called a  $R$

(iii) A parallelogram having all the sides equal is

called a  $S$ .

A.

$P$	$Q$	$R$	$S$
equal	parallel	rectangle	rhombus

B.

$P$	$Q$	$R$	$S$
equal	non-parallel	trapezium	kite

- C.  $P$        $Q$        $R$        $S$   
equal      parallel      trapezium      rhombus
- D.  $P$        $Q$        $R$        $S$   
equal      parallel      trapezium      kite

**Answer: C**



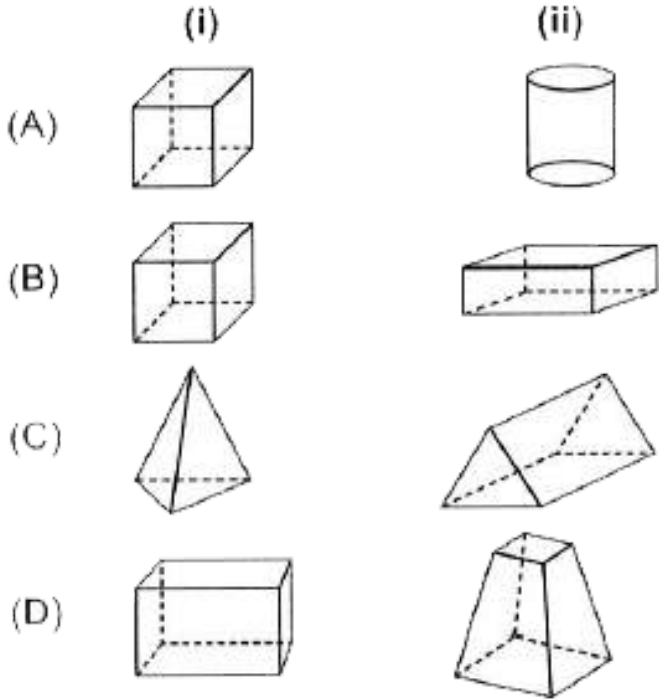
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4. Which of the following figures satisfy the given conditions?

Fig. (i) Faces : 4      Fig. (ii) Faces : 5

Edges : 6      Edges : 9

Vertices : 4 Vertices : 6



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5. Which of the following statements is correct?

A. A right angle is  $\frac{1}{2}$  of a revolution.



B. A straight angle is  $\frac{1}{4}$  of a revolution.

C. The measure of a reflex angle is greater than that of a straight angle.

D. The angle formed in one revolution is a reflex angle.

**Answer: C**



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