T.I.M.E.
Triumphant Institute of Management Education Pvt. Ltd

REPRINT

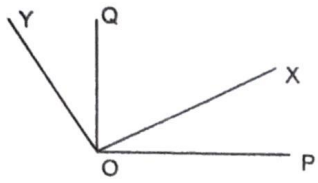
QUANTITATIVE ABILITY HANDOUT
(Geometry)

Ref: QAHO1031313

Directions for questions 1 to 20: Select the correct alternative from the given choices.

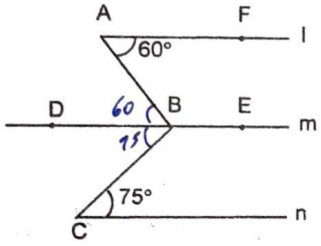
1. Find the measure of an angle, which is equal to one-fifth of its complement.
(A) 30° (B) 15° (C) 25° (D) 10°

2.



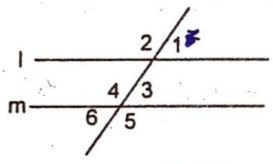
In the figure above, OP ⊥ OQ and OX ⊥ OY. Find, ∠POX, if ∠QOY = 25°.
(A) 155° (B) 50° (C) 65° (D) 25°

3.



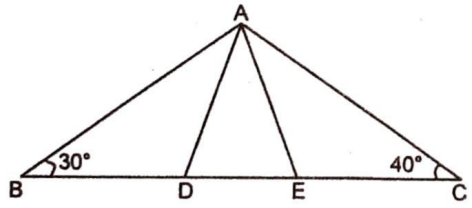
If lines, l, m and n in the above figure are parallel to each other, find the value of ∠ABC – ∠EBC.
(A) 35° (B) 60° (C) 90° (D) 30°

4. In the given figure, lines l and m are parallel. If ∠1 + ∠6 = 120°, then find ∠4.



(A) 120° (B) 90°
(C) 60° (D) None of these

5.

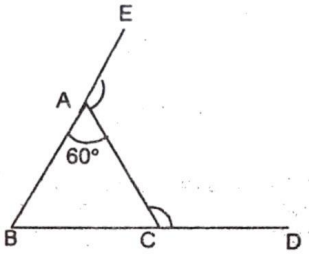


In the figure above, AD = BD, AE = CE, ∠ABD = 30° and ∠ACE = 40°. Find ∠DAE.
(A) 40° (B) 45° (C) 35° (D) 30°

6. In triangle ABC, the bisectors of ∠ABC and ∠ACB intersect at O. If ∠ABC = 80° and AB = AC, then find ∠BOC.
(A) 100° (B) 80° (C) 70° (D) 50°

7. In Δ ABC, ∠ABC = 50° and ∠ACB = 70°. AP is the bisector of ∠BAC and AQ is an altitude drawn on the side BC. Find ∠PAQ.
(A) 5° (B) 15° (C) 10° (D) 20°

8.

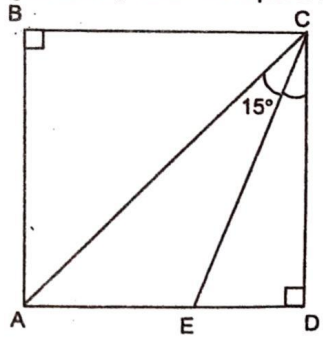


If in the given figure, ∠ACD + ∠EAC = 260°, then find the measures of angles ∠B and ∠C respectively.
(A) 80°; 40° (B) 70°; 50°
(C) 40°; 80° (D) 60°; 60°

9. G is the centroid of a triangle ABC, whose sides AB, BC and CA measure 9 cm, 12 cm and 15 cm respectively. Find the length of BG.
(A) 7.75 cm (B) 5 cm
(C) 7.5 cm (D) 10 cm

10. The triangle ABC is similar to triangle DEF and ∠A = ∠D, ∠B = ∠E. If AC = 6 cm, DF = 2 cm EF = 3 cm and AB = 12 cm, then find BC and DE respectively.
(A) 8 cm and 4 cm (B) 9 cm and 4 cm
(C) 12 cm and 5 cm (D) 4 cm and 12 cm

11. In the figure below, ABCD is a square. Find ∠CED.



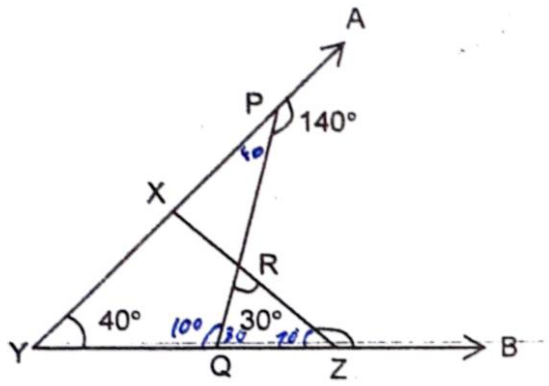
(A) 45° (B) 75° (C) 60° (D) 105°

12. Angle bisectors of angle B and angle C of triangle ABC meet at O. If $\angle A = 45°$, find $\angle BOC$.
(A) 135° (B) 45°
(C) 67.5° (D) 112.5°

13. In a triangle ABC, AD is the angle bisector of $\angle BAC$. If the length of AB is 2 cm, AC = 3 cm and BD = 1.5 cm, then find the length of CD.
(A) 3 cm (B) 2.25 cm
(C) 2.5 cm (D) 2.40 cm

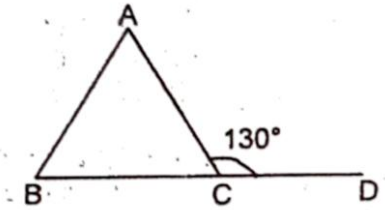
14. In triangle PQR, PS is the angular bisector of $\angle P$. T is a point on PR such that ST || QP. Find PT : TR.
(A) PQ : QR (B) QR : PQ
(C) PR : PQ (D) PQ : PR

15.



In the above figure (not to scale), find $\angle BZX$.
(A) 110° (B) 115°
(C) 105° (D) 100°

16.



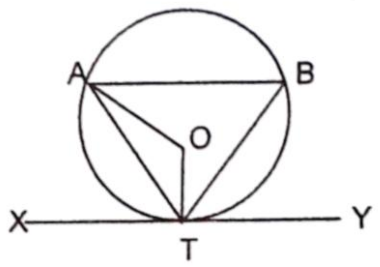
In the given figure, $\angle ABC = 2\angle ACB$ and $\angle ACD = 130°$. Find $\angle BAC$.
(A) 50° (B) 65°
(C) 30° (D) 60°

17. Find the interior and exterior angles of a regular polygon of eight sides.
(A) 150°; 30° (B) 140°; 40°
(C) 135°; 45° (D) 108°; 72°

18. Two secants PXY and PQR are drawn to a circle, from a point P. If XY = 4 cm, PQ = 6 cm and PX = 8 cm, then find QR.
(A) 16 cm (B) 8 cm
(C) 10 cm (D) 3 cm

19. Two parallel chords of equal length are drawn inside a circle of radius 13 cm. If they are 10 cm apart, then find the length of each of the two chords.
(A) 24 cm (B) 18 cm
(C) 12 cm (D) 6 cm

20.



Find $\angle AOT$, if XY is a tangent of the circle, whose center is O and $\angle XTA = 36°$
(A) 108° (B) 72°
(C) 36° (D) 144°

Exterior angle $= \frac{360°}{n}$

interior angle $= 180° - (\text{Ext})$

(17) $\text{Ex} = \frac{360}{8} = 45$

$\text{in} = 180 - 45 = 135°$

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QUANTITATIVE ABILITY HANDOUT

(Mensuration)

Ref: QAHO1031314

Directions for questions 1 to 20: Select the correct alternative from the given choices.

1. In a triangle, the average of any two sides exceeds half of the third side by 6 cm. Find the area of the triangle. (in sq. cm)

(A) $24\sqrt{3}$ (B) $36\sqrt{3}$

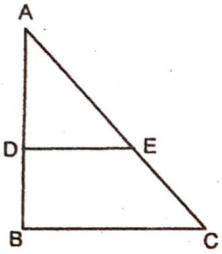
(C) $18\sqrt{3}$ (D) $48\sqrt{3}$

2. What is the area of an isosceles triangle of perimeter 20 cm, if the ratio of either of the equal sides and the third side of the triangle is 3 : 4? (in sq cm)

(A) $8\sqrt{5}$ (B) $16\sqrt{5}$

(C) $4\sqrt{10}$ (D) $12\sqrt{10}$

3 In the figure below, ABC is a triangle in which $\angle ABC = 90°$, AB = 15 cm and BC = 12 cm. D and E are points on AB and AC such that AD : DB = 2 : 1 and AE : EC = 2 : 1. Find the area of triangle ADE.



(A) 15 sq.cm (B) 40 sq.cm

(C) 25 sq.cm (D) 30 sq.cm

4. The length and the breadth of a rectangle are in the ratio 3 : 4. The area of the rectangle is 432 sq. cm. Find the perimeter of the rectangle.

(A) 56 cm (B) 70 cm

(C) 84 cm (D) 98 cm

5. A string in the shape of a circle of radius 7 cm is bent into a square. Find the difference in the areas of the square and the circle. (in sq.cm)

(A) 27 (B) 30 (C) 33 (D) 36

6. Find the area of a circle inscribed in a regular hexagon of side 12 cm (in sq cm).

(A) 144π (B) 54π

(C) 108π (D) 72π

7. The length of a rectangular plot is 20 meters more than its breadth. If the cost of fencing the plot at ₹26.50 per meter is ₹5,300, what is the length of the plot in meters?

(A) 40 (B) 60

(C) 50 (D) None of these

8. In a rectangular lawn of dimensions 24 yards × 18 yards, a path of uniform width of 2 yards is constructed inside it, all along its length and breadth. What is the area of the lawn unoccupied by the path? (in sq yards).

(A) 356 (B) 280

(C) 152 (D) 348

9. (i) The total surface area of a cube is1536 sq.cm. What is the volume of the cube? (in cubic cm)

(A) 2048 (B) 4096

(C) 8192 (D) 1536

(ii) Two cubes each of edge 12 cm are joined end to end. What is the total surface area of the cuboid so formed (in sq cm)?

(A) 1016 (B) 1220

(C) 1144 (D) 1440

10. What is the length of the longest pencil that can be kept in a pencil box of dimensions 8 cm × 6 cm × 4 cm?(in cm)

(A) $2\sqrt{19}$ (B) $2\sqrt{21}$

(C) $2\sqrt{17}$ (D) $2\sqrt{29}$

11. A rectangular sheet of paper is folded into a cylinder. If the dimensions of the paper are 44 cm x 10 cm, then find the volume of the cylinder. The height of the cylinder is 10 cm.

(A) 1520 cm^3 (B) 1680 cm^3

(C) 1420 cm^3 (D) 1540 cm^3

12. In a right angled triangle ABC, right angled at B, D is the mid point of the hypotenuse. If the length of AB is 12 cm and BD is 6.5 cm, then find the area of triangle ABC.

(A) 30 sq.cm (B) 39 sq.cm

(C) 60 sq.cm (D) 42.25 sq.cm

13. Find the side of a cube formed by melting a cuboid of dimensions 36 cm × 24 cm × 16 cm.

(A) 16 cm (B) 24 cm

(C) 28 cm (D) 38 cm

14. Four cubic meters of iron are required to prepare an iron sheet of area 20000 sq m. Find the thickness of this sheet (in cm).

(A) 0.2 (B) 0.002

(C) 20 (D) 0.02

15. A cylindrical rod is desired to be made with its height and its radius being in the ratio 12 : 1. How many spherical balls having the same radius as that of the rod have to be melted and casted into it?

(A) 6 (B) 12 (C) 18 (D) 9

16. A rope can make 70 rounds on a cylinder's circumference whose radius is 7 cm. Find the number of rounds it can make on a cylinder's circumference whose radius is 10 cm.
(A) 49 (B) 98 (C) 70 (D) 140

17. Two cones have their base radii in the ratio 3 : 4. Their heights are in the ratio 2 : 3. Find the ratio of their volumes.
(A) 3 : 8 (B) 1 : 2
(C) 2 : 1 (D) 8 : 3

18. A hall is 15 m long and 9 m wide. The height of the hall is 12 m. Find the cost of painting the walls at ₹2.5 per sq.m approximately.
(A) ₹2880 (B) ₹2160
(C) ₹1440 (D) ₹3600

19. A sector of angle 144° is cut from a circular plate of radius 7 cm and the two cut edges are joined. Find the area of the base of the solid formed. (approx).
(A) $28\pi/25$ cm^2 (B) 8π cm^2
(C) $28\pi/5$ cm^2 (D) $196\pi/5$ cm^2

20. The wheel of a cycle covers 1100 m by making 175 revolutions. Find the diameter of the wheel.
(A) 20 cm (B) 2.5 cm
(C) 1.2 cm (D) 2 m

(1) $\frac{a+b}{2} = \frac{1}{2}c + 6$

$a+b = c+12$ — (1)

$b+c = a+12$ — (2)

$a+c = b+12$ — (3)

$2(a+b+c) = a+b+c+36$

$c+12+c = 36$

$c = 12$

area of eq. $\Delta = \frac{\sqrt{3}}{4} \times \text{side}^2$

$= \frac{\sqrt{3}}{4} \times 12^2$

$= 36\sqrt{3}$