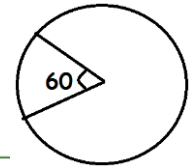


# Visual Geometry Handout

Uniform Figure

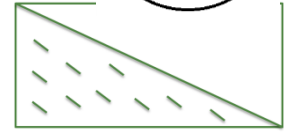
1. In the figure below, What is the ratio of the area of the sector to that of the circle?

- a)  $1/12$       b)  $1/6$       c)  $1/24$       d)  $1/2$



2. In the figure below, What is the ratio of the area of the shaded triangular region to that of the rectangle with Length 20 and breath 10.

- a)  $1/12$       b)  $1/6$       c)  $1/24$       d)  $1/2$



3. In the figure below, Find the area the shaded region.

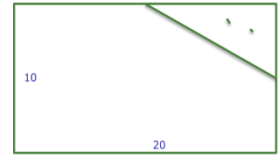
If the rectangle has Length 20 and breath 10.

- a) 50      b) 60      c) 100      d) 120



4. In the figure below, Find the percentage of the shaded region to that of the main rectangle, if the rectangle has Length 20 and breath 10.

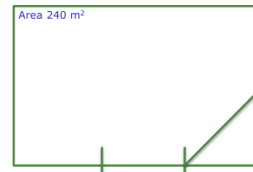
- a) 16.67%      b) 35%      c) 25%      d) 12.5%



5. In the figure below, Find the area the shaded triangle.

If the area of the main rectangle is 240 m<sup>2</sup>

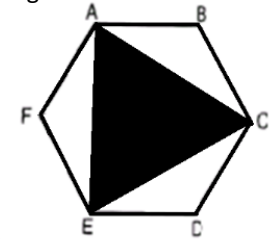
- a) 50      b) 60      c) 100      d) 20



6. Find the area of the shaded portion a)  $1/2$       b)  $1/6$       c)  $1/4$       d)  $1/12$   
 7. Find the area of the shaded portion a)  $1/8$       b)  $1/6$       c)  $1/4$       d)  $1/12$   
 8. Find the area of the shaded portion a)  $1/2$       b)  $1/6$       c)  $1/4$       d)  $1/12$   
 9. Find the area of the shaded portion a)  $1/2$       b)  $5/8$       c)  $3/4$       d)  $3/8$



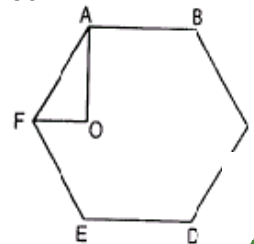
10. In the figure below, ABCDEF is a regular hexagon. What is the ratio of the area of the triangle ACE to that of the hexagon ABCDEF? a)  $1/12$       b)  $1/6$       c)  $1/24$       d)  $1/2$



11. In the figure below, ABCDEF is a regular hexagon and angle AOF = 90°.

FO is parallel to ED. What is the ratio of the area of the triangle AOF to that of the hexagon ABCDEF? CAT 2003

- a)  $1/12$       b)  $1/6$       c)  $1/24$       d)  $1/18$



12. In the figure below, ABCDEF is a regular hexagon.

Find the area of shaded region if the area of hexagon is 600?

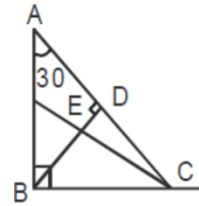
- a) 200      b) 600      c) 300      d) 180



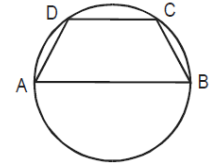
# Visual Geometry Handout

30-60-90 angles

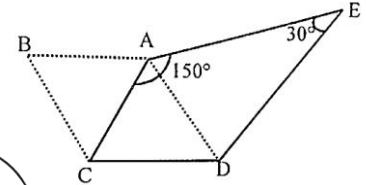
13.  $AB \perp BC$ ,  $BD \perp AC$  and  $CE$  bisects  $\angle C$ ,  $\angle A = 30^\circ$ . Then what is  $\angle CED$ ?  
 a.  $30^\circ$  b.  $60^\circ$  c.  $45^\circ$  d.  $65^\circ$



14. In the given figure,  $AB$  is diameter of the circle and points  $C$  and  $D$  are on the circumference such that  $\angle CAD = 30^\circ$  and  $\angle CBA = 70^\circ$ . What is the measure of  $\angle ACD$ ? a.  $40^\circ$  b.  $50^\circ$  c.  $30^\circ$  d.  $90^\circ$

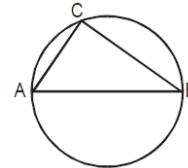


15. In Triangle  $ACD$ ,  $AD = AC$  and  $\angle C = 2\angle E$ . The distance between parallel lines  $AB$  and  $CD$  is  $h$ . Find  $\angle ADE$ .  
 a.  $20^\circ$  b.  $30^\circ$  c.  $50^\circ$  d.  $60^\circ$

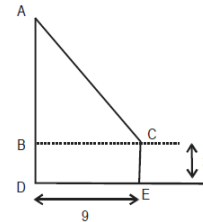


Triplets

16. The figure shows a circle of diameter  $AB$  and radius  $6.5$  cm. If chord  $CA$  is  $5$  cm long, find the area of  $\triangle ABC$ .  
 a.  $60$  sq. cm b.  $30$  sq. cm c.  $40$  sq. cm d.  $52$  sq. cm

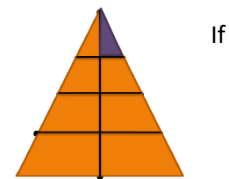


17. The length of a ladder is exactly equal to the height of the wall it is leaning against. If lower end of the ladder is kept on a stool of height  $3$  m and the stool is kept  $9$  m away from the wall, the upper end of the ladder coincides with the top of the wall. Then the height of the wall is ?  
 a.  $12$  m b.  $15$  m c.  $18$  m d.  $11$  m



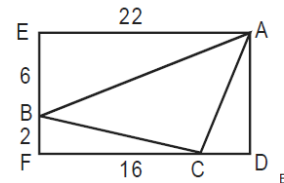
Similar Triangles

18. In  $\triangle ABC$ , points  $P$ ,  $Q$  and  $R$  are the mid-points of sides  $AB$ ,  $BC$  and  $CA$  respectively. area of  $\triangle ABC$  is  $20$  sq. units, find the area of  $\triangle PQR$ .  
 a.  $10$  sq. units b.  $5\sqrt{3}$  sq. units c.  $5$  sq. units d. None of these



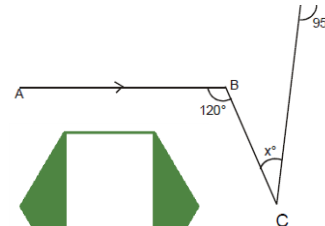
19. Find the area of the shaded triangle to that of the complete triangle?  
 a)  $1/8$  b)  $1/32$  c)  $1/16$  d) Cannot be det

20. In the given figure,  $EADF$  is a rectangle and  $ABC$  is a triangle whose vertices lie on the sides of  $EADF$  and  $AE = 22$ ,  $BE = 6$ ,  $CF = 16$  and  $BF = 2$ . Find the length of the line joining the mid-points of the sides  $AB$  and  $BC$ . a.  $4\sqrt{2}$  b.  $5$  c.  $3.5$  d. None of these



VIRTUAL POSITIONING

21. Line  $AB$  and  $DE$  are parallel; find the value of angle  $x$ .  
 a)  $25$  b)  $35$  c)  $45$  d)  $55$



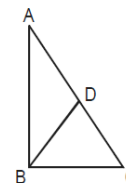
22. In the figure below,  $ABCDEF$  is a regular hexagon. Find the area of shaded region if the area of hexagon is  $600$ ?  
 a)  $200$  b)  $600$  c)  $300$  d)  $180$



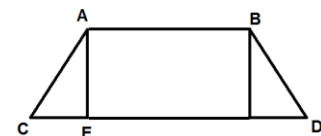
23. In the figure below, Find the area of shaded region I and II if the side of the square is  $20$ m? a)  $200$  b)  $60$  c)  $300$  d)  $50$



24. In  $\triangle ABC$ ,  $\angle B$  is a right angle,  $AC = 6$  cm, and  $D$  is the mid-point of  $AC$ . The length of  $BD$  is a)  $2$  b)  $6$  c)  $3$  d)  $5$



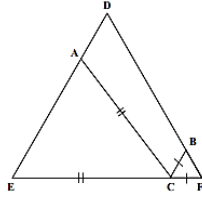
25. Given:  $AC = BD$ ,  $AD = 15$ ,  $AE = 9$ . Find the area of trapezium?  
 a)  $108$  b)  $612$  c)  $112$  d)  $152$



# Visual Geometry Workshop

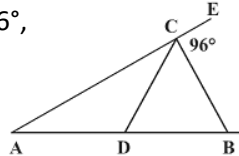


1. In Triangle DEF shown below, points ABC are taken on DE, DF and EF respectively such that EC = AC and CF = BC. If Angle D = 40°, then what is angle ACB in Degree.



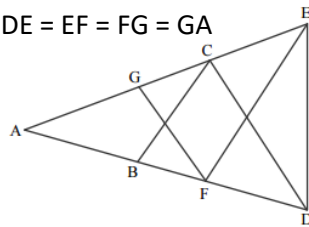
- a) 140                      b) 70  
c) 100                      d) None

2. In the figure (not drawn to scale) given below, if AD = CD = BC, and  $\angle BCE = 96^\circ$ , how much is  $\angle DBC$ ?



- (1) 32° (2) 84°  
(3) 64° (4) Cannot be det

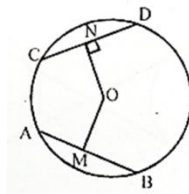
3. Given: AB = BC = CD = DE = EF = FG = GA  
Find Angle DAE.  
Approx in degrees?.



- a) 15                      b) 20  
c) 30                      d) 25

Triplets

4. In the figure, AB = 16 cm, CD = 12 cm and OM = 6cm. Find ON.



- a. 12 cm                      b. 15 cm  
c. 8 cm                      d. 11 cm

5. 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??

- a.  $\sqrt{3} : 2$                       b.  $1 : \sqrt{3}$                       c.  $2 : 5$                       d.  $3 : 4$

6. A triangle and a rectangle has same areas. Hypotenuse of the Triangle is 13 and smallest side is 5. Find the Length of another Rectangle which has width of 10 units.

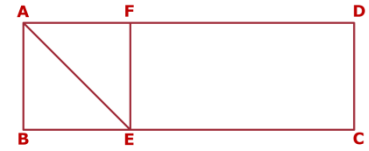
- a. 30                      b. 36                      c. 13                      d. None

7. A ladder leans against a vertical wall. The top of the ladder is 5m above the ground. When the bottom of the ladder is moved 1 m away from the wall, the ladder rests against the foot of the wall. What is the length of the ladder.

- a. 10                      b. 12                      c. 13                      d. 15

8. If a b c are sides of the triangle and  $a^2 + b^2 + c^2 = ab + bc + ca$ , then the triangle is ?  
a. Right                      b. Isoceles  
c. Equilateral                      d. Obtuse

Uniform figure  
9. In the figure below, ABCD rectangle.



The area of isosceles right triangle. ABE = 7 sq cm. EC = 3 (BE). Find area of ABCD

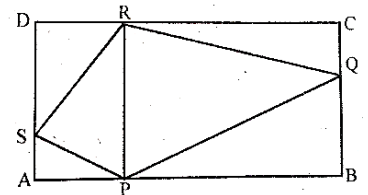
- a) 21                      b) 28                      c) 42                      d) 56

10. In the diagram, ABCD is a rectangle with AE = EF = FB. Find the ratio of area of triangle CEF and that of the rectangle.



- a. 1 : 4                      b. 1 : 6                      c. 2 : 5                      d. 2 : 3

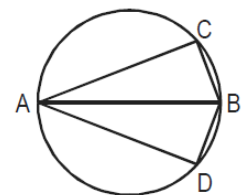
11. ABCD is a parallelogram. AD is parallel RP. If the area of the rectangle is 200m<sup>2</sup> find the area of quadrilateral PQRS?



- a. 150                      b. 50  
c. 75                      d. 100

Draw to scale

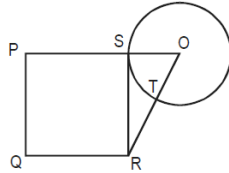
12. AB is the diameter of the given circle, while points C and D lie on the circumference as shown. If AB is 15cm, AC is 12 cm and BD is 9 cm. Find the area of the quadrilateral ABCD.



- a. 54π                      b. 216π  
c. 162π                      d. None of these

# Visual Geometry Workshop

13. PQRS is a square. SR is a tangent (at point S) to the circle with centre O and  $TR = OS$ . Then the ratio of area of the circle to the area of the square is



- a.  $\pi/3$                       b.  $11/7$   
c.  $3/\pi$                       d.  $7/11$

## Similar Triangles

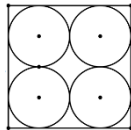
14. Points A, B, C and D lie on the circle.  $AD = 24$  and  $BC = 12$ . What is the ratio of the area of  $\Delta CBE$  to that of  $\Delta ADE$ ?

- a. 1 : 4                      b. 1 : 2                      c. 1 : 3                      d. None

15. A right circular cone of height h is cut by a plane parallel to the base at a distance of  $h/3$  from the base. Then the volume of resulting cone and frustum are in what ratio?

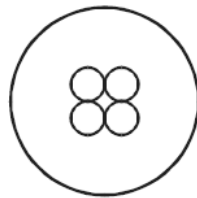
- a. 1 : 3                      b. 8 : 19                      c. 1 : 4                      d. 1 : 7

16. 4 identical coins are placed in a square. For each coin ratio of area to circumference is same as the ratio of circumference to area. Then find the area of square not covered by coins.



- a.  $16(\pi - 1)$                       B.  $16(8\pi - 1)$   
C.  $16(4 - \pi)$                       D.  $16(4 - \pi/2)$

17. From a circular sheet of paper with a radius 20 cm, four circles of radius 5 cm each are cut out. What is the ratio of the uncut to the cut portion?



- a. 1 : 3                      b. 4 : 1  
c. 3 : 1                      d. 4 : 3

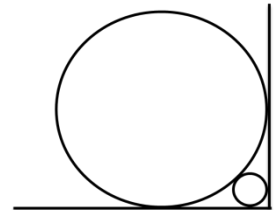
18. Consider two different cloth-cutting processes. In the first one, n circular cloth pieces are cut from a square cloth piece of side a in the following steps: the original square of side a is divided into n smaller squares, not necessarily of the same size; then a circle of maximum possible area is cut from each of the smaller squares. In the second process, only one circle of maximum possible area is cut from the square of side a and the process ends there. The cloth pieces

remaining after cutting the circles are scrapped in both the processes. The ratio of the total area of scrap cloth generated in the former to that in the latter is:

- 1 : 1                      2.  $\sqrt{2} : 1$   
3.  $n(4 - n)/(4n - n)$                       4.  $(4n - n)/n(4 - n)$

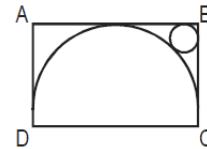
## Circle in Circle

19. Circle of radius 2 is placed against a right angle. Another smaller circle is also placed as shown. What is the radius of the smaller circle?



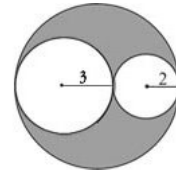
- a.  $3 - 2\sqrt{2}$   
b.  $4 - 2\sqrt{2}$   
c.  $7 - 4\sqrt{2}$   
d.  $6 - 4\sqrt{2}$

20. The figure shows the rectangle ABCD with a semicircle and a circle inscribed inside in it as shown. What is the ratio of the area of the circle to that of the semicircle?



- a.  $(\sqrt{2} - 1)^2 : 1$   
b.  $2(\sqrt{2} - 1)^2 : 1$   
c.  $(\sqrt{2} - 1)^2 : 2$   
d. None of these

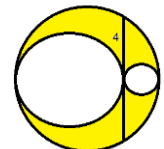
21. Area of shaded portion



- a.  $25\pi$                       B.  $5\pi$   
C.  $20\pi$                       D.  $12\pi$

22. Find the area bigger circle A?

If length of the chord is 4.



- a.  $4\pi$                       b.  $6\pi$   
c.  $8\pi$                       d.  $3\pi$

## Book based

23. Two circles of radius 10cm and 8cm are placed 20cm apart. Find the length of the common tangent drawn between these two circles.

- a. 30                      b. 36                      c. 13                      d. None

24. Find the Circum radius of a triangle with sides 5, 12 and 13.  $[A = abc/4R]$

- a. 3                      b. 6                      c. 9                      d. None