Karnataka Government

Dakshina Kannada Zilla Panchayat Department of Public Instruction

Office of Deputy Director of Public Instruction (Administration), Mangalore, D.K.

and

District Institute of Education and Training, Kodialbail

Mangalore, Dakshina Kannada

Sopana

For Achievement in Mathematics…

Mathematics MCQ Question Bank

(Resource material prepared based on the new Multiple-Choice Questions based Examination Pattern 2020-21)

ಸಂದೇಶ

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ಮುಖ್ಯ ಕಾರ್ಯನಿರ್ವಹಣಾಧಿಕಾರಿಗಳು,
ದಕ್ಷಿಣ ಕನ್ನಡ

ಮುಖ್ಯ ಕಾರ್ಯನಿರ್ವಹಣಾಧಿಕಾರಿಗಳ ಕಾರ್ಯಾಲಯ
ಜಿಲ್ಲಾ ಪಂಚಾಯತ್ ಕಟ್ಟಡ
ಅಶೋಕನಗರ
ಮಂಗಳೂರು, ದಕ್ಷಿಣ ಕನ್ನಡ ಜಿಲ್ಲೆ
575006

ಕೋವಿಡ್-19 ಸಾಂಕ್ರಾಮಿಕ ರೋಗದಿಂದಾಗಿ ಕಳೆದ ಒಂದು ವರ್ಷದಿಂದ ಶೈಕ್ಷಣಿಕ ಪ್ರಗತಿ ಕುಂಠಿತವಾಗಿ ವ್ಯತಿರಿಕ್ತ ಪರಿಣಾಮ ಬೀರುತ್ತಿದೆ. ಆದಾಗ್ಯೂ ವಿದ್ಯಾರ್ಥಿಗಳ ಶೈಕ್ಷಣಿಕ ಪ್ರಗತಿಗೆ ಅನುಕೂಲವಾಗುವ ದೃಷ್ಟಿಯಿಂದ 10ನೇ ತರಗತಿ ಪಠ್ಯಕ್ರಮ ಹಾಗೂ ಪರೀಕ್ಷಾ ಪದ್ಧತಿಗೆ ಅನುಗುಣವಾಗಿ ಬಹುಅಂಶ ಆಯ್ಕೆ ಪ್ರಶ್ನಾಕೋಠಿ [Multiple Choice Question Bank] ನ್ನು ದಕ್ಷಿಣ ಕನ್ನಡ ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆಯ ಸಂಪನ್ಮೂಲ ಶಿಕ್ಷಕರ ತಂಡ ಹಾಗೂ ಅಧಿಕಾರಿ ವರ್ಗದವರು ಒಟ್ಟುಗೂಡಿ ರಚನೆ ಮಾಡಿರುತ್ತಾರೆ.

ಶೈಕ್ಷಣಿಕ ಹಿತದೃಷ್ಟಿಯಿಂದ ಇದರ ಸದುಪಯೋಗವನ್ನು ಜಿಲ್ಲೆಯ ಎಲ್ಲ ವಿದ್ಯಾರ್ಥಿಗಳು ಪಡೆದುಕೊಂಡು ಮುಂಬರುವ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಉತ್ತಮ ಸಾಧನೆ ಮಾಡುವಂತಾಗಲಿ ಎಂದು ಹಾರೈಸುತ್ತೇನೆ. ಈ ಕಾರ್ಯದಲ್ಲಿ ತೊಡಗಿಕೊಂಡ ಎಲ್ಲರಿಗೂ ಅಭಿನಂದನೆಗಳು.

ಶುಭಾಶಯಗಳು

17-06-2021

(ಡಾ. ಕುಮಾರ, ಐ.ಎ.ಎಸ್)
ಮುಖ್ಯಕಾರ್ಯನಿರ್ವಹಣಾಧಿಕಾರಿಗಳು
ದಕ್ಷಿಣಕನ್ನಡಜಿಲ್ಲಾಪಂಚಾಯತ್

ಮುನ್ನುಡಿ

ಉಪನಿರ್ದೇಶಕರು (ಆಡಳಿತ)
ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ ಮಂಗಳೂರು,
ದಕ್ಷಿಣ ಕನ್ನಡ ಜಿಲ್ಲೆ-575001

ಕೋವಿಡ್-19ರ ಕಾರಣ ಬದಲಾದ ಸನ್ನಿವೇಶಕ್ಕೆ ಮತ್ತು ಬದಲಾದ ಪರೀಕ್ಷಾ ಪದ್ಧತಿಗೆ ಅನುಕೂಲವಾಗುವಂತೆ ಎಲ್ಲ ವಿಷಯಗಳ ಪ್ರಶ್ನಾಕೋಠಿಯನ್ನು ತಯಾರಿಸಲಾಗಿದ್ದು ಇದರಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಲು ಅಭ್ಯಾಸ ಮಾಡುವ ಮೂಲಕ ಅಂತಿಮ ಪರೀಕ್ಷೆಯನ್ನು ಆತ್ಮವಿಶ್ವಾಸದಿಂದ ಎದುರಿಸಬಹುದಾಗಿದೆ. ಜಿಲ್ಲೆಯ ಎಲ್ಲಾ ಶಿಕ್ಷಕರು ಈ ಕೈಪಿಡಿಯನ್ನು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ತಲುಪಿಸಿ ಗರಿಷ್ಠ ಅಂಕಗಳನ್ನು ಪಡೆಯುವಂತೆ ಮಾರ್ಗದರ್ಶನ ಮಾಡಿದರೆ ವಿದ್ಯಾರ್ಥಿಗಳು ಯಶಸ್ಸನ್ನು ಗಳಿಸಬಹುದು.

ಪ್ರಶ್ನಾಕೋಠಿಯನ್ನು ಶ್ರಮವಹಿಸಿ ಸಿದ್ಧಗೊಳಿಸಿದ ಸಂಪನ್ಮೂಲ ವ್ಯಕ್ತಿಗಳಿಗೆ, ಮಾರ್ಗದರ್ಶನ ನೀಡಿದ ಇಲಾಖೆಯ ಅಧಿಕಾರಿಗಳಿಗೆ ಧನ್ಯವಾದಗಳನ್ನು ಸಮರ್ಪಿಸುತ್ತೇನೆ.

ಶುಭವಾಗಲಿ.

17-06-2021

(ಮಲ್ಲೇಸ್ವಾಮಿ)
ಉಪನಿರ್ದೇಶಕರು(ಆಡಳಿತ)
ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ, ಮಂಗಳೂರು,
ದಕ್ಷಿಣ ಕನ್ನಡ ಜಿಲ್ಲೆ-575001

ನಿರ್ದೇಶನ

ಸಿಪ್ರಿಯಾನ್ ಮೊಂತೆರೋ

ಸಹ ನಿರ್ದೇಶಕರು ಹಾಗೂ ಪ್ರಾಂಶುಪಾಲರು, ಶಿಕ್ಷಕರ ಶಿಕ್ಷಣ ಮಹಾವಿದ್ಯಾಲಯ, ಮಂಗಳೂರು

ಪರಿಕಲ್ಪನೆ ಮತ್ತು ಮಾರ್ಗದರ್ಶನ

ಶ್ರೀ ಮಲ್ಲೇಸ್ವಾಮಿ, ಉಪನಿರ್ದೇಶಕರು (ಆಡಳಿತ ಮತ್ತು ಅಭಿವೃದ್ಧಿ)

ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ, ದಕ್ಷಿಣ ಕನ್ನಡ, ಮಂಗಳೂರು. ದ.ಕ.

ಮೇಲ್ವಿಚಾರಣೆ

ಶ್ರೀ ವಿರೂಪಾಕ್ಷಪ್ಪ ಎಚ್.ಎಸ್

ಕ್ಷೇತ್ರ ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು, ಬೆಳ್ತಂಗಡಿ ತಾಲೂಕು.

ಶ್ರೀಮತಿ ಬಬಿತ

ಹಿರಿಯ ಉಪನ್ಯಾಸಕರು, ಡಯಟ್ ಮಂಗಳೂರು

ಶ್ರೀ ಶಂಭು ಶಂಕರ್

ಕೇತ್ರ ಸಮನ್ವಯಾಧಿಕಾರಿಗಳು, ಬೆಳ್ತಂಗಡಿ ತಾಲೂಕು.

ಸಲಹೆಗಾರರರು :

ಶ್ರೀಮತಿ ದಯಾವತಿ

ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು, ಉಪನಿರ್ದೇಶಕರ ಕಛೇರಿ, ಮಂಗಳೂರು.

ಶ್ರೀಮತಿ ಶೋಭಾ ಎನ್

ಗಣಿತ ವಿಷಯ ಪರಿವೀಕ್ಷಕರು, ಉಪನಿರ್ದೇಶಕರ ಕಛೇರಿ, ಮಂಗಳೂರು.

ಶ್ರೀಮತಿ ವೀಣಾ ಎಲ್

ಉಪನ್ಯಾಸಕರು, DIET ಮಂಗಳೂರು.

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ಸಹಕಾರ

ಶ್ರೀಮತಿ ಜಯಶ್ರೀ

ಅಧ್ಯಕ್ಷರು, ಜಿಲ್ಲಾ ಪ್ರೌಢ ಶಾಲಾ ಮುಖ್ಯ ಶಿಕ್ಷಕರು ಹಾಗೂ ಪ.ಪೂ ಪ್ರಾಂಶುಪಾಲರ ಸಂಘ, ದಕ್ಷಿಣ ಕನ್ನಡ

ಸ್ಟ್ಯಾನಿ ತಾವ್ರೋ

ಅಧ್ಯಕ್ಷರು ಪ್ರೌಢ ಶಾಲಾ ಸಹ ಶಿಕ್ಷಕರ ಸಂಘ, ದಕ್ಷಿಣ ಕನ್ನಡ

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CONTENT

Unit 1 : Arithmetic Progressions

1. If the n[th] term of an Arithmetic Progression is $a_n = 4n + 5$ then the third term is _________
   a) 5 b) 9 c) 13 d) 17
2. The value of 'x' in the Arithmetic Progression 2, x, 14 is __________
   a) 28 b) 16 c) 7 d) 8
3. In an Arithmetic Progression where $a_n = 3n – 2$, the 2[nd] term is _________
   a) 2 b) 4 c) 6 d) 8
4. The fourth term of an Arithmetic Progression where $a_n = 2n – 1$ is _________
   a) 23 b) 9 c)5 d) 7
5. The common difference of the Arithmetic Progression 3, 6, 9, 12 …….. is _______
   a) -3 b) 3 c) 6 d)9
6. The sum of the first 'n' Natural Numbers is _________
   a) $\frac{n(n-1)}{2}$ b) $\frac{n(n+1)}{2}$ c) $\frac{n(n+1)}{3}$ d) $n(n+1)$
7. Which among the following is an Arithmetic Progression?
   a) 1, 4, 6 . . . . b)12, 10, 14. . . . . c)35, 30, 25 . . . . . d)8, 13, 19, ...
8. The formula to find the n[th] term of an Arithmetic Progression is _________
   a) $a_n = a - (n - 1)d$ b) $a_n = a + (n +1)d$ c) $a_n = a + (n - 1)d$ d) $a_n = 2a + (n – 1)d$
9. If in an Arithmetic Progression $a_n = 3n – 1$ then the common difference is ________
   a) 1 b) 2 c) 3 d) 4
10. Sum of first 10 Natural Numbers is __________
    a) 45 b)50 c)55 d)65
11. The common difference of the Arithmetic Progression 3, 1, -1, -3 …. is __________
    a) 2 b) -2 c) 4 d) -4
12. The common difference of the Arithmetic Progression $\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{1}{2}$ . . . . . . is _______
    a) 0 b) 1 c) $\frac{1}{2}$ d) $-\frac{1}{2}$
13. The number to be entered into the $\boxed{}$ in the Arithmetic Progression 2, $\boxed{}$, 26 is
    a)12 b)13 c)14 d) 16
14. If the first term is 'a' and the n[th] term is 'l' then the sum of n terms of an Arithmetic Progression is _____
    a) $S_n = \frac{a}{2}(n + l)$ b) $S_n = \frac{n}{2}(a + l)$ c) $S_n = \frac{l}{2}(a + n)$ d) $S_n = \frac{1}{2}a(n + l)$

15. If the first term is 'a' and the common difference is 'd' then the formula to calculate the sum of n terms of an Arithmetic Progression is _______

a) $S_n = \frac{n}{2}(a + (n - 1)d)$ b) $S_n = \frac{n}{2}(a + 2(n - 1)d)$

c) $S_n = \frac{n}{2}(2a + (n - 1)d)$ d) $S_n = \frac{n}{2}(n + 1)d)$

16. The next four terms of the Arithmetic Progression 2, 5, 8, 11, 14 ……….. is ___________

a) 16, 18, 20, 22 b) 15, 16, 17, 18 c) 18, 22, 24, 26 d) 17, 20, 23, 26

17. The third term of an Arithmetic Progression whose fourth term is 9 and common difference is 2 is _______

a) 8 b) 7 c) 6 d) 5

18. If the n^{th} term of an Arithmetic Progression is $a_n = 13 - 2n$ then its fourth term is _________

a) 9 b) 7 c) 5 d) 4

19. In an Arithmetic Progression of $a_3 = 10$ and $a_4 = 8$ then the common difference is ________

a) -2 b) 2 c)1 d)-1

20. The next terms of the Arithmetic Progression 4, -1, -6 ……. is ______

a) -10 , -15 b) -12, -15 c)11, 16 d)-11, -16

21. The value of S_3 in the Arithmetic Progression 7, 4, 1, -2. . . . . .

a) 1 b)3 c) -3 d)12

22. If the sum of an Arithmetic Progression whose first term and the last term are 1 and 11 respectively is 36 then the number of its terms is _______

a)5 b)6 c)7 d)8

23. If the n^{th} term of an Arithmetic Progression is $a_n = 2n - 1$ then the Arithmetic Progression is ____

a)1, 5, 9 …… b)2, 6, 10 …… c)1, 3, 5…… d)1, 2, 3……

24. The common difference of an Arithmetic Progression whose n^{th} term is $a_n = 5 - 2n$ is ______

a) -3 b) -2 c) -1 d) 2

25. In the Arithmetic Progression 6, x, y, 18 the value of x and y respectively are ________

a) 8, 12 b) 10, 13 c) 10, 14 d) 14, 10

26. The common difference of two Arithmetic Progressions is equal. If the first term of the first Arithmetic Progression is 6 and the first term of the second Arithmetic Progression is 10 then the difference of the 5^{th} term of these Arithmetic Progressions is _______

a) 2 b) 3 c) 4 d) 5

27. If the sum of 'n' terms of an Arithmetic Progression is $S_n = 3n^2 + 5n$ then its 2^{nd} term is _______

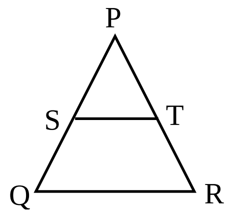
a) 22 b) 14 c) 12 d) 10

Unit 2: Triangles

28. The mathematician who proposed that " A line drawn parallel to one side of the triangle divides the other two sides in equal proportion" is ____________

a) Pythagoras b) Thales c) Euclid d) Euler

29. In the given figure if ST∥QR then $\frac{PS}{SQ}$ is equal to ___________

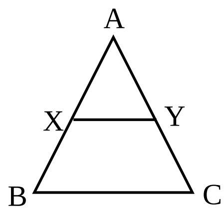


a) $\frac{PT}{TR}$ b) $\frac{PS}{TR}$ c) $\frac{PT}{SQ}$ d) $\frac{PT}{SR}$

30. If the ratios of the sides of two similar triangles is 4 : 9 then the ratios of the areas of these triangles is ______________

a) 2 : 3 b) 4 : 9 c) 81 : 16 d) 16 : 81

31. In the given figure if XY∥BC then $\frac{AX}{AB}$ is equal to ___________



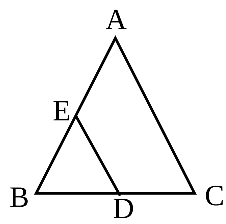
a) $\frac{AX}{AY}$ b) $\frac{AX}{XB}$ c) $\frac{AY}{AC}$ d) $\frac{AC}{AY}$

32. The length of the sides of a triangle are given below. Which of the following forms a right-angled triangle?

a) 7 cm, 24 cm, 25cm b) 3 cm, 8 cm, 6 cm

b) 50 cm, 80 cm, 100 cm d) 130 cm, 12 cm, 5 cm

33. ΔABC and ΔBDE are two similar triangles. If 'D' is the midpoint of BC then Area of ΔABC : Areas of ΔBDE is equal to ______________



a) 2 : 1 b) 1 : 2 c) 4 : 1 d) 1 : 4

34. The mathematician who proposed the theorem which states that "In a right-angled triangle, the square of the hypotenuse is equal to the sum of the squares on the other two sides" is ____________

a) Thales b) Pythagoras c) Brahma Gupta d) Euclid

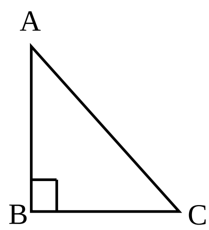
35. The corresponding sides of two similar triangles are ____________

a) Equal b) Parallel c) Not Equal d) Proportional

36. The areas of two similar triangles are 120 cm^2 and 480 cm^2 respectively, then the ratio of any pair of its corresponding sides is ____________

a) 1 : 4 b) 1 : 2 c) 4 : 1 d) 2 : 3

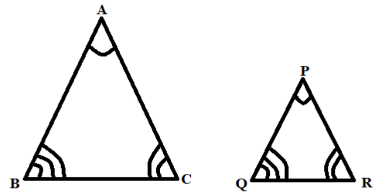
37. In the given figure if $\angle B = 90^0$ then the correct relation among the following is ___________



a) $BC^2 + AC^2 = AB^2$ b) $AB^2 + AC^2 = BC^2$

c) $AB^2 - AC^2 = BC^2$ d) $AC^2 - BC^2 = AB^2$

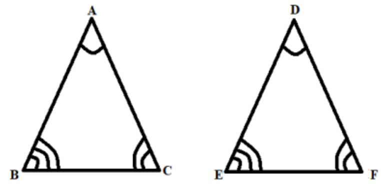
38. In the figure if two triangles are similar then the ratio of their corresponding sides is __________



a) $\frac{AB}{PQ} = \frac{BC}{PR} = \frac{AC}{QR}$ b) $\frac{AB}{PR} = \frac{BC}{QR} = \frac{AC}{PQ}$

c) $\frac{AB}{QR} = \frac{BC}{RP} = \frac{AC}{PQ}$ d) $\frac{AB}{PQ} = \frac{BC}{QR} = \frac{AC}{PR}$

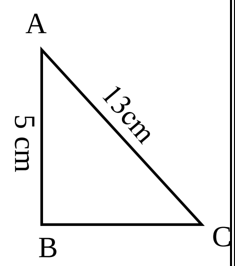
39. In the given figure $\Delta ABC \sim \Delta DEF$ then $\frac{Area\ of\ \Delta ABC}{Area\ of\ \Delta DEF}$ is equal to ___________



a) $\frac{AB^2}{EF^2}$ b) $\frac{AC^2}{EF^2}$ c) $\frac{BC^2}{EF^2}$ d) $\frac{AB^2}{DF^2}$

40. The ratios of the areas of two similar triangles is 9 : 16 then the ratios of their corresponding sides is _____________

a) 3 : 4 b) 4 : 3 c) 9 : 16 d) 81 : 256

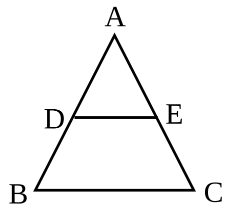


41. In ΔABC if $\angle B = 90^0$, AC = 13 cm and AB = 5 cm then BC is equal to __________

a) 10 cm b) 11 cm c) 12 cm d) 18 cm

42. In ΔABC if area of ΔABC = 54 cm, BC = 3 cm, EF = 4 cm then area of ΔDEF is _______

a) 90 cm^2 b) 96cm^2 c) 94 cm^2 d)92 cm^2

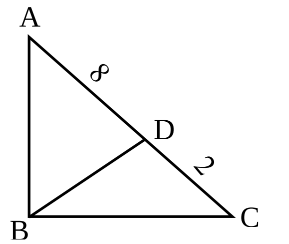


43. In ΔABC if DE‖BC AD = 2 cm, DB = 3 cm and AE = 3 cm then EC is equal to _______

a) 3.5 cm b) 4.5 cm d)) 4.6 cm d) 5.4 cm

44. In ΔABC if AB = 6 cm , BC = 8cm, AC = 10 cm then value of $\angle B$ is _________

a) 120^0 b) 90^0 c) 60^0 d) 30^0



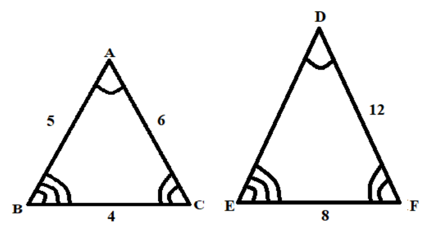
45. In ΔABC $\angle B = 90^0$ if AD = 8 cm, CD = 2 cm then BD is ___________

a) 4 cm b) 8 cm c) 10 cm d) 16 cm

46. A 6m tall pole casts a shadow of length 4m on the ground. At the same time if a building standing next to it, casts a shadow of length 28m then the height of the building is ____________

a) 48m b) 42m c) 40m d) 36m

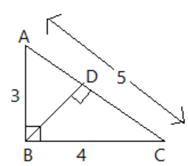
47. In the figure if $\Delta ABC \sim \Delta DEF$ then length of DE is ________



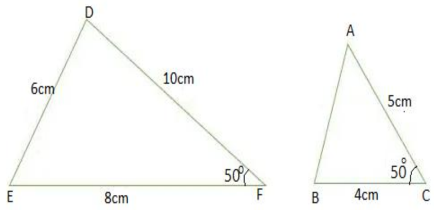
a) 15 cm b) 12 cm c) 10 cm d) 8 cm

48. In triangle ABC if $\angle B = 90^0$, then AD =

a) 4cm b) 3.2cm c) 2.8cm d) 1.8cm

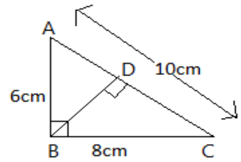


49. In the figure $\Delta DEF \sim \Delta ABC$ and $\angle F = \angle C = 50^0$ then length of AB is ____________



a) 8cm b) 6cm c) 4cm d) 3cm

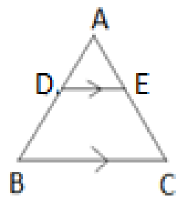
50. In triangle ABC if $\angle B = 90^0$, then CD = _________



a) 6.4cm b) 6.2cm c) 5.4cm d) 5.2cm

51. In triangle ABC if DE ∥ BC and AD:DB = 3:4 then

Area of ΔABC : Area of ΔDEF = _________



a) 9:49 b) 49:9 c) 1:49 d) 49:1

Unit 3: Pair of Linear Equations in Two Variables

52. If a pair of linear equations x + 2y = 3 and 2x + 4y = k are coincident then the value of 'k' is ___________

a) 3 b) 6 c) -3 d) -6

53. If $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are pair of linear equations which form intersecting lines then the ratio of their co-efficient is ___________

a) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ b) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ c) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ d) $\frac{a_1}{a_2} = \frac{b_1}{b_2}$

54. Number of solutions for the pair of Linear Equations 2x + 3y – 9 = 0 and 4x + 6y – 18 = 0 is ______

a) 0 b) 1 c) 2 d) Infinity

55. In the equation x + y = 7 if x = 3 then the value of y is ___________

a) 6 b) 5 c) 4 d) 3

56. If the pair of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are coincident then the correct relation among the following is ___________

a) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ b) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ c) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ d) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

57. If $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are pair of linear equations which have infinite solutions, then the correct relation among the following is ________

a) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ b) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ c) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ d) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

58. For what value of k will the graphs of the linear equations 2x – y + 4 = 0 and 6x - ky + 12 = 0 coincide?

a) $\frac{1}{3}$ b) $\frac{-1}{3}$ c) 3 d) -3

59. If the graphical representation of pair of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ is coincident then they have ___________

a) No solution b) Unique Solution c) Two solutions d) Infinitely many solutions

60. If the graphical representation of the pair of linear equations 4x + ky + 8 = 0 and 4x + 4y + 2 = 0 are parallel then the value of k is ___________

a) -4 b) 2 c) 4 d) 8

61. Types of lines represented by the pair of linear equations 6x + 2y – 4 = 0 and 2x + 4y -12 = 0 is _____

a) Intersecting b) Perpendicular c) Parallel d) Coincident

62. On solving the equation x + y = 4 and x - y = 2 the values of x and y will be __________

a) (3, 1) b) (2, 2) c) (1, 3) d) (10, 4)

63. In the given equations 2x + y = 5 and x – y = 1 the values of x and y will be _________

a) (3,2) b) (2, 1) c) (1, 2) d) (2, 3)

64. In the equation 2x + y = 8 if x = 3 then the value of y is ____________

a) 4 b) 3 c) 2 d) 1

65. If the pair of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are consistent then the number of solutions is _________

a) 0 b) 1 c) 2 d) Infinite

66. The value of $\frac{c_1}{c_2}$ in the pair of linear equations 3x + 2y = 5 and 2x – y – 6 = 0 is _______

a) $\frac{-5}{6}$ b) $\frac{-6}{5}$ c) $\frac{5}{6}$ d) $\frac{3}{2}$

67. If x + 2y – 3 = 0 and 5x + ky + 7 = 0 are a pair of linear equations which have no solution then the value of k is _________

a) 10 b) 6 c) 3 d)1

68. If the pair of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are consistent then their graphical representation is ___________

a) Parallel b) Coincident c) Intersecting d) Intersecting or Coincident

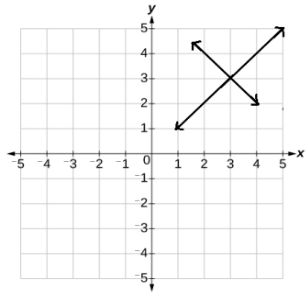
69. Number of solutions for the pair of linear equations x + y = 0 and x + y = 3 is _________

a) One solution b) Two solutions c) No solutions d) Infinite Solutions

70. In the equation 3x + y = 10 if y = 4 then the value of x is ___________

71. 0 b) 1 c) 2 d) 3

72. In the given graphical representation, the solution to the pair of linear equations is ______



a) (3,3) b) (2,3) c) (3,2) d) (4,4)

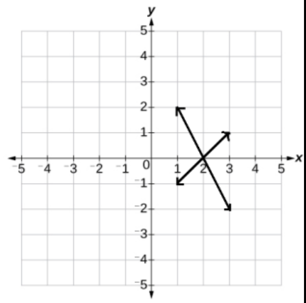
73. If y = 5 in the linear equation y = 2x -3 then the value of x is ______

a) 2 b) 3 c) 4 d) 5

74. The solution to the pair of linear equations 2x – y = 2 and x -y = 0 is

a) (4,4) b) (3,3) c) (2,2) d) (1,1)

75. The solution for the given pair of linear equations from the graph is ______



a) (0,2) b) (2,0) c) (0,0) d) (2,2)

76. If the line formed by the linear equation 2x – y = 5 passes through the point (3, a) then the value of 'a' is _____________

a) 0 b) 1 c) 2 d) -1

77. The solution to the pair of linear equations x + y = 3 and x + y = -7 is _________

a) One Solution b) Two Solutions c) Infinite Solutions d) No Solutions

78. If the graphical representation of the equations x + 4y = 5 and 3x + 2ky + 15 = 0 are parallel then the value of 'k' is __________

a) 3 b) 4 c) 6 d) 12

79. The value of x and y which satisfies the equation 4x – 3y = 5 is ________

a) x=1, y=-1 b) x=2, y=1 c) x=3, y=2 d) x=2, y=-2

80. The number of solutions for the pair of linear equations 3x + 4y = 5 and 9x + 12y = 15 is ________

(a) Two Solutions (b) One Solution

(c) Infinitely many Solutions (d) No Solutions

Unit 4: Circles

81. A straight line which intersects a circle at two points is called _____

a) Secant b) Tangent c) Radius d) Perpendicular Line

82. The number of points in which a tangent touches a circle are _______

a) 0 b) 1 c) 2 d) Infinite

83. The number of tangents that a circle can have is _____

a) 1 b) 2 c) 3 d) Infinite

84. The maximum number of parallel tangents that a circle can have are ____

a) 1 b) 2 c) 4 d) Infinite

85. The common point between the circle and the tangent of a circle is ________

a) Centre b) Point of Contact c) External Point d) None of these

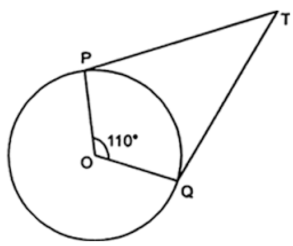
86. The length of the tangent drawn to a circle of radius 3 cm from a distance 5 cm from its centre is _________

a) 3 cm b) 4 cm c) 5 cm d) 6 cm

87. If the length of the tangent drawn from an external point Q to a circle is 24 cm and the distance between the point Q and centre of the circle is 25 cm then the measure of the radius is ________

a) 7 cm b) 12 cm c) 15 cm d) 24.5 cm

88. In the figure $\angle POQ = 110^0$. If TP and TQ are the tangents to the circle with 'O', then the measure of $\angle PTQ$ is _________



a) 60^0 b) 70^0 c) 80^0 d) 90^0

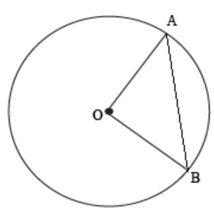
89. If the angle between the tangents PA and PB drawn from an external point 'P' to a circle with centre 'O' is 80^0 then measure of $\angle POA$ is ______

a) 40^0 b) 50^0 c) 80^0 d) 100^0

90. If the length of the tangent drawn from an external point 'A', 5 cm away from the centre of the circle is 4 cm, then the length of the radius is ________

a) 5 cm b) 4.5 cm c) 4 cm d) 3 cm

91. In the figure 'O' is the centre of the circle. If $\angle AOB = 100^0$ then $\angle OAB$ is equal to ___________



a) 80^0 b) 50^0 c) 40^0 d) 30^0

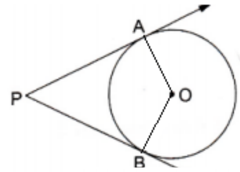
92. The angle between the tangent and the radius drawn at the point of contact is __________

a) 45^0 b) 60^0 c) 80^0 d) 90^0

93. The maximum number of tangents that can be drawn to a circle from an external point is _____

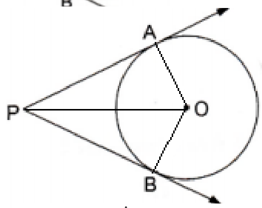
a) 0 b) 1 c) 2 d) Infinite

94. In the figure if PA and PB are tangent to the circle with centre 'O' then $\angle AOB +$ $\angle APB =$ ______



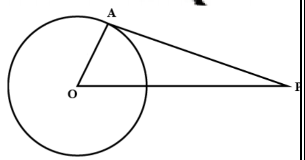
a) 90^0 b) 120^0 c) 180^0 d) 360^0

95. In the figure 'O' is the centre of the circle, PA and PB are tangents. If $\angle AOB = 100^0$ then measure of $\angle APO$ is ___________



a) 90^0 b) 80^0 c) 50^0 d) 40^0

96. In the figure 'O' is the centre of the circle, PA is the tangent. If $\angle APO = 50^0$ then $\angle APO =$ ___________

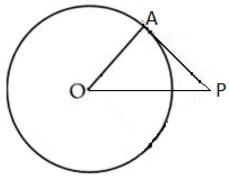


a) 60^0 b) 50^0 c) 40^0 d) 30^0

97. The maximum number of tangents that can be drawn to circle at a point on it is __________

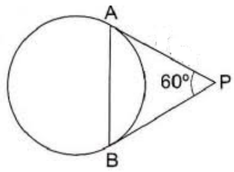
a) 0 b) 1 c) 2 d) Infinite

98. In the figure 'O' is the centre of the circle. If OA = PA then $\angle AOP =$ _________



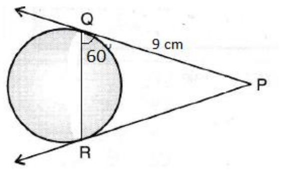
a) 50^0 b) 45^0 c) 40^0 d) 30^0

99. In the figure PA and PB are tangents to the circle. If $\angle APB = 60^0$ then ΔAPB is ______.



a) Isosceles Triangles b) Equilateral Triangle
c) Scalene Triangle d) Right Angled Triangle

100. In the figure PQ and PR are the tangents. If $\angle PQR = 60^0$ and PQ = 9 cm then the length of the chord QR is ________

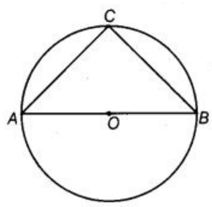


a) 6 cm b) 7 cm c) 8 cm d) 9 cm

101. The tangents drawn at the end points of the diameter of a circle ______

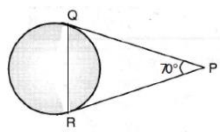
a) Intersect each other b) Coincide with each other
c) Parallel to each other d) Perpendicular to each other

102. In the figure 'O' is centre of the circle. Measure of $\angle ACB$ is __________



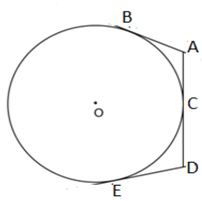
a) 45^0 b) 60^0 c) 90^0 d) 100^0

103. In the figure PQ and PR are the tangents. If $\angle QPR = 70^0$ then $\angle PQR =$ ________



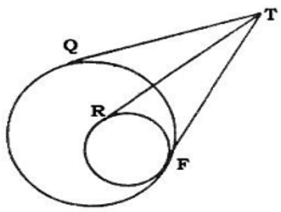
a) 70^0 b) 65^0 c) 55^0 d) 50^0

104. In the figure AB, AD and DE are the tangents to the circle. If AB = 3 cm and DE = 4 cm then the length of AD is ________



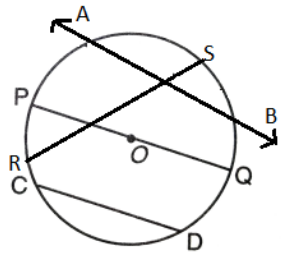
b) 8 cm b) 7 cm c) 6 cm d) 5 cm

105. In the figure TQ and TF are the tangents to the bigger circle and TR and TF are the tangents to the smaller circle. If TQ = 8 cm the TR = ___________



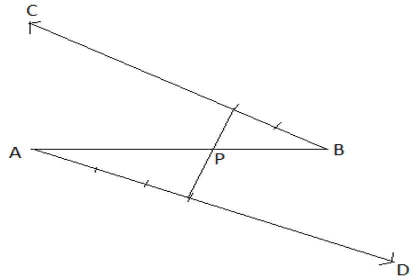
a) 10 cm b) 9 cm c) 8 cm d) 6 cm

106. In the figure if 'O' is the centre of the circle then the longest chord is _________



a) AB b) CD c) PQ d) RS

Unit 5: Constructions



106. In the figure the ratio in which the point 'P' divides the line segment AB is ________

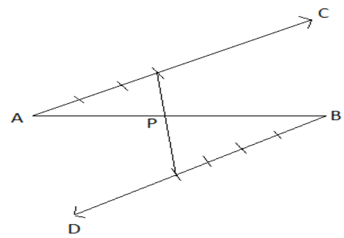
a) 3 : 2 b) 2 : 3 c) 2 : 1 d) 3 : 1

107. If a point 'P' divides a line segment AB such that $\frac{PB}{AB} = \frac{3}{7}$ then the ratio of AP : PB will be __________

a) 4 : 7 b) 7 : 4 c) 7 : 3 d) 4 : 3

108. To construct a triangle similar to ΔABC, given BC = 4.5 cm, $\angle B$ = 45^0, $\angle C$ = 60^0 and the ratio of the corresponding sides is $\frac{3}{7}$ then the given line segment BC should be divided in the ratio ______

a) 3 : 4 b) 3 : 7 c) 3 : 10 d) 4 : 7

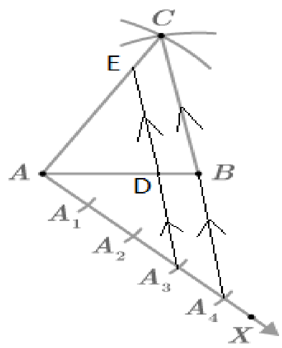


109. In the figure the ratio in which the point 'P' divides the line segment AB is ________

a) 3 : 2 b) 3: 4 c) 4 : 3 d) 2 : 3

110. In order to divide a given line segment in the ratio 3 : 5, the number of arcs to be constructed on the line forming an acute angle with the given line segment is _______.

a) 3 b) 5 c) 8 d) 10

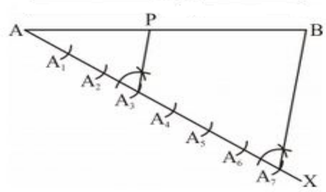


111. In the given figure to construct ΔABC similar to ΔADE , the ratio of the corresponding sides will be _______

a) $\frac{7}{3}$ b) $\frac{3}{4}$ c) $\frac{4}{3}$ d) $\frac{3}{7}$

112. If two tangents with angles between them to be 60^0 are to be constructed from an external point, then the angle between the radii should be ________

a) 60^0 b) 75^0 c) 90^0 d) 120^0



113. In the given figure the ratio in which the point 'P' divides the line segment AB is _________

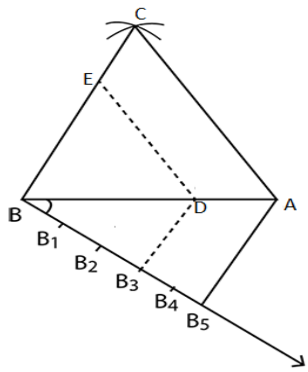
a) 4 : 3 b) 3 : 4 c) 4 : 7 d) 7 : 4

114. To construct tangents to a circle from an external point such that the angle between the tangents is 100^0 then the angle between the radii should be _______

a) 100^0 b) 90^0 c) 80^0 d) 50^0

115. Number of tangents that can be drawn to a circle from its non-centric end of a radii is ______

a) 1 b) 2 c) 3 d) Infinite



116. On constructing $\Delta ABC \sim \Delta ADE$ the ratio of the corresponding sides of ΔADE are $\frac{3}{5}$ times the corresponding sides of ΔABC. If AB=5cm, AC = 6cm and BC = 7cm then the length of sides BD and DE of ΔADE (By Calculations)

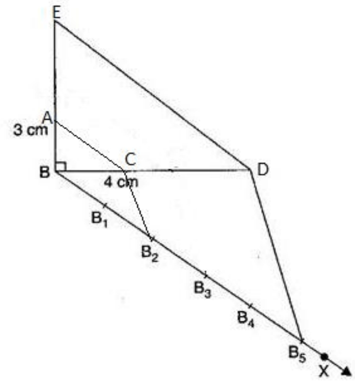
a) 2cm, 3cm b) 3cm, 3.6cm

c) 3cm, 4.6cm d) 4cm, 3.6cm

117. Number of tangents that can be drawn to a circle from a point inside it is ____________

a) 2 b) 1 c) 0 d) Infinite

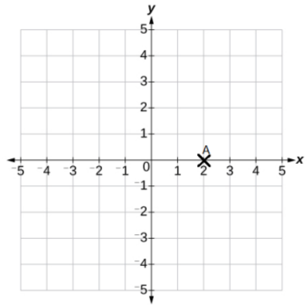
118. ΔABC is constructed similar to ΔBDE. In ΔABC $\angle B = 90^0$, AB=3cm and BC=4cm. If the corresponding sides of ΔBDE is $\frac{5}{2}$ times that of ΔABC then the length of BD and BE respectively are ______________ (By Calculations)



a) 10cm, 7.5cm b) 7.5cm, 10cm

c) 8cm, 12cm d) 12cm, 8cm

Unit 6: Coordinate Geometry



119. The distance of the point P(4,3) from the x – axis is ________

a) 2 units b) 3 units c) 4 units d) 5 units

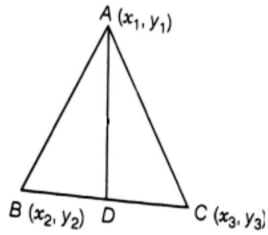
120. In the given graph the coordinates of the point A is ________

a) (-1, 0) b) (1, -1) c) (0, 2) d) (2, 0)

121. The coordinates of the midpoint which divides the line joining A (x_1, y_1) and B (x_2, y_2) is ________

a) $\left(\frac{x_1+y_1}{2}, \frac{x_2+y_2}{2}\right)$ b) $\left(\frac{x_2-x_1}{2}, \frac{y_2-y_1}{2}\right)$

b) $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$ d) $\left(\frac{x_1-x_2}{2}, \frac{y_1-y_2}{2}\right)$



122. In the given figure if D is the midpoint of BC, then the coordinates of D are _________

a) $\left(\frac{x_2+x_3}{2}, \frac{y_2+y_3}{2}\right)$ b) $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

c) $\left(\frac{x_1+x_3}{2}, \frac{y_1+y_3}{2}\right)$ d) $\left(\frac{x_2+y_3}{2}, \frac{y_2+x_3}{2}\right)$

123. The distance of the point P(5,2) from the y – axis is _________

a) 2 units b) 4 units c) 5 units d) 7 units

124. The co-ordinates of the origin are _________

a) (0,0) b) (0,1) c) (1,0) d) (1,1)

125. The formula to find out the distance between the points (x_1, y_1) and (x_2, y_2)

a) $\sqrt{(x_1 + x_2)^2 + (y_1 + y_2)^2}$ b) $\sqrt{(x_1 + x_2)^2 - (y_1 + y_2)^2}$

c) $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ d) $\sqrt{(x_2 - x_1)^2 - (y_2 - y_1)^2}$

126. The distance between the origin and the point (x, y) is _________

a) $\sqrt{x^2 + y^2}$ b) $\sqrt{x^2 - y^2}$ c) $\sqrt{(x + y)^2}$ d) $\sqrt{(x - y)^2}$

127. The formula to find out the area of the triangle whose vertices are A (x_1, y_1), B (x_2, y_2) and C (x_3, y_3) is _____________

a) $\frac{1}{2}\lfloor x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\rfloor$

b) $\frac{1}{2}\lfloor x_1(y_2 - y_3) - x_2(y_3 - y_1) - x_3(y_1 - y_2)\rfloor$

c) $\frac{1}{2}\lfloor x_1(y_2 + y_3) + x_2(y_3 + y_1) + x_3(y_1 + y_2)\rfloor$

d) $\frac{1}{2}\lfloor x_1(y_2 + y_3) - x_2(y_3 + y_1) - x_3(y_1 + y_2)\rfloor$

128. The distance between the origin and the point (3, 4) is ____________

a) 3 units b) 4 units c) 5 units d) 6 units

129. The co-ordinates of the midpoint of the line joining the points A (1, 4) and B (3, 6) is _______

a) (5,2) b) (2,5) c) (4,10) d) (10, 4)

130. The distance between the origin and the point (p, q) is _______

a) $\sqrt{p^2 X\, q^2}$ b) $\sqrt{p^2 - q^2}$ c) $\sqrt{(p+q)^2}$ d) $\sqrt{p^2 + q^2}$

131. The distance between the origin and the point (4, -3) is ________

a) 5 units b) 4 units c) 3 units d) 1 unit

132. The distance between the origin and the point (12, 5) is ___________

a) 13 units b) 12 units c) 7 units d) 5 units

133. The distance of the point P (5,3) from x axis and y axis is _________

a) 5 units, 3 units b) 3 units, 5 units

c) 4 units, 3 units d) 5 units, 2 units

134. The distance between the origin and the point (0,4) is __________

a) 2 units b) 4 units c) 8 units d) 16 units

135. The distance of the point (-4, -7) from the y axis is _________

a) 4 units b) 7 units c) 11 units d) $\sqrt{65}$ units

136. The distance between the points (2,3) and (6,6) is _________

a) 7 units b) 5 units c) 4 units d) 3 units

137. The coordinates of the point on the x axis will be in the form ________

a) (0, y) b) (x,0) c) (0,0) d) (x,y)

138. The co-ordinates of the point of intersection of the x-axis and y-axis is _____

a) (1,0) b) (0,1) c) (0,0) d) (1,1)

139. Ordinate of all points on the x-axis is _________

a) 0 b) 1 c) 2 d) 3

140. Abscissa of all points on the y-axis is _______

a) 3 b) 2 c) 1 d) 0

141. The coordinates of the points which divides the line segment joining the points (x_1, y_1) and (x_2, y_2) internally in the ratio $m_1 : m_2$ is ___________

a) $\left(\frac{m_1x_2+m_2x_1}{m_1+m_2}, \frac{m_1y_2+m_2y_1}{m_1+m_2}\right)$ b) $\left(\frac{m_1x_2-m_2x_1}{m_1-m_2}, \frac{m_1y_2-m_2y_1}{m_1-m_2}\right)$

c) $\left(\frac{m_1x_2+m_2x_1}{m_1-m_2}, \frac{m_1y_2+m_2y_1}{m_1-m_2}\right)$ d) $\left(\frac{m_1x_2-m_2x_1}{m_1+m_2}, \frac{m_1y_2-m_2y_1}{m_1+m_2}\right)$

142. Which of the following point is on the x-axis?

a) (2,0) b) (0,2) c) (2,3) d) (0, -2)

143. Which of the following point is on the y-axis?

a) (3,0) b) (0, -4) c) (-2,0) d) (4,6)

144. If the midpoint of the line joining the coordinates A (5 , -2) and B(a , b) is the origin then the value of 'a' and 'b' is ____________

a) (5,-2) b) (-5,2) c) (0,0) d) (5,5)

145. If A (2,3) , B (4, k) and C(6,-3) are collinear then the value of 'k' is __________

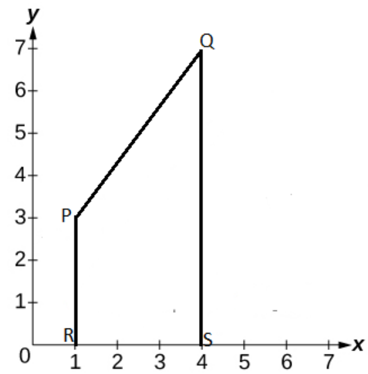
a) -1 b) 0 c) 1 d) 2

146. If A(1,1) B(0,0) and C(a,b) then the correct relation among the following is __________

a) a=2b b) a=b c) b=2a d) a=-b

147. In the given figure the length of PQ IS

a) 3 units b) 4 units c) 5 units d) 6 units



Unit 7 : Quadratic Equations

148. If the roots of the equation $x^2 + 6x + k = 0$ are equal then the value of 'k ' is equal to ____

a) 9 b) – 9 c) 8 d) 5

149. The standard form of quadratic equation is ______

a) $ax^2-bx+c=0$ b) $ax^2+bx+c=0$ c) $ax^2-bx-c=0$ d) $ax^2+bx-c=0$

150. If one root of the quadratic equation $(x-2)(x+1)=0$ is 2 then the other root is ________

a) 0 b) -1 c) 1 d) 3

151. The roots of the quadratic equation $ax^2+bx+c=0$ are _________

a) $\frac{-b \pm\sqrt{b^2-4ac}}{2a}$ b) $\frac{-b \pm\sqrt{a^2-4bc}}{2a}$ c) $\frac{-b \pm\sqrt{b^2+4ac}}{2a}$ d) $\frac{-b \pm\sqrt{a^2+4bc}}{2a}$

152. If the roots of the quadratic equation $x^2 - kx + 4 = 0$ are equal then the value of 'k' is _________

a) ± 2 b) ± 4 c) ± 8 d) ± 16

153. The discriminant of the quadratic equation $x^2 +5x + 6 = 0$ is _________

a) 49 b) 25 c) 24 d) 1

154. The roots of the equation $x^2 - x - 6 = 0$ are ___________

a) (-2,3) b) (-2,-3) c) (2,3) d) (2,-3)

155. The roots of the equation $(x-1)(x-2)=0$ are __________

a) -1,-2 b) 1,2 c) -1,2 d) -2,1

156. The discriminant of the quadratic equation $ax^2+bx+c = 0$ is __________

a) $b^2 + 4ac$ b) $b^2 - 4ac$ c) $\sqrt{b^2 + 4ac}$ d) $\sqrt{b^2 - 4ac}$

157. The standard form of the quadratic equation $x(x+1) = 30$ is ________

a) $x^2 + x =30$ b) $x^2 + x - 30 = 0$ c) $x^2 - x - 30 = 0$ d) $x^2 - x =30$

158. If the roots of the quadratic equation are real then the value of its discriminant is _________

a) Less than zero b) Greater than or equal to zero c) -1 d) None of the above

159. If the quadratic equation $ax^2+bx+c=0$ does not have real roots then $b^2 - 4ac$ is ________

a) Less than zero b) Greater than zero c) Equal to zero d) Equal to one

160. If the roots of the quadratic equation $ax^2+bx+c=0$ are equal then the value of $b^2 - 4ac$ is ____

a) Less than zero b) Greater than zero c) Equal to zero d) Equal to one

161. The roots of the equation $x^2 -5x + 6 = 0$ are _______

a) 2,3 b) -2,3 c) 2,-3 d) -2,-3

162. The roots of the equation $x^2 - 6x = 0$ are ______

a) (0,-6) b) (0,6) c) (6,-6) d) (-6,-6)

163. If (x+4) (x-4) =9 then the value of x is ________

a) ± 5 b) $\pm \frac{1}{5}$ c) 5, 5 d) 4, -4

164. The quadratic equation whose roots are equal to 2 and -1 is ____________

a) $x^2 + 2x - 2 = 0$ b) $x^2 + x + 2 = 0$ c) $x^2 - 2x + 2 = 0$ d) $x^2 - x - 2 = 0$

165. If the roots of the equation $kx^2 + 2x + 3 = 0$ are equal the value of 'k' is _________

a) $\frac{1}{3}$ b) $\frac{-1}{3}$ c) 3 d) -3

166. The discriminant of the equation $2x^2 - x - 8 = 0$ is _______

a) -127 b) -65 c) -15 d) 65

167. If the discriminant of a quadratic equation $ax^2+bx+c=0$ is -3 then the roots of the equation are ____

a) Real and distinct b) No real roots

c) Roots are equal d) None of the above

168. The maximum number of roots that a quadratic equation can have is ______

a) 1 b) 2 c) 3 d) Infinite

169. If one root of the equation $2x^2+kx+4=0$ is 2 then the value of 'k' is __________

a) 6 b) -1 c) -2 d) -6

170. The standard form of the quadratic equation $x^2=3x+2$ is __________

a) $x^2-3x+2=0$ b) $x^2+3x-2=0$ c) $x^2-3x-2=0$ d) $x^2+3x+2=0$

171. If one root of the equation (3x - 2)(x+3) = 0 is -3 then the other root is _________

a) $\frac{2}{3}$ b) $\frac{3}{2}$ c) $\frac{-2}{3}$ d) $\frac{-3}{2}$

172. The standard form of the equation $2x^2 - 5(4x-1) = 0$ is ____________

a) $2x^2-20x-5=0$ b) $2x^2-20x+5= 0$ c) $2x^2+20x-5=0$ d) $2x^2+20x+5= 0$

173. The nature of the roots of the equation $2x^2 - x - 3 = 0$ is _________

a) Roots are equal b) Roots are real and distinct

c) No real roots d) Roots are irrational

174. The sum of the squares of two consecutive even numbers is 164. Its mathematical representation is _____

a) $x^2+(x+1)^2=164$ b) $x^2+(x+2)^2=164$ c) $[x+(x+2)]^2=164$ d) $x^2+(2x)^2=164$

175. The sum of the squares of two consecutive odd numbers is 130. Its mathematical representation is _____

a) $x^2+(x+1)^2=130$ b) $x^2+(2x)^2=130$ c) $x^2+(x+2)^2=130$ d) $(x+2x)^2=130$

Unit 8: Introduction to Trigonometry

176. The value of sin 60^0 x cos 30^0 is ___________

a) $\frac{1}{4}$ b) $\frac{\sqrt{3}}{4}$ c) $\frac{3}{4}$ d) $\frac{1}{2}$

177. The value of sin $(90^0-\theta)$ is __________

a) cos θ b) tan θ c) sec θ d) cot θ

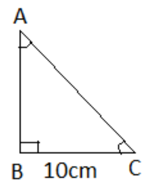
178. The value of tan 45^0 is ____________

a) $\sqrt{3}$ b) 0` c) 1 d) $\frac{1}{\sqrt{3}}$

179. The value of tanθ - cot$(90^0- \theta)$ is _____________

a) 1 b) 0 c) -1 d) $\frac{1}{2}$

180. In the figure if $\angle B = 90^0$, $\angle A = \angle C$ and BC = 10 cm then the value of tan A is _________



a) 0 b) 1 c) $\sqrt{3}$ d) $\frac{1}{\sqrt{3}}$

181. If 15 cot A = 8 then the value of tanA is ____________

a) 0 b) $\frac{8}{15}$ c) 1 d) $\frac{15}{8}$

182. If $\sqrt{3}$ tanθ = 1 then the value of θ is __________

a) 30^0 b) 45^0 c) 60^0 d) 90^0

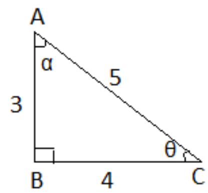
183. The value of tan 45^0 + cot 45^0 is __________

a) 0 b) 1 c) 2 d) N.D.

184. The value of cot (90^0-30^0) is _____________

a) $\frac{1}{\sqrt{3}}$ b) $\frac{1}{2}$ c) 1 d) $\sqrt{3}$

185. In the figure if $\angle B = 90^0$, $\angle C = \theta$, $\angle A = \alpha$ then the value of sin α + cos θ is _______



a) $\frac{6}{5}$ b) $\frac{8}{5}$ c) $\frac{7}{5}$ d) $\frac{3}{4}$

186. The value of $\frac{\sin 80^0}{\cos 10^0}$ is ______________

a) -1 b) 0 c) 1 d) N.D.

187. If 3tan θ = 3 then the value of acute angle θ is ____________

a) 90^0 b) 60^0 c) 45^0 d) 30^0

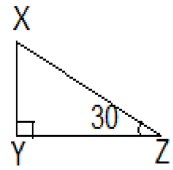
188. The value of $\cos^2\theta + \cos^2(90^0 - \theta)$ is __________

a) 2 b) 1 c) 0 d) -1

189. $(1+\cos\theta)(1-\cos\theta) =$

a) $\sin^2\theta$ b) $\cos^2\theta$ c) $\sec^2\theta$ d) $\tan^2\theta$

190. In the given figure if $\angle Y = 90^0$, $\angle Z=30^0$ and XY=5cm then the length of XZ is ______



a) 5cm b) 10cm c) 15cm d) 20cm

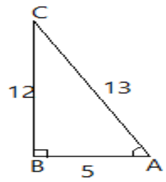
191. If $\sin 18^0 = \cos A$ and A is an acute angle then $\angle A =$ _______

a) 90^0 b) 82^0 c) 72^0 d) 36^0

192. If 5 sin A = 3 then cosec A = ____________

a) $\frac{3}{5}$ b) $\frac{4}{5}$ c) $\frac{5}{4}$ d) $\frac{5}{3}$

193. In triangle ABC if $\angle B = 90^0$ then tan A = _____________



a) $\frac{13}{5}$ b) $\frac{5}{12}$ c) $\frac{12}{5}$ d) $\frac{5}{13}$

194. $\frac{1-\sin^2 A}{1-\cos^2 A}$ = ___________

a) $\cot^2 A$ b) $\tan^2 A$ c) $\sec^2 A$ d) $\mathrm{cosec}^2 A$

195. In triangle ABC if $\angle A = 90^0$ then sin B = _____________

a) $\frac{AC}{AB}$ b) $\frac{BC}{AC}$ c) $\frac{AC}{BC}$ d) $\frac{AB}{BC}$

196. The value of $\cos^2 17^0 - \sin^2 73^0$ is ___________

a) 1 b) $\frac{1}{3}$ c) 0 d) -1

197. The value of $\tan 10^0 \times \tan 80^0$ is _________

a) -1 b) 1 c) 0 d) $\sqrt{3}$

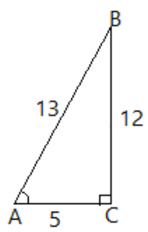
198. $\frac{1-\tan^2 45}{1+\tan^2 45}$ = ______________

a) 0 b) 1 c) -1 d) $\frac{1}{2}$

199. $\frac{\tan 55^0}{\cot 35^0}$ = ______________

a) 0 b) 1 c) -1 d) $\frac{1}{\sqrt{3}}$

200. In the figure if $\angle C = 90^0$ then cot A = _________



a) $\frac{12}{13}$ b) $\frac{5}{13}$ c) $\frac{13}{5}$ d) $\frac{5}{12}$

201. If $\sin\alpha = \frac{1}{2}$ and $\cos\beta = \frac{1}{2}$ then $\alpha+\beta =$ ___________

a) 0^0 b) 30^0 c) 60^0 d) 90^0

202. The trigonometric ratio equivalent to $\frac{1}{\sqrt{3}}$ is ____________

a) $\sin 30^0$ b) $\cos 60^0$ c) $\tan 30^0$ d) $\tan 60^0$

203. The value of $10\sin^2\theta + 10\cos^2\theta$ is ______________

a) 10 b) 1 c) 0 d) $\frac{1}{10}$

204. $\cos 48^0 - \sin 42^0$ = _________

a) 6 b) 1 c) 0 d) -1

205. $\sec(90^0\text{-}A)$ = ___________

a) cos a b) sin a c) cot a d) cosec a

206. $\frac{cosec\ 31^0}{sec\ 59^0}$ = ___________

a) 0 b) $\frac{1}{2}$ c) 1 d) -1

207. The value of $\sin^2 60^0$ is _______________

a) $\frac{\sqrt{3}}{2}$ b) $\frac{3}{4}$ c) $\frac{4}{3}$ d) $\frac{2}{\sqrt{3}}$

208. $1+\cot^2 A$ = _____________

a) $cosec^2A$ b) $\cos^2 A$ c) $\sec^2 A$ d) $\tan^2 A$

209. $\sec^2 A$ = ______________

a) $1+ \cot^2 A$ b) $1+ \tan^2 A$ c) $1+ cosec^2 A$ d) $1+ \cos^2 A$

210. $\sec^2 A - \tan^2 A$ = ____________

a) 0 b) 1 c) -1 d) 2

211. Among the following the trigonometric ratios the ratio whose value is 1 is ____________

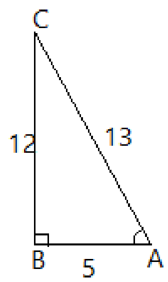
a) $\sin 30^0$ b) $\cos 30^0$ c) $\sin 0^0$ d) $\cos 0^0$

212. $\sin 30^0 + \cos 60^0$ = ____________

a) 1 b) 0 c) $\frac{1}{4}$ d) $\frac{1}{2}$

213. If 5 sec A = 11 then cosA = ___________

a) $\frac{11}{5}$ b) $\frac{5}{11}$ c) $\frac{1}{2}$ d) 1



214. In the figure if $\angle B = 90^0$ $\angle A = \theta$ (θ is an acute angle) then $\cos(90^0\text{-}\theta)$ = ______

a) $\frac{12}{13}$ b) $\frac{5}{13}$ c) $\frac{13}{5}$ d) $\frac{12}{13}$

215. If $2\cos\theta = 1$ then θ =

a) 90^0 b) 60^0 c) 45^0 d) 30^0

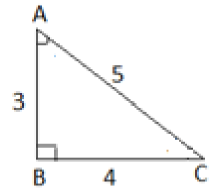
216. If $\sqrt{2}\cos\theta = 1$ then θ =

a) 30^0 b) 45^0 c) 60^0 d) 90^0

217. If $\sqrt{3}\tan\theta = 1$ then $\theta =$ __________

a) 90^0 b) 60^0 c) 45^0 d) 30^0

218. In the figure $\angle B = 90^0$, if $\angle A$ is an acute angle then $\sin(90^0 - A) =$

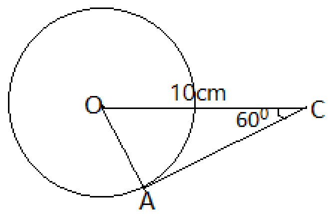


a) $\frac{3}{5}$ b) $\frac{4}{5}$ c) $\frac{5}{4}$ d) $\frac{5}{3}$

219. If $\cos A + \cos^2 A = 1$ then the value of $\sin^2 A + \sin^4 A$ is ______

a) 3 b) 2 c) 1 d) $\frac{1}{2}$

220. In the figure 'O' is the centre, AC is the tangent. If OC=10cm then the length of the radius OA= ___



a) $10\sqrt{3}$ cm b) $5\sqrt{3}$ cm

c) 5cm d) $4\sqrt{3}$ cm

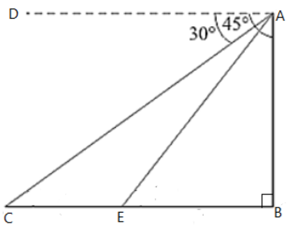
Unit 9: Some Applications of Trigonometry

221. If a pole of height $4\sqrt{3}$ m from the ground casts a shadow of length 4m, then its angle of elevation towards the sun is ___________

a) 30^0 b) 45^0 c) 60^0 d) 90^0

222. From a point on the ground 30m away from the foot of the tower, if the angle of elevation of the top of the tower is 45^0 then the height of the tower is _________

a) 60m b) 45m c) 30m d) $30\sqrt{3}$m



223. The angle of depression from point A are $\angle DAC = 30^0$, $\angle DAE = 45^0$ then the angle of elevation from point C is

a) 15^0 b) 30^0 c) 45^0 d) 75^0

224. A 10m long rope is tied from a pole of height 5m to the ground. The angle of elevation made by the rope with the ground is _________________

a) 15^0 b) 30^0 c) 45^0 d) 60^0

225. If the angle of elevation of the sun is 45^0 then the length of the shadow cast by a 15m tall building is _____________

a) 25m b) 20m c) 15m d) 10m

226. If the height of the pole and the shadow cast by it are in the ratio $\frac{1}{\sqrt{3}}$ then the angle of elevation formed is ___________

a) 30^0 b) 45^0 c) 60^0 d) 90^0

227. If the length of the shadow cast by a building is 20m and angle of elevation from the tip of the shadow to the top of the building is 60^0 then the height of the building is __________

a) 20m b) $20\sqrt{3}$m c) 25m d) $30\sqrt{3}$m

228. If a pole of height 2m casts a shadow of length $2\sqrt{3}$m, then the angle of elevation towards the tip of the pole from the tip of the shadow is __________

a) 30^0 b) 45^0 c) 60^0 d) 90^0

229. If the height of a pillar is equal to the length of the shadow cast by it then the angle of elevation of the top of the pillar is _____________

a) 30^0 b) 45^0 c) 60^0 d) 90^0

230. The angle of elevation formed by the shadow of a pole to the top of the pole is 30^0. If the height of the pole is 100m then the length of the shadow cast by it is __________

a) $100\sqrt{3}$m b) 100m c) $100(\sqrt{3}-1)$m d) $\frac{100}{\sqrt{3}}$m

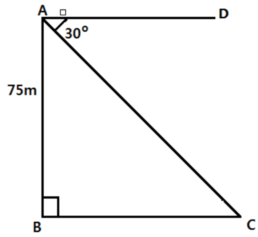
231. From the point 15m away from the foot of the pole of height 50m the angle of elevation to the top of the pole is _________________.

a) 15^0 b) 30^0 c) 45^0 d) 60^0

232. A kite is flying at a height of 75m above the ground. If the inclination of the string of the kite with the ground is 60^0 then the length of the string is ______________

a) $50\sqrt{2}$ m b) $50\sqrt{3}$ m c) $\frac{50}{\sqrt{2}}$m d) $\frac{50}{\sqrt{3}}$m

233. If the angle of depression of a ship as observed from the top of a 75m high light house is 30^0 then the distance between the ship and the light house is ___________



a) $25\sqrt{3}$ m b) $75\sqrt{3}$ m c) $\frac{75}{\sqrt{2}}$m d) $75\sqrt{2}$ m

234. A ladder placed along the wall makes an angle of 60^0 with the the ground. If the foot of the ladder is 8m away from the wall then the height of the wall is ________

a) 4m b) 8m c) $8\sqrt{2}$m d) 16m

235. The angle of depression of a car which is at a distance of $10\sqrt{3}$m from the foot of the building which is 10m tall is ______________

a) 30^0 b) 45^0 c) 60^0 d) 90^0

236. If the angle of depression of a boat from the top of a bridge of height 50m is 30^0, then the distance of the boat from the bridge is ______________

a) $50\sqrt{3}$ m b) 50m c) $25\sqrt{3}$ m d) 25m

Unit 10 : Statistics

237. The empirical relationship between the three measures of central tendency is _____

a) 2 Median = Mode +3Mean b) 3Median = Mode + 2 Mean

c) Median = Mode + Mean d) Median = Mode – Mean

238. The median of the data 5,3,14,16,19 and 20 is __________

a) 14 b) 14.5 c) 15 d) 16

239. The midpoint of the class interval (10 – 25) is _______

a) 18 b) 17.5 c) 17 d) 15

240. The mean of the data 1, 2, 3, 4, 5 is _______

a) 15 b) 7.5 c) 3.5 d) 3

241. The mode of the following frequency distribution is ______

X	5	10	15	20	25
f	2	8	3	10	5

a) 25 b) 20 c) 15 d) 10

242. In the frequency distribution of grouped data if $\sum f_i x_i = 400$ and $\sum f_i = 20$ then its mean is _____

a) 20 b) 25 c) 40 d) 800

243. The median of the data 15, 17, 19, 14, 12 is __________

a) 17 b) 15 c) 14 d) 13

244. The mean of the first five prime numbers is _________

a) 5.7 b) 5.6 c) 5.5 d) 5

245. If for certain data the mean is 16 and median is 15 then the mode is equal to ________

a) 10 b) 11 c) 12 d) 13

246. The mode of the data 1, 0, 2, 2, 3, 1, 4, 5, 1, 0 is _________

a) 3 b) 2 c) 1 d) 0

247. If the point of intersection of 'less than ogive' and 'more than ogive' of a given frequency distribution is (30, 40) then the median will be __________

a) 30 b) 35 c) 40 d) 70

248. The value that repeats most often in given set of data is _________

a) Mean b) Median c) Mode d) None of the above

249. The mean of 50 and 20 is _________

a) 70 b) 35 c) 30 d) 20

250. Which among the following is not a measure of central tendency?

a) Mean b) Median c) Mode d) Range

251. If the mean of the data 11, 8, 9, 12 and x is 10 then the value of 'x 'is __________

a) 8 b) 9 c) 10 d) 11

252. In a group of data, the mode is ____________

a) Score which is repeated less number of times b) Middle Score

c) Most frequently repeated score d) None of the above

253. If the mode of 16, 15, 17, 16, 15, x,19, 17, 14, 8 is 15 then x = __________

a) 19 b) 15 c) 14 d) 8

254. If a certain group of data has its mean as 24 and mode as 12 then its median is _______

a) 25 b) 22 c) 20 d) 18

255. The mean of first 5 odd numbers is ____________

a) 4 b) 5 c) 6 d) 7

256. The size of the class interval (40-50) is _____________

a) 10 b) 40 c) 45 d) 50

257. The formula to calculate the mode is __________

a) $l + \left[\frac{f_1-f_0}{f_1-f_0-2f_2}\right]h$ b) $l + \left[\frac{2f_1-f_0}{f_1-f_0-f_2}\right]h$ c) $l + \left[\frac{f_1-f_0}{2f_1-f_0-f_2}\right]h$ d) $l + \left[\frac{f_1-f_0}{2f_1+f_0-2f_2}\right]h$

258. The class interval which contains the mode in the following frequency distribution

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	3	9	15	30	18	5

a) (20-30) b) (30-40) c) (40-50) d) (50-60)

259. In the given frequency distribution table if mode lies in the class interval (30-40) then which of the following is correct?

Class Interval	10-20	20-30	30-40	40-50	50-60
Frequency	5	8	x	4	2

a) $x < 8$ b) $x < 4$ c) $x < 5$ d) $x > 8$

260. In the following distribution table the class-interval which contains the mode is ________

Class Interval	10-15	15-20	20-25	25-30	30-35
Frequency	10	12	15	8	13

a) 15 b) 13 c) 12 d) 8

261. In the following distribution table the class-interval which contains the median is ______

Class Interval	Frequency	Cumulative Frequency
10-20	7	7
20-30	12	19
30-40	11	30
40-50	18	48
50-60	12	60

a) 20 – 30
b) 30 – 40
c) 40 – 50
d) 50 – 60

262. The formula to calculate the median is _____________

a) $l + \left[\frac{\frac{n}{2} - C_f}{f}\right]h$ b) $l + \left[\frac{\frac{n}{2} + C_f}{f}\right]h$ c) $l + \left[\frac{\frac{n}{4} - C_f}{f}\right]h$ d) $l + \left[\frac{\frac{n}{3} - C_f}{f}\right]h$

263. In the following frequency distribution table the value of 'l' when calculating the mode is ________

Class Interval	40-50	50-60	60-70	70-80	80-90
Frequency	7	10	8	6	5

a) 40 b) 50 c) 60 d) 70

264. The marks scored by a student in 6 subjects are 27, 30, 45, 60, 35 and x. If the mean of all scores is 42 then the value of x is ____________

a) 40 b) 42 c) 55 d) 52

Unit 11: Surface Areas and Volumes

265. Volume of a cylinder is 300 m^3. Volume of the cone whose radius and height is equal to that of the cylinder is _______________

a) $900m^3$ b) $600m^3$ c) $150m^3$ d) $100m^3$

266. Surface Area of a sphere whose radius is 7cm is ____________

a) $154cm^2$ b) 308 cm^2 c)616 cm^2 d) 770 cm^2

267. The formula to calculate the Curved Surface Area of the frustum of a cone is _________

a) $\pi(r_1^2 + r_2^2)l$ b) $\pi(r_1 - r_2)l$ c) $\pi(r_1 + r_2)l$ d) $\pi(r_1^2 - r_2^2)l$

268. Formula to calculate the Total Surface Area of a right circular cylinder is ______

a) πr^2h b) $2\pi r(r+h)$ c) $\pi r(r+h)$ d) $2\pi r^2(r+h)$

269. Formula to find the volume of a solid sphere ____________

a) $\frac{2}{3}\pi r^3$ b) $\frac{1}{3}\pi r^3$ c) $\frac{4}{3}\pi r^3$ d) $\frac{1}{3}\pi r^2$

270. Mathematical relationship between slant height (l), height (h) and radius (r) of a cone __________.

a) $l^2 = h^2 + r^2$ b) $l^2 = h^2 - r^2$ c) $l^2 = r^2 - h^2$ d) $l = \sqrt{h^2 - r^2}$

271. If the radius of the cone is 'r', height is 'h' then the slant height is l = ______

a) $\sqrt{h^2 - r^2}$ b) $\sqrt{r^2 - h^2}$ c) $\sqrt{h^2 + r^2}$ d) $\sqrt{(r+h)^2}$

272. Lateral Surface Area of a cube whose volume is 27 cm^3 is ____________

a) 36 cm^2 b) 54 cm^2 c) 63 cm^2 d)108 cm^2

273. A sphere of radius 'r' cm is melted to form a cone 'R' cm and height 'h' cm then the correct relation is ___________

a) $\frac{4}{3}\pi r^3 = \frac{1}{3}\pi R^3h$ b) $\frac{4}{3}\pi r^3 = \frac{1}{3}\pi R^2h$ c) $\frac{2}{3}\pi r^3 = \frac{1}{3}\pi R^2h$ d) $\frac{1}{3}\pi r^3 = \frac{4}{3}\pi R^2h$

274. Perimeter of a base of a cylinder is 24 cm, height is 8cm then the Curved Surface Areas will be __

a) 136 cm^2 b) 160 cm^2 c) 190 cm^2 d) 192 cm^2

275. A cuboid of dimensions 12cm x 6cm x 3cm is melted to form a cube, then the edge of each face of the cube is ___________.

a) 21cm b) 12cm c) 6cm d) 3cm

276. Volume of the frustum of a cone whose height is 'h' and radii of two circular ends are r_1 and r_2 is ______________

a) $\frac{1}{3}\pi h(r_1 + r_2 + r_1r_2)$ b) $\frac{1}{3}\pi h(r_1^2 + r_2^2 + r_1^2r_2^2)$

c) $\frac{1}{3}\pi h(r_1^2 + r_2^2 + r_1r_2)$ d) $\frac{1}{3}\pi h(r_1 + r_2 + r_1^2r_2^2)$

277. Curved Surface Areas of a cone whose radius of the base is 7cm, and slant height 10cm is ______

a) $110cm^2$ b) $210cm^2$ c) $220cm^2$ d) $240cm^2$

278. A metallic sphere of radius 'R' cm is melted to form a metallic wire of radius 'r' cm and length 'h' cm. The correct relation among the following is ________

a) $\frac{4}{3}\pi R^3 = \frac{1}{3}\pi r^2 h$ b) $\frac{4}{3}\pi R^3 = \pi r^2 h$ (c) $\frac{1}{3}\pi R^3 = \frac{4}{3}\pi r^2 h$ (d) $\frac{2}{3}\pi R^3 = \pi r^2 h$

279. A solid cone is melted to from a cylinder whose radius is equal to that of the cone. If the height of the cylinder is 5 cm, then the height of the cone is _______

a) 18cm b) 15cm c) 12cm d) 10cm

280. The ratio of the volumes of two spheres is 64:27 respectively. The ratio of their radii is ________

a) 3:4 b) 4:3 c) 9:16 d) 16:9

281. A Sphere of radius 'r' units is converted into a cone of height 'r' units. Radius of the cone is ____

a) r units b) 2r units c) 3r units d) 4r units

282. Total Surface Area of a solid hemisphere is __________

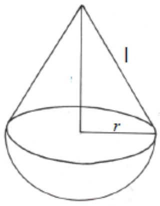
a) $4\pi r^2$ b) $3\pi r^2$ c) $2\pi r^2$ d) $\frac{4}{3}\pi r^2$

283. A pencil sharpened at one edge is a combination of _____________

a) Frustum of a cone and a cylinder b) Cone and cylinder

c) Cylinder and Hemisphere d) Cone and Hemisphere

284. A toy is prepared by mounting a cone on the hemisphere. Its Total Surface Area is ______________

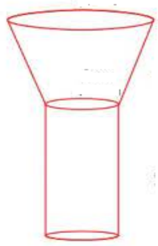


a) $3\pi r^2 + \pi rl$ b) $4\pi r^2 + \pi rl$ c) $2\pi r^2 + \pi rl$ d) $\frac{2}{3}\pi r^2 + \pi rl$

285. If the ratio of the radii of 2 spheres is 4:5 then the ratio of their areas is ___________

a) 4:5 b) 5:4 c) 16:25 d) 25:16

286. The combination of solids in this funnel is ______________



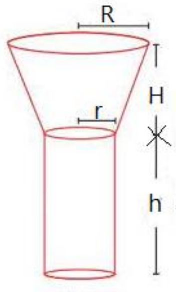
a) Cone and cylinder b) Frustum of a cone and cylinder

c) Cylinder and Hemisphere d) Cone and Cuboid

287. If the volume of two spheres is in the ratio 27:8 then the ratio of their radii is ______

a) 2:3 b) 3:2 c) 4:9 d) 9:4

288. The correct formula to find the volume of the given combination of solids is _______



a) $\frac{1}{3}\pi r^2 h + \frac{1}{3}\pi h(r^2+r^2+rr)$ b) $\frac{1}{3}\pi h(r^2+r^2+rr) + \pi r^2 h$

c) $\frac{1}{3}\pi h(r^2+r^2+r^2r^2) + \pi r^2 h$ d) $\frac{1}{3}\pi h(r^2+r^2+rr) + 2\pi rh$

289. Number of lead sheets each of radius 2 cm can made by melting a sphere of radius 4cm is _____________

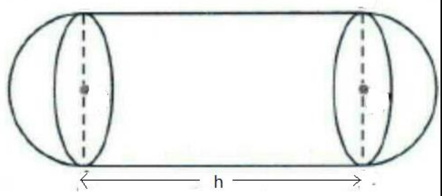
a) 1 b) 2 c) 4 d) 8

290. The Combination of solids in the capsule is _____________

a) 2 cylinders b) 2 hemispheres + cylinder

c) 2 spheres + cylinder d) 1 cylinder + 1 hemisphere

291. The surface area of the capsule whose radius is 'r' is ________



a) $2x2\pi r^2 + 2\pi rh$ b) $2x3\pi r^2 + 2\pi rh$

c) $2x2\pi r^2 + 2\pi r(r+h)$ d) $\frac{4}{3}\pi r^3 + \pi r^2 h$

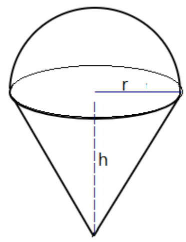
292. Total surface area of the cone whose radius is 'r', and slant height is 'l' is _____________

a) $\pi(r+l)$ b) $\pi r(r+l)$ c) $\pi l(r+l)$ d) $2\pi r(r+l)$

293. Volume of hemisphere whose radius 'r' units is ______________

a) $\frac{1}{3}\pi r^3$ b) $\frac{2}{3}\pi r^3$ c) $\frac{4}{3}\pi r^3$ d) $\frac{3}{2}\pi r^3$

294. The volume of this toy ______________



a) $\frac{2}{3}\pi r^3+\frac{1}{3}\pi r^2 h$ (b) $\frac{4}{3}\pi r^3+\frac{1}{3}\pi r^2 h$

(c) $\frac{1}{3}\pi r^3+\frac{1}{3}\pi r^2 h$ (d) $\frac{2}{3}\pi r^3+\frac{2}{3}\pi r^2 h$

295. The volume of the cuboid whose dimensions are (5 x 6 x 3) is __________

a)180 cubic units b) 120 cubic units

c) 90 cubic units d) cubic units [-c x9

296. Surface area of the sphere whose radius is 7cm is _______________

a) 616 cm^2 b) 432 cm^2 c) 343 cm^2 d) 312 cm^2

297. Curved surface area of a hemisphere whose radius is 7cm is ___________

a) 324cm^2 b) 316 cm^2 c) 312 cm^2 d) 308 cm^2

298. Total surface area of the hemisphere whose radius is 7cm is ______________

a) 412cm^2 b) 432 cm^2 c) 462 cm^2 d) 484 cm^2

299. Curved Surface Area of the cylinder whose radius is 7cm and height is 10 cm is __________

a) 220 cm^2 b) 410 cm^2 c) 432 cm^2 d) 440 cm^2

300. Total Surface Area of the water pipe whose radius is 'r' units and length is 'h' units ______

a) $2\pi r(r+h)$ b) $2\pi rh$ c) $\pi r^2+2\pi rh$ d) $\pi r(r+h)$

301. If the perimeter of the base of the cylinder is 88cm and the height is 10cm, then the volume of the cylinder is ______________

a) 1890π cm^3 b) 1940π cm^3 c) 1960π cm^3 d) 1960 cm^3

302. If the perimeter of the base of the cylinder is 22cm and height is 5cm then its Curved Surface Areas is ____________

a) 45π cm^2 b) 35π cm^2 c) 35πcm^2 d) 25π cm^2

303. Taking some clay, a cone is formed. It is cut parallel to its base with a knife. When the smaller cone is separated the Total Surface Area of the solid that is remaining is ________

a) $\pi(r_1 + r_2)l$

b) $\pi(r_1 + r_2)l+\pi r_1^2 + \pi r_2^2$

c) $\frac{1}{3}\pi h\,(r_1^2 + r_2^2 + r_1 r_2)$

d) $\pi[(r_1 + r_2)l+\pi r_1^2 + \pi r_2^2$

ANSWERS

Unit 1 : Arithmetic Progressions

1. d) 17 ($a_n = 4n + 5$

$a_3 = 4(3) + 5 = 12 + 5 = 17$

2. d) 8 ($x = \frac{2+14}{2} = \frac{16}{2} = 8$)

3. b) 4 ($a_n = 3n - 2$

$a_2 = 3(2) - 2 = 6 - 2 = 4$)

4. c) 7($a_n = 2n - 1$

$a_4 = 2(4) - 1 = 8 - 1 = 7$)

5. b) 3 [$d = a_2 - a_1 = a_3 - a_2 =$ -----]

[d= 6-3 =3 (2nd term – 1st term) OR d= 9-6=3 (3rd term- 2nd term)]

6. b) $\frac{n(n+1)}{2}$

7. c) 35,30,25........(Common difference, d=30-35= 25-30=-5 is equal. In other options c.d is unequal)

[A) $d = 4-1 \neq 6-4$ B) $d = 10-12 \neq 14-10$ D) $d = 13-8 \neq 19-13$

$3 \neq 2$ $2 \neq 4$ $5 \neq 6$]

8. c) $a_n = a + (n-1)d$

9. c) 3 [$a_n = (3n-1) \Rightarrow a_1 = 3(1) - 1 = 3 - 1 = 2$

$a_2 = 3(2) - 1 = 6 - 1 = 5 \Rightarrow d = a_2 - a_1 = 5 - 2 = 3$

10. c) 55

$$S_n = \frac{n(n+1)}{2} = S_{10} = \frac{10(10+1)}{2} = \frac{\overset{5}{\cancel{10}} \times 11}{\underset{1}{\cancel{2}}} = 55$$

11. b) – 2 [$d = a_2 - a_1 = a_3 - a_2 =$ -----]

[d= 1-3 =-2 (2nd term – 1st term) OR d= -1-1=-2 (3rd term- 2nd term)]

12. a) 0 [$d = a_2 - a_1 = a_3 - a_2 =$ -----]

[$d = \frac{1}{2} - \frac{1}{2} = 0$ (2nd term – 1st term) or $d = \frac{1}{2} - \frac{1}{2} = 0$ (3rd term- 2nd term)]

13. c) 14 ($x = \frac{2+26}{2} = \frac{28}{2} = 14$)

14. b) $S_n = \frac{n}{2}(a+l)$

15. c) $S_n = \frac{n}{2}[2a+(n-1)d]$

16. d) 17,20,23,26 ($d = a_2 - a_1 = 5 - 2 = 3$

Next 4 terms are = 14+3=17, 17+3=20, 20 =3 =23, 23+3=26)

17. b) 7 (a_4=9 and d=2 ∴ a_3= a_4– d = 9-2=7

(To get previous term subtract d from that term)

18. c) 5(a_n = 13 – 2n

a_4 = 13-2(4) = 13 -8 =5

19. a) – 2 (**a_3** =10, a_4 =8∴ d = a_4- **a_3**= 8-10 =-2

20. d) -11,-16 (d= a_2 – a_1= -1 -4 =-5

Next 2 terms are = -6-5 =-11 and -11-5 =-16)

21. d) 12 (= a_1 + a_2 + a_3 = 1+4=7 = 12)

22. b) 6 (a= 1 a_n= 11 S_n =36 $S_n = \frac{n}{2}(a+a_n)$

$$36 = \frac{n}{2}(1+11) = \frac{n}{\cancel{2}_{1}}(\cancel{12}^{6})$$

$$6n = 36$$

$$n = \frac{\cancel{36}^{6}}{\cancel{6}_{1}} = 6$$

23. c) 1,3,5...........(a_n=2n-1

a_1 = 2(1) – 1= 2-1 =1

a_2 = 2(2) -1 = 4-1 =3

a_3 = 2(3) -1 = 6-1 =5

24. b) -2 (a_n=5-2n

a_1 = 5-2(1)=3 and a_2=5-2(2) =5-4=1 ∴ d= a_2- a_1 = 1-3=-2

25. c) 10 , 14 (Answer by seeing the options)

26. c) 4 (10-6 =4, same difference continues)

27. b) 14 $S_n = 3n^2 + 5n$

$S_1 = 3(1)^2 + 5(1) = 3 + 5 = 8 = a_1$

$S_2 = 3(2)^2 + 5(2) = 12 + 10 = 22 = a_1 + a_2$

∴ a_2 = 22 -8 = 14

Unit 2 : Triangles

28. b) Thales.

29. a) $\frac{PT}{TR}$(According to BPT or Thales theorem, $\frac{PS}{SQ} = \frac{PT}{TR}$)

30. d) 16:81($4^2 : 9^2$, According to Areas of Similar Triangles theorem, The ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides)

31. c) $\frac{AY}{AC}$ (According to BPT or Thales theorem $\frac{AX}{AB} = \frac{AY}{AC}$)

32. a) 7cm, 24cm, 25cm (According to Pythagoras theorem $7^2 + 24^2 = 25^2$

$49 + 576 = 625 \Rightarrow 625 = 625$)

33. c) 4:1 (Equilateral triangles are similar and D is midpoint of BC).

$\therefore BD = \frac{1}{2} BC \Longrightarrow 2BD = BC \therefore BC:BD = 2:1$

Ratio of corresponding Sides = 2:1

∴The ratio of the areas of two similar triangles= $2^2 : 1^2$ = **4:1**

∵The ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding

sides.

OR

$\frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta BDC} = \frac{BC^2}{BD^2} = \frac{(2BD)^2}{BD^2} = \frac{4BD^2}{BD^2} = \frac{4}{1}$

∴ Area of $\Delta\ ABC$:Area of Δ BDC = **4:1**

34. b) Pythagoras

35. d) In same ratio

36. b) 1:2 (According to Areas of Similar Triangles theorem, $\frac{\text{Area of } \Delta \text{ ABC}}{\text{Area of } \Delta \text{ DEF}} = \frac{BC^2}{EF^2} = (\frac{BC}{EF})^2$

$\frac{\text{Area of } \Delta \text{ ABC}}{\text{Area of } \Delta \text{ DEF}} = (\frac{BC}{EF})^2 = \frac{120}{480} = \frac{1}{4}$

$\therefore \frac{BC}{FF} = \sqrt{\frac{1}{4}} = \frac{1}{2}$)

37. d) $AC^2 - BC^2 = AB^2$(According to Pythagoras theorem $AC^2 = AB^2 + BC^2$

$\Rightarrow AC^2 - BC^2 = AB^2$)

38. d) $\frac{AB}{PQ} = \frac{BC}{QR} = \frac{AC}{PR}$ (Corresponding sides of similar triangles are in same ratio.

Corresponding sides AB → PQ, BC → QR, and AC→ PR)

39. c) $\frac{BC^2}{EF^2}$(According to Areas of Similar Triangles theorem $\frac{Area\ of\ \Delta\ ABC}{Area\ of\ \Delta\ DEF} = \frac{AB^2}{DE^2} = \boldsymbol{\frac{BC^2}{EF^2}} = \frac{AC^2}{DF^2}$

40. a) 3:4(According to Areas of Similar Triangles theorem, $\frac{Area\ of\ \Delta\ ABC}{Area\ of\ \Delta\ DEF} = \frac{BC^2}{EF^2} = (\frac{BC}{EF})^2 = \frac{9}{16}$

$\Rightarrow \frac{BC}{EF} = \sqrt{\frac{9}{16}} = \frac{3}{4}$)

41. c) 12cm (According to Pythagoras theorem, $AB^2 + BC^2 = AC^2$

$5^2 + BC^2 = 13^2$

$\Rightarrow BC^2 = 13^2 - 5^2$

$= 169 - 25 = 144$

$\Rightarrow BC = \sqrt{144} = 12$)

42. d) $96cm^2$(According to Areas of Similar Triangles theorem, $\frac{Area\ of\ \Delta\ ABC}{Area\ of\ \Delta\ DEF} = \frac{BC^2}{EF^2}$

$$\Rightarrow \frac{54}{Area\ \ of\ \Delta\ DEF} = \frac{3^2}{4^2}$$

$$\Rightarrow \frac{54}{Area\ of\ \Delta\ DEF} = \frac{9}{16}$$

$\therefore$Area of ΔDEF $= \frac{54\ X\ 16}{9} = 96\ cm^2$.

43. b) 4.5cm (According to BPT or Thales theorem, $\frac{AD}{DB} = \frac{AE}{EC}$

$\Rightarrow \frac{2}{3} = \frac{3}{EC} \Rightarrow EC = \frac{3X\ 3}{2} = \frac{9}{2} = 4.5cm$)

44. b) 90^0 ($AB^2 + BC^2 = 6^2 + 8^2 = 36 + 64 = 100$

$AC^2 = 10^2 = 100$

$\therefore AC^2 = AB^2 + BC^2$ $\therefore$According to Pythagoras converse theorem, $\angle B = 90^0$)

45. a) 4cm ($BD^2 = AD\ X\ CD \Rightarrow BD^2 = 8\ X\ 2 = 16 \Rightarrow BD = \sqrt{16} = 4cm$)

46. b) 42m

Simple Method: Height --Shadow

$$\left.\begin{array}{l} 6m \rightarrow 4m \\ ? \rightarrow 28m \end{array}\right\} \Rightarrow \frac{6 \times \cancel{28}^{\,7}}{\cancel{4}_{\,1}} = 42\ m$$

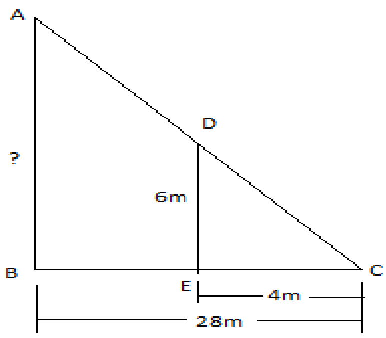
OR

In Figure , According to Thales Theorem

$$\frac{AB}{DE} = \frac{BC}{EC}$$

$$\frac{AB}{6} = \frac{\cancel{28}^{\,7}}{\cancel{4}_{\,1}}$$

AB = 6 x 7 = 42 m



47. c) 10cm (ΔABC ~ΔDEF⇒ $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$ ⇒ $\frac{5}{DE} = \frac{4}{8}$

$$\frac{5}{DE} = \frac{\cancel{4}}{\cancel{8}\;2}$$

5x 2 = DE ⇒ DE = 10cm

48. d) 1.8cm (AB^2 = AD x AC

3^2 = AD x 5

9= 5AD ⇒ AD= $\frac{9}{5}$ = 1.8)

49. d) 3cm ($\frac{DE}{AB} = \frac{EF}{BC} = \frac{DF}{AC} =$

$\frac{6}{AB} = \frac{8}{4} = \frac{10}{5} = 2$ ⇒ AB= $\frac{6}{2}$ =3)

50. a) 6.4cm (BC^2 = AC x CD

8^2 = 10 x CD

64 = 10 CD ⇒ CD= $\frac{64}{10}$ = 6.4

51. b) 49:9 (AD:DB = 3:4 ⇒ AD:AB = 3:7

⇒ AB:AD = 7:3 ⇒∴ $\Delta\, area(ABC) : \Delta\, area(ADE)$ = $\mathbf{AB^2 : AD^2}$

$7^2 : 3^2$ = 49:9

Unit 3 : Pair Of Linear Equations in Two Variables

52. b) 6 (Lines are coincident then, $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2} \Rightarrow \frac{1}{2} = \frac{2}{4} = \frac{3}{k}$

$\Rightarrow \frac{1}{2} = \frac{3}{k} \Rightarrow$k= 3 X 2 =6

OR

We can understood in this way,

$$1 \times 2 = 2 \quad \begin{matrix} 1x & + & 2y & = 3 \\ \Downarrow & & \Downarrow & \Downarrow \\ 2x & + & 4y & = k \end{matrix} \quad 2\times 2 = 4 \quad 3 \times 2 = 6$$

53. a) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

54. d) Infinite

$$\left(\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2} \Rightarrow \frac{2}{4}\ \text{x2} \quad = \frac{3}{6}\ \text{x2} \quad = \frac{-9}{-18}\ \text{x2} \quad = \frac{1}{2}\right.$$

∴ Lines are coincident ⇒Infinite many solutions.

55. c) 4(x + y = 7⇒ 3+ y = 7 ⇒ y= 7-3 =4

$$\begin{matrix} x & + & y & = 7 \\ 3 & + & 4 & = 7 \end{matrix} \qquad \boxed{y=4}$$

56. a) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

57. a) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

58. c) 3 (Lines are coincident $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2} \Rightarrow \frac{2}{6} = \frac{-1}{-k} = \frac{4}{12}$ Numerator x **3**= Denominator

2x3=6 4x3=12

∴(-1)x**3** =-k=-3)

59. d) Infinite many solutions.

60. c) 4 (Lines are parallel then, $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2} \Rightarrow \frac{4}{4} = \frac{k}{4} \Rightarrow$ k=4

61. a) Intersecting (If lines are intersecting then, $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ here $\frac{6}{2} \neq \frac{2}{4}$ after simplification $3 \neq \frac{1}{2}$

62. a) (3,1) (Easily identify the answer3+1 =4 and 3-1 =2)

Method : x + y = 4 ----(1)

<u>x – y = 2</u>----(2)

2x = 6⇒ x = $\frac{6}{2}$ = 3

Substitute x = 3 in equation (1),

3 + y = 4

y = 4 – 3 ⇒ y = 1.

63. b) (2,1) [2x+y=5 and x–y=1 Easily identify the answer]

2(2)+1 = 5 2 -1 =1]

Method : 2x + y = 5 ----(1)

<u>x – y = 1</u>----(2)

3x = 6⇒ x = $\frac{6}{3}$ = 2

Substitute x = 2 in equation (1),

2x2 + y = 5

4 + y = 5⇒ y = 5-4 ⇒ y = 1

64. c) 2 (Substitute x = 3 in equation 2x + y = 8, we get 2(3) + y =8

6 +y =8 ⇒y= 8 -6 =2)

65. b) 1 (Consistent pair of equations are intersect in a single point and $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$exactly one solutions)

66. c) $\frac{5}{6}$(we write equations in standard form(3x + 2y – 5=0and2x - y – 6 = 0) **c_1 = -5 c_2 = -6**

Then, $\frac{c_1}{c_2} \Rightarrow \frac{-5}{-6} = \frac{5}{6}$)

67. a) 10 (Pair of equations has no solution only if lines are parallel and $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

$\frac{1}{5} = \frac{2}{k}$ ⇒ k= 5 x2 =10

68. c) Intersect each other ($\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$Unique solution)

69. c) No solutions (Lines are Parallel $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$then, No solutions)

70. c) 2 [Substitute y = 4in equation 3x + y = 10 we get, 3(x) + 4 =10

3x = 10 –4 = 6 ⇒x= $\frac{6}{3}$ =2]

71. a) (3,3)

72. c) 4 (y = 2x – 3

5= 2x-3

5+3 = 2x ⇒ 2x=8 ⇒ x= $\frac{8}{2}$ =4)

73. c) (2,2) 2x-y=2; x-y=0 ⇒ x=y

2x –x =2

∴ x=2 and y=2

74. b) (2,0)

75. b) 1 2x-y=5 [(3,a)]

2(3)-a =5 ⇒ 6-a=5 ⇒ 6-5=a ⇒a=1

76. d) No Solution (Parallel lines $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2} \Rightarrow \frac{1}{1} = \frac{1}{1} \neq \frac{3}{-7}$

⇒ 1=1≠ $\frac{-3}{7}$

77. c) 6 (Parallel lines $\frac{1_1}{3} = \frac{4}{2k}$ [≠ $\frac{c_1}{c_2}$]

⇒ 2k = 4x3=12 ⇒ k= $\frac{12}{2}$ =6

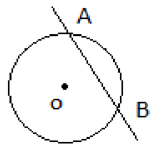
78. b) x=2, y=1 (4x – 3y = 5 go through wit options)

4(2)- 3(1) =5

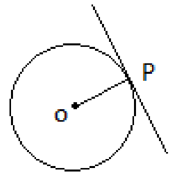
8- 3 = 5

79. c) Infinitely many solutions ($\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2} \Rightarrow \frac{3}{9} = \frac{4}{12} = \frac{-5}{-15} \Rightarrow \frac{1}{3} = \frac{1}{3} = \frac{1}{3}$ ⇒lines are coincde)

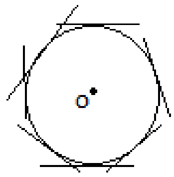
Unit 4 :Circles



80. a) Secant (In this figure Secant of the Circle intersects Circle at A and B)

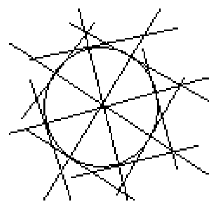


81. b) 1 (In this figure the tangent touching circle at one & only point P)

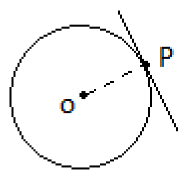


82. d) Infinite (There are infinite points on the circle. The tangent can be drawn at each point

(In figure Some tangents have been drawn)



83. d) Infinite (Infinite diameter can be drawn in a Circle. The tangents drawn at the end points of each diameter are parallel)



84. b) Point of contact (In the figure point of contact P is on the circle and the tangent)

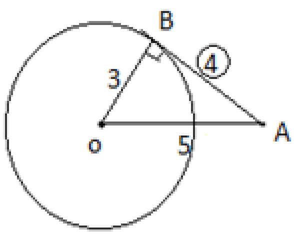
85. b) 4cm(This is application of Pythagoras theorem.**3, 4, 5**are Pythagorean triplets)

$AB^2 + OB^2 = OA^2$

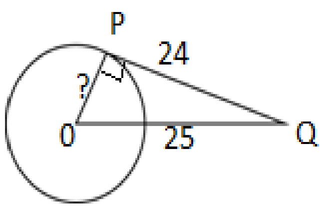
$AB^2 + 3^2 = 5^2$

$AB^2 + 9 = 25 \Rightarrow AB^2 = 25 - 9 = 16$

$AB = \sqrt{16} = 4$



86. a) 7cm (This is application of Pythagoras theorem.**7, 24, 25**are Pythagorean triplets)



$OP^2 + PQ^2 = OQ^2$

$OP^2 + 24^2 = 25^2$

$OP^2 + 576 = 625 \Rightarrow OP^2 = 625 - 576 = 49$

$OP = \sqrt{49} = 7$

87. b) 70^0(Angle between radii + Angle between tangents = 180^0)

∴Angle between tangents= 180-110 =70)

$\angle POQ + \angle PTQ = 180^0$

$110^0 + \angle PTQ = 180^0$

$\therefore \angle PTQ$ = 180-110 =70

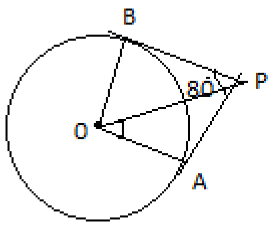
88. b) 50^0 (In figure

$\angle AOB + \angle APB = 180^0$

$\angle AOB + 80 = 180^0$

$\angle AOB$ = 180-80 = 100

Now $\angle POA = \frac{100}{2} = 50^0$



)

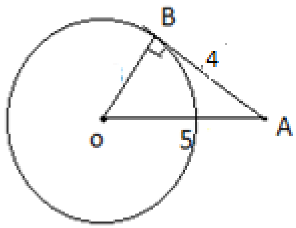
89. d) 3cm (This is application of Pythagoras theorem.**3, 4, 5**are Pythagorean triplets)

$AB^2 + OB^2 = OA^2$

$4^2 + OB^2 = 5^2$

$16 + OB^2 = 25 \Rightarrow OB^2 = 25 - 16 = 9$

$OB = \sqrt{9} = 3$



90. c) 40^0 (180- 100=80 $\angle OAB = \frac{80}{2} = 40^0$)

In the figure $\angle AOB + \underline{\angle OAB + \angle OBA} = 180^0$

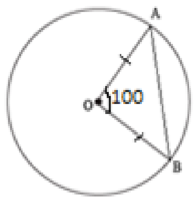
$100 + 2\angle OAB = 180$

$2\angle OAB = 180 - 100 = 80$

$\angle OAB = \frac{80}{2} = 40^0$

OA = OB (Radii)

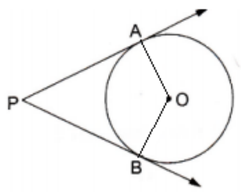
$\therefore \angle OAB = \angle OBA$



radii

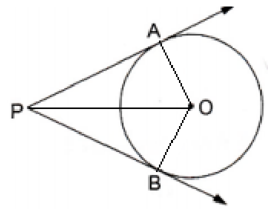
91. d) 90^0 (**Theorem: The tangent at any point of a circle is perpendicular to the radius through the point of centres)**

92. c) 2 (In figure PA and PB are tangents drawn from the external point P)



93. c) 180^0 (Angle between radii + Angle between tangents = 180^0)

94. d) 40^0



In figure

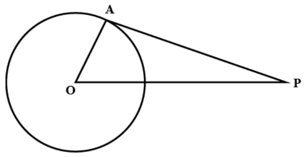
$\angle APB$ = 180^0

$100 + \angle APB = 180^0$

$\angle APB = 180 - 100 = 80$

$\therefore \quad \angle APO = \frac{80}{2} = 40^0$

95. c) 40^0(90- 50 = 40 $\because$ $\angle$PAO) = 90^0(Theorem)



In figure$\angle$POA = 50^0

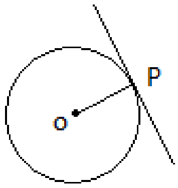
i. $\angle$PAO) = 90^0(Theorem)

$\angle$POA + $\angle$PAO) + $\angle A$PO =180^0

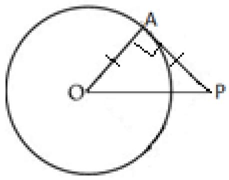
50^0+ 90^0+ $\angle A$PO =180^0

140 + $\angle A$PO =$180^0$$\Rightarrow$ $\angle A$PO = 180- 140 =40

96. b) 1 (In figure Only one tangent can be drawn at the point)



97. b) 45^0 (In figure$\angle OAP$ = 90^0



$\angle AOP = \angle APO$(OA=PA)

$\angle OAP + \underline{\angle AOP + \angle APO} = 180^0$

$90 + 2\underline{\angle AOP} = 180$

$2\angle AOP = 180 - 90 = 90 \Longrightarrow \angle AOP = \frac{90}{2} = 45^0$

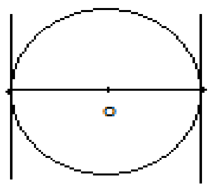
98. b) Equilateral triangle (The tangents drawn to a circle from an external point are equal and$\angle APB$=60^0

99. d) 9 cm [PQ = 9cm$\Rightarrow$ PR=9cm (The tangents drawn to a circle from an external point are equal)

$\angle$PQR=$60^0$$\Rightarrow$ $\angle$PRQ=60^0(base angles)$\Rightarrow$ $\angle$QPR=60^0(3^{rd} angle of triangle)

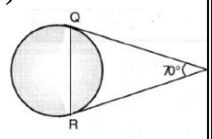
$\therefore$ QR = 9cm (ΔPQR equilateral triangle)

100. c) parallel (As showing the figure)



101. c) 90^0(Angle in a semi circle is right angle)

102. c) 55^0(In figure PQ= PR(The tangents drawn to a circle from an external point are equal)

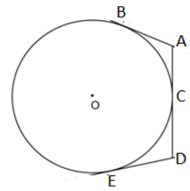


$\underline{PQR + \angle PRQ} = 180 - 70$ ($\angle QPR = 70^0$)

$2\angle PQR = 110$ ($\angle PQR = \angle PRQ$)

$\angle PQR = \frac{110}{2} = 55^0$

103. b) 7cm(In figure AD= AC+ CD AC= AB ಮತ್ತು CD=DE

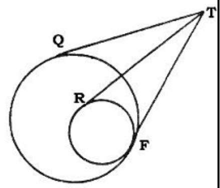


AD= AB+ DE (The tangents drawn to a circle from an external point are equal)

AD= 3+4 =7cm

104. c) 8cm (TQ = 8 cm =TF (Tangents drawn from exterior point to the largest circle are equal)

TF = TR (Tangents drawn from exterior point to the smallest circle are equal)



∴ TR= 8cm

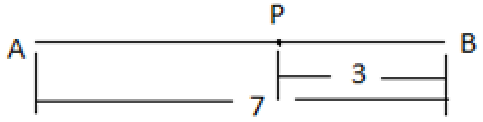
105. c) PQ (The largest chord of the circle is Diameter)

Unit 5 : Constructions

106. a) 3:2 (3 points on **A**D and 2 points on **B**C)

107. d) 4:3(Draw a figure and locate the point)

AB = 7 PB=3
then AP = 7-3 =4
AP: PB =4:3



108. a) 3:4

109. b) 3:4(3 points on **A**Cand 4 points on BD)

110. c) 8 (3+ 5 =8)

111. b) $\frac{3}{4}$(Joined A_4 & B ∴Denominator=4 parallel line drawn from A_3 ∴Numerator= 3 ∴ $\frac{3}{4}$)

112. d) 120^0(Angle between the radii + Angle between tangents = 180^0

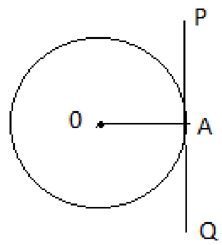
∴Angle between the radii = 180-60 =120)

113. b) 3:4 (Total 7 points on AX. Parallel line drawn from **3rd point to** A_7B and there are 4 points after A_3.)

114. c) 80^0(Angle between the radii + Angle between tangents = 180^0

∴Angle between the radii= 180-100 =80)

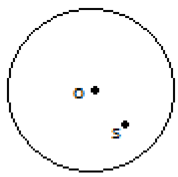
115. a) 1 (In figure, We can draw only onetangent PQ through A)



116. b) 3 cm, 3.6cm BD= $\frac{3}{5}$AB=$\frac{3}{5}$ x 5 =3cm

DE = $\frac{3}{5}$AC=$\frac{3}{5}$ x 6 = $\frac{18}{5}$=3.6cm

117. c) 0 (Observe the figure,we annot draw any tangents from S)



118. a) 10cm, 7.5cm BD= $\frac{5}{2}$BC =$\frac{5}{2}$ x 4 =10cm

BE = $\frac{5}{2}$AB=$\frac{5}{2}$ x 3 = $\frac{15}{2}$=7.5cm

Unit 6 : Coordinate Geometry

119. b) 3 units (The distance from the x axis to its point is the Y Co-ordinate)

120. d) (2, 0)(The y-coordinate of the point on the x-axis is 0(Zero))

121. c) $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

122. a) $\left(\frac{x_2+x_3}{2}, \frac{y_2+y_3}{2}\right)$

123. c) 5 Units (The distance from the y axis to its point is the xcoordinate)

124. a) (0,0)

125. c) $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

126. a) $\sqrt{x^2+y^2}$

127. a) $\frac{1}{2}[x_1(y_2-y_3)+x_2(y_3-y_1)+x_3(y_1-y_2)]$

128. c) 5 Units ($\sqrt{x^2+y^2}$ =$\sqrt{3^2+4^2}$ = $\sqrt{9+16}$= $\sqrt{25}$ =5 (Application of Pythagoras Theorem)

(We can also interpret that 3,4,5 are Pythagorian Triplets)

129. b) (2,5) [$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right) = \left(\frac{1+3}{2}, \frac{4+6}{2}\right) = \left(\frac{4}{2}, \frac{10}{2}\right)$= (2,5)]

130. d) $\sqrt{p^2+q^2}$

131. a) 5 Units ($\sqrt{x^2+y^2}$ =$\sqrt{4^2+(-3)^2}$ = $\sqrt{16+9}$= $\sqrt{25}$ =5

(Application of Pythagoras Theorem)

(We can also interpret that 3,4,5 are Pythagorean Triplets)

132. a) 13 Units ($\sqrt{x^2+y^2}$ =$\sqrt{12^2+5^2}$ = $\sqrt{144+25}$= $\sqrt{169}$ =13

(We can also interpret that 5,12,13 are Pythagorean Triplets)

133. b) 3 Units, 5 Units (The distance from the y-axis to the point is its x coordinate)

1. (The distance from the x-axis to the point is its y coordinate)

134. b) 4 Units ($\sqrt{x^2+y^2}$ =$\sqrt{0^2+4^2}$ = $\sqrt{0+16}$= $\sqrt{16}$ =4

(The point along the y-axis is the distance from the origin to the y coordinate)

135. a) 4 Units (The distance from the y-axis to the point is its x coordinate)

(Distance is written positively though the coordinate is negative)

136. b) 5 Units (d =$\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

d =$\sqrt{(6-2)^2+(6-3)^2}$

d=$\sqrt{(4)^2+(3)^2}$ = $\sqrt{16+9}$= $\sqrt{25}$ =5 Units)

137. b) (x,0)

138. c) (0,0) (The point where the x axis and y axis meet is the origin point)

139. a) 0 (Zero)

140. d) 0 (Zero)

141. a) $\left(\frac{m_1x_2+m_2x_1}{m_1+m_2}, \frac{m_1y_2+m_2y_1}{m_1+m_2}\right)$

142. a) (2,0) (The y coordinate of each point on the x axis is 0(zero))

143. b) (0,-4) (The x coordinate of each point on the y axis is 0(zero))

144. b) (-5,2) $(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}$ =(x,y)

$\frac{5+a}{2}$ =0 and $\frac{-2+\omega b}{2}$ =0

$\Longrightarrow$ 5+a =0 and -2+b =0

$\Longrightarrow$ a= -5 and b=2

145. b) 0 $\frac{1}{2}\lfloor x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\rfloor$ =0 (A(2,3) B(4,k) C(6,-3))

$\frac{1}{2}\lfloor 2(k-(-3)) + 4(-3-3) + 6(3-k)\rfloor$=0

$\frac{1}{2}\lfloor 2(k+3)) + 4(-6) + 6(3-k)\rfloor$=0

$\frac{1}{2}\lfloor 2k + 6 - 24 + 18 - 6k\rfloor$ =0

$\frac{1}{2}\lfloor -4k\rfloor$ =0 ⇒ 4k=0 ⇒ k=0

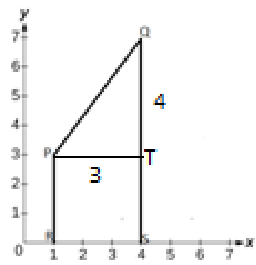
146. b) a=b $\frac{1}{2}\lfloor x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\rfloor$ =0 [A(1,1) B(0,0) C(a,b)]

$$\frac{1}{2}\lfloor 1(0-b) + 0(b-1) + a(1-0)\rfloor$$

$\frac{1}{2}\lfloor -b + 0 + a\rfloor$ =0

-b+ a =0 ⇒ a=b

147. c) 5 units (Pythagoras Theorem in triangle PTQ)



Unit 7 : Quadratic Equations

148. a) 9 (If roots are equal $b^2 - 4ac = 0$ Here a=1, b= 6, c= k

$6^2 - 4(1)(k) = 0$

$36 - 4k = 0 \Rightarrow 36 = 4k \Rightarrow k = \frac{36}{4} = 9$)

149. b) $ax^2 + bx + c = 0$

150. b) -1 ($x-2=0 \Rightarrow x=2$ Similarly $x+1=0 \Rightarrow x=-1$)

151. a) $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

152. b) ± 4[If roots are equal $b^2 - 4ac = 0$ ($x^2 - kx + 4 = 0$ ಇಲ್ಲಿ a=1, b=-k, c=4)

$(-k)^2 - 4(1)(4) = 0$

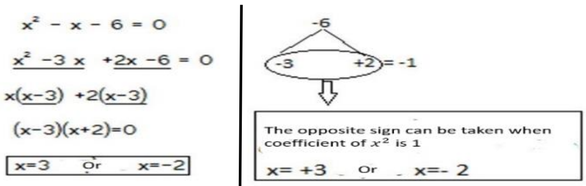
$k^2 - 16 = 0 \Rightarrow k^2 = 16 \Rightarrow k = \sqrt{16}$ ± 4]

153. d) 1 [$x^2 + 5x + 6 = 0$ ಇಲ್ಲಿ a=1, b=5, c=8

Discriminant = $b^2 - 4ac = 5^2 - 4(1)(6)$

$= 25 - 24 = 1$

154. a) (-2,3)



155. b) 1,2 ($(x-1)(x-2)=0 \Rightarrow x-1=0$ or $x-2=0$

x=1 or x=2)

156. b) $b^2 - 4ac$

157. b) $x^2 + x - 30 = 0$ ($x(x+1) = 30$

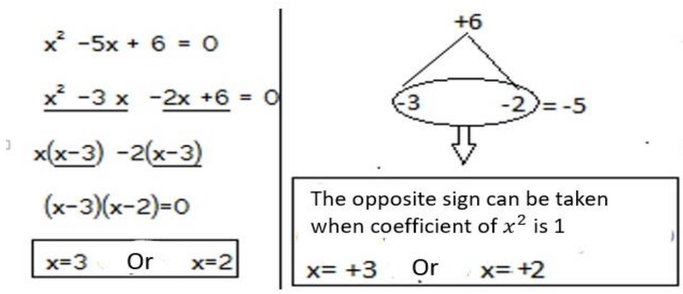
$x^2 + x = 30 \Rightarrow x^2 + x - 30 = 0$

158. b) Greater than Zero or equal to Zero

159. a) less than Zero

160. c) equal to zero

161. a) 2,3



162. b) (0,6) ($x^2 - 6x = 0$

$x(x-6)=0$

$x=0$ or $x-6=0 \Rightarrow x=6$)

163. a) ± 5 $(x+4)(x-4)=9$ ($(a+b)(a-b)=a^2-b^2$

$x^2 - (4)^2 = 9$

$x^2 - 16 = 9$

$x^2 = 16 + 9 = 25$

$x = \sqrt{25}\ \pm 5$

164. d) $x^2 - x - 2 = 0$ (Quadratic Equation= x^2 –(sum of the roots)x + product of the roots =0

$x^2 - [2+(-1)]x + 2(-1) = 0$

$x^2 - (2-1)x - 2 = 0$

$x^2 - 1x - 2 = 0 \Rightarrow x^2 - x - 2 = 0$

165. a) $\frac{1}{3}$ [If roots are equal, $b^2 - 4ac = 0$($kx^2+2x+3=0$ Here a=k, b=2, c=3)

$(2)^2 - 4(k)(3)=0$

$4 - 12k = 0 \Rightarrow 4 = 12k \Rightarrow k = \frac{4}{12} = \frac{1}{3}$

166. d) 65 ($2x^2 - x - 8 = 0$ Here a=2, b=-1, c=-8)

Discriminant = $b^2 - 4ac = (-1)^2 - 4(2)(-8)$

$= 1 + 64 = 65$

167. b) No real roots

168. b) 2

169. d) -6($2x^2+kx+4=0$ (Substituting x=2)

$2(2)^2 + k(2) + 4 = 0$

$2(4) + 2k + 4 = 0$

$8 + 2k + \underline{4} = 0$

$2k + 12 = 0 \Rightarrow 2k = -12 \Rightarrow k = \frac{-12}{2} = -6$)

170. c) $x^2-3x-2=0$

171. a) $\frac{2}{3}$ $(3x-2)=0 \Rightarrow 3x=2 \Rightarrow x = \frac{2}{3}$)

172. b) $2x^2-20x+5=0$ ($2x^2 - 5(4x-1) = 0$

$2x^2 - 20x + 5 = 0$)

173. b) Distinct real roots (Discriminant = $b^2 - 4ac$ [$2x^2 - x - 3 = 0$ here a=2, b=-1, c=-3]

$= (-1)^2 - 4(2)(-3)$

$= 1 + 24 = 25 > 0$

174. b) $x^2+(x+2)^2=164$ (x and (x+2) are two consecutive even numbers)

175. c) $x^2+(x+2)^2=130$ (x and (x+2) are two consecutive odd numbers)

Unit 8 : Introduction to Trigonometry

176. c) $\frac{3}{4}$(sin 60^0 X cos 30^0)

$\frac{\sqrt{3}}{2}$ X $\frac{\sqrt{3}}{2}$= $\frac{\sqrt{3}^2}{4}$=$\frac{3}{4}$)

177. a) cosθ(Complementary angle)

178. c) 1

179. b) 0 (tanθ - cot(90^0-θ) [cot(90^0-θ) =tanθ(Complimentary angle)]

⇒tanθ– tanθ = 0)

180. b) 1 (∠A = ∠C&∟B = 90^0⇒∠A = ∠C = 45^0⇒, BC= AB = 10 cm

tanA = $\frac{BC}{AB}$ = $\frac{10}{10}$ = 1 or tan45^0 = 1

181. d) $\frac{15}{8}$ (15 cot A = 8

cot A = $\frac{8}{15}$ ⇒tan A = $\frac{15}{8}$(reciprocal ratio)

182. a) 30^0 ($\sqrt{3}$tanθ = 1⇒tan θ = $\frac{1}{\sqrt{3}}$ ⇒ θ = 30^0)

183. c) 2 (tan 45^0 + cot 45^0= 1 + 1 =2)

184. a) $\frac{1}{\sqrt{3}}$ (cot (90^0-30^0) = tan30^0 = $\frac{1}{\sqrt{3}}$orcot (90^0-30^0) =cot 60^0 =$\frac{1}{\tan 60}$ =$\frac{1}{\sqrt{3}}$)

185. b) $\frac{8}{5}$ (sinα + cosθ= $\frac{4}{5}$ + $\frac{4}{5}$= $\frac{8}{5}$)

186. c) 1 ($\frac{\sin 80^0}{\cos 10^0}$ = $\frac{\sin 80^0}{\sin (90-10)^0}$ = $\frac{\sin 80^0}{\sin\ 80^0}$ = 1)

187. c) 45^0(3 tanθ = 3⇒tan θ = $\frac{3}{3}$ ⇒tan θ =1 ⇒ θ= 45^0)

188. b) 1 ($\cos^2$θ + $\underline{\cos^2 (90^0–θ)}$

= $\cos^2$θ+$\sin^2$θ = 1)

189. a) $\sin^2$θ[(1+cosθ)(1-cosθ) =$(1)^2$ - $\cos^2\theta$= 1 - $\cos^2\theta$= $\sin^2$θ]

190. b) 10cm (∟Y = 90^0, ∠Z=30^0andXY=5cm sinz =$\frac{Opposite\ side}{hypotenuse}$= $\frac{XY}{XZ}$

Sin 30^0=$\frac{5}{XZ}$

$\frac{1}{2}$ =$\frac{5}{XZ}$ ⇒xz= 5X2 = 10cm

191. c) 72^0 (sin 18^0= cos A,

=cos(90^0-18^0) =cos A

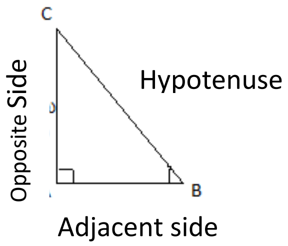
= cos 72^0= cos A⇒∠A =72^0)

192. d) $\frac{5}{3}$ (5 sin A = 3

sin A = $\frac{3}{5}$ ⇒ cosec A = $\frac{5}{3}$)

193. c) $\frac{12}{5}$ (tan A = $\frac{Opposite\ side}{Adjacent\ side} = \frac{BC}{BA} = \frac{12}{5}$

194. a) cot^{2}A ($\frac{1-\sin^2 A}{1-\cos^2 A} = \frac{\cos^2 A}{\sin^2 A} =$ cot^{2}A)



195. c) $\frac{AC}{BC}$ (SinB = $\frac{Opposite\ side}{hypotenuse} = \frac{AC}{BC}$)

196. c) 0 (cos^{2}17^0 – sin^{2}73^0

cos^{2}17^0 - cos^2(90^0-73^0)

cos^{2}17^0 - cos^{2}17^0 =0)

197. b) 1 (tan10^0 X tan80^0

tan10^{0}X Cot(90^0-80^0)

tan10^{0}X Cot10^0

$\cancel{\tan 10^0} X \frac{1}{\cancel{\tan 10^0}} = 1)$

198. a) 0 ($\frac{1-\tan^2 45}{1+\tan^2 45} = \frac{1-(1)^2}{1+(1)^2} = \frac{1-1}{1+1} = \frac{0}{1} = 0$)

199. b) 1 ($\frac{\tan 55^0}{\cot 35^0} = \frac{\tan 55^0}{(\tan(90^0-35^0))} = \frac{\tan 55^0}{\tan 55^0} = 1$)

200. d) $\frac{5}{12}$ (Cot A = $\frac{Adjacent\ side}{Opposite\ side} = \frac{5}{12}$ಅಥವಾ tan A=$\frac{Opposite\ side}{Adjacent\ side} = \frac{12}{5}$ ∴ CotA = $\frac{5}{12}$)

201. d) 90^0 (sin α = $\frac{1}{2}$ ⟹α= 30^0&cos β = $\frac{1}{2}$ ⟹β=60^0∴α+β =30^0 + 60^0 = 90^0)

202. c) tan 30^0

203. a) 10 (10sin^{2}θ + 10cos^{2}θ = 10(sin^{2}θ + cos^{2}θ 0 = 10(1) =10

204. c) 0 (cos48^0 - sin42^0

cos48^0 – cos(90^0-42^0)

cos48^0 - cos48^0 = 0)

205. d) cosec A

206. c) 1 ($\frac{cosec\ 31^0}{sec\ 59^0} = \frac{\sec(90^0-31^0)}{sec 59^0} = \frac{sec 59^0}{sec 59^0} = 1$)

207. b) $\frac{3}{4}$ (sin^{2}60^0= $(\frac{\sqrt{3}}{2})^2 = \frac{3}{4}$)

208. a) $\operatorname{cosec}^2 A$

209. b) $1+\tan^2 A$

210. b) 1

211. d) $\cos 0^0$

212. a) 1 ($\sin 30^0 + \cos 60^0 = \frac{1}{2} + \frac{1}{2} = 1$)

213. b) $\frac{5}{11}$ (5 sec A = 11

Sec A = $\frac{11}{5} \Rightarrow$ Cos A $=\frac{5}{11}$

214. a) $\frac{12}{13}$ ($\cos(90^0-\theta) = \text{Sin}\,\theta = \frac{Opposite.side}{hypotenues} = \frac{12}{13}$)

215. b) 60^0 $2\cos\theta = 1 \Rightarrow \cos\theta = \frac{1}{2} \Rightarrow \theta = 60^0$

216. b) 45^0 $\sqrt{2}\cos\theta = 1 \Rightarrow \cos\theta = \frac{1}{\sqrt{2}} \Rightarrow \theta = 45$

217. d) 30^0 $\sqrt{3}\tan\theta = 1 \Rightarrow \tan\theta = \frac{1}{\sqrt{3}} \Rightarrow \theta = 30^0$

218. b) $\frac{4}{5}$ $\sin(90^0-A) = \text{Cos}A = \frac{adjacent}{hypotenues} = \frac{4}{5}$

219. c) 1 $\cos A + \cos^2 A = 1$

$\Rightarrow \text{Cos}A = 1 - \cos^2 A = \sin^2 A$ -----(1)

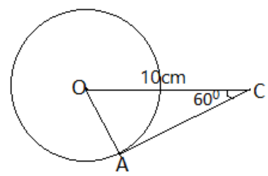
now $\sin^2 A + \sin^4 A = \sin^2 A + (\sin^2 A)^2$

$= \cos A + \cos^2 A = 1$

220. b) $5\sqrt{3}$ cm $\angle A = 90^0$

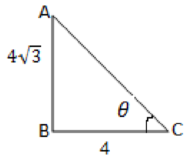
$\text{Sin}60^0 = \frac{opposite}{hypotenues} = \frac{OA}{10}$

$\Rightarrow \frac{\sqrt{3}}{2} = \frac{OA}{10} \Rightarrow \text{OA} = \frac{\sqrt{3}}{2}\, X\, 10 = 5\sqrt{3}$



Unit 9 : Some applications of Trigonometry

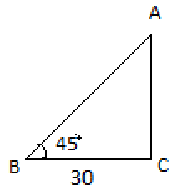
221. c) 60^0 (tanθ=$\frac{Opp.side}{Adj.side} = \frac{4\sqrt{3}}{4} = \sqrt{3} \Rightarrow \theta = 60^0$



222. c) 30m (tan45^0=$\frac{Opp.side}{Adj.side} = \frac{AC}{BC}$

$1 = \frac{AC}{30} \Rightarrow$AC= 30m

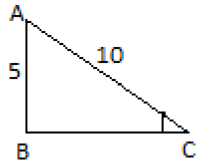
(Note :If angle is 45^0 then opposite side and adjacent sides are equal)



223. b) 30^0(Alternate angles)

224. b) 30^0(Sin C = $\frac{Opp.side}{Hypo.} = \frac{AB}{AC} = \frac{5}{10} = \frac{1}{2}$

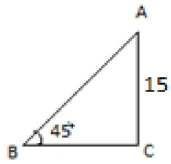
Sin C = =$\frac{1}{2} \Rightarrow \angle C = 30^0$



225. c) 15m (If angle is 45^0 then opposite side and adjacent sides are equal)

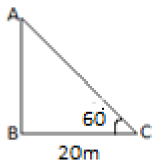
tan45^0 =$\frac{Opp.side}{Adj.side} = \frac{AC}{BC}$

$1 = \frac{15}{BC} \Rightarrow$BC= 15m



226. a) 30^0($\frac{Height\ of\ the\ pole}{length\ of\ the\ shadow} = \frac{Opp.side}{Adj.side} = \frac{1}{\sqrt{3}}$= tan$\theta \Rightarrow \theta = 30^0$

227. b) $20\sqrt{3}$m (tan60^0=$\frac{Opp.side}{Adj.side} = \frac{AB}{BC}$



$\sqrt{3} = \frac{AB}{20}$

$\Rightarrow \underline{\underline{20\sqrt{3} = AB}}$

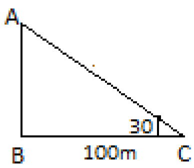
228. a) 30^0($\frac{Height\ of\ the\ pole}{length\ of\ the\ shadow} = \frac{Opp.side}{Adj.side} = \frac{2}{2\sqrt{3}} \Rightarrow \theta = 30^0$

$\Rightarrow$tanθ $= \frac{1}{\sqrt{3}} \Rightarrow \theta = 30^0$

229. b) 45^0(If opposite side and adjacent sides are equalthenangle is 45^0)

(tanθ= $\frac{Opp.side}{Adj.side} = 1 = \Rightarrow \theta = 45^0$

230. d) $\frac{100}{\sqrt{3}}$m(tan30^0=$\frac{Opp.side}{Adj.side} = \frac{AB}{BC}$



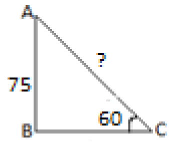
$\frac{1}{\sqrt{3}} = \frac{AB}{100}$

$\Rightarrow \frac{100}{\sqrt{3}}$ = AB($\frac{100X\sqrt{3}}{\sqrt{3}X\sqrt{3}} = \frac{100\sqrt{3}}{3}$

231. c) 45^0 (If opposite side and adjacent sides are equalthen angle is 45^0)

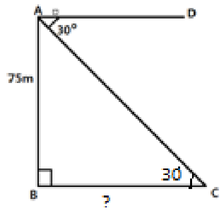
$(\tan\theta = \frac{Opp.side}{Adj.side} = \frac{15}{15} = 1 \Rightarrow \theta = 45^0\ )$

232. b) $50\sqrt{3}$ Sin 60^0 = $\frac{Opp.side}{Hypo.}$ m



$\frac{\sqrt{3}}{2} = \frac{75}{AC} \Rightarrow AC = \frac{75X2}{\sqrt{3}} = \frac{150}{\sqrt{3}} = \frac{150X\sqrt{3}}{\sqrt{3}X\sqrt{3}} = \frac{\cancel{150}^{50}X\sqrt{3}}{\cancel{3}} = 50\sqrt{3}$

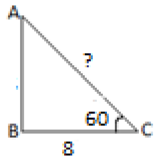
233. b) $75\sqrt{3}$ m ($\angle C = 30^0$(Alternate angle)



$\tan 30^0 = \frac{Opp.side}{Adj.side} = \frac{AB}{BC} = \frac{75}{BC}$

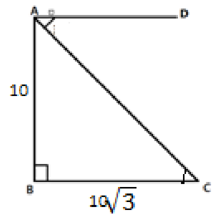
$\frac{1}{\sqrt{3}} = \frac{75}{BC} \Rightarrow BC = 75\sqrt{3}$

234. d) 16m (Cos $60^0 = \frac{Adj.side}{Hypo} = \frac{BC}{AC}$



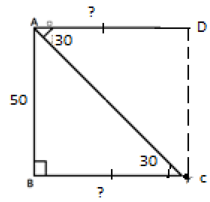
$\frac{1}{2} = \frac{8}{AC} \Rightarrow$ AC= 8x2=16m)

235. a) 30^0 $(\tan\theta = \frac{Opp.side}{Adj.side} = \frac{10}{10\sqrt{3}} = \frac{1}{\sqrt{3}}$



$\Rightarrow \theta = 30^0)$

236. a) $50\sqrt{3}$ m($\tan 30^0 = \frac{Opp.side}{Adj.side} = \frac{AB}{BC} = \frac{50}{BC}$



$\frac{1}{\sqrt{3}} = \frac{50}{BC} \Rightarrow BC = 50\sqrt{3}$)

Unit 10: Statistics

237. b) 3Median =Mode +2Mean

238. c) 15 (Ascending order: <u>3,5</u>,**14,16**, <u>19, 20)</u>

(Middle number of 14 and 16 is Median)

Median =$\frac{14+16}{2}$=$\frac{30}{2}$=15)

239. b) 17.5 (Mid point= $\frac{10+25}{2}$ =$\frac{35}{2}$ =17.5)

240. d) 3(Mean= $\frac{1+2+3+4+5}{5}$ =$\frac{15}{5}$ = 3)

241. b) 20(10 has highest frequency)

242. a) 20 (Mean $\bar{X}$ = $\frac{\sum f_i x_i}{\sum f_i}$ = $\frac{400}{20}$ =20)

243. b) 15 (Ascendin order: <u>12, 14</u>, **15,**<u>17, 19</u>, Middle number is median)

244. b) 5.6(Mean= $\frac{\text{Sum of first five prime numbers}}{5} = \frac{2+3+5+7+11}{5}$ =$\frac{28}{5}$ =5.6)

245. d) 13 (Mode= 3median– 2Mean

Mode= 3(15) – 2(16) = 45-32 =13)

246. c) 1 (Most frequent(3 times) repitition)

247. a) 30 (Median is the x coordinate of the intersection point of graph)

248. c) Mode

249. b) 35 (Mean =$\frac{50+20}{2}$ =$\frac{70}{2}$ =35)

250. d) Range

251. c) 1 (Mean =10 = $\frac{11+8+9+12+x}{5}$

10x5 = 40+x

⇒ 50= 40+x ⇒ x = 50-40 =10

252. c) More frequent repeat value

253. b) 15 (x=15:repeating 3times.16 or 17 could have been, but had no options)

254. c) 20 (Mode= 3Median– 2Mean)

12= 3(Median) – 2(24)

12 = 3(Median) -48

12 + 48 = 3(Median)

60 = 3(Median) ⇒Median = $\frac{60}{3}$ = 20

255. b) 5 (Mean= $\frac{1+3+5+7+9}{5}$ =$\frac{25}{5}$ = 5)

256. a) 10

257. c) $l + \left[\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right]h$

258. b) (30-40)(This class interval has maximum frequency(30))

259. d) x > 8(The class interval which has maximum frequency is modal class)

260. a) 15(Modal class is 20-25. It has maximum frequency)

261. b) (30-40)($\frac{n}{2} = \frac{60}{2}$ = Class interval which has 30thvalue)

262. a) $l + \left[\frac{\frac{n}{2} - C_f}{f}\right]h$

263. b) 50(Modal class is 50-60.Its lower limit l=50)

264. c) 55 (Mean =42 = $\frac{27+30+45+60+35+x}{6}$

42x6 = 197+x

⇒252=197+x ⇒ x = 252-197 =55

Unit 11 : Surface area and Volumes

265. d) $100m^3$ (Volume of cone=$\frac{1}{3}$Volume of Cylinder= $\frac{1}{3}$X 300 =100)

266. c) $616cm^2$ (Surface area of = $4\pi r^2$

$$=4x\frac{22}{\cancel{7}} \times 7x\cancel{7} = 4x22x7= 616$$

267. c) $\pi(r_1 + r_2)l$

268. b) $2\pi r(r+h)$

269. c) $\frac{4}{3}\pi r^3$

270. a) $l^2 = h^2 + r^2$

271. c) $\sqrt{h^2 + r^2}$

272. a) $36\ cm^2$ (Volume of Cube $a^3 = 27 \Rightarrow a=3$

$\therefore$Lateral Surface Area of Cube= $4a^2$= 4x3x3=36)

273. b) $\frac{4}{3}\pi r^3 = \frac{1}{3}\pi R^2 h$

274. d) $192\ cm^2$ (Curved Surface Area of Cylinder =$\underline{2\pi r}h$ = $\underline{24}$ x8 = 192)

275. c) 6cm (12x6x3= 216 = $a^3 \Rightarrow a=\sqrt[3]{216} = 6$)

276. c) $\frac{1}{3}\pi h(r_1^2 + r_2^2 + r_1 r_2)$

277. c) $220cm^2$ (Curved Surface Area of Cone =πrl

$$= \frac{22}{\cancel{7}} x\cancel{7}x10= 220)$$

278. b) $\frac{4}{3}\pi R^3 = \pi r^2 h$

279. b) 15cm(Volume of Cone = Volume of Cylinder)

$\frac{1}{3}\cancel{\pi}\cancel{r^2}h_1 = \cancel{\pi}\cancel{r^2}h_2$ (radii are equal)

$\frac{1}{3} \times h_1 = 5 \Rightarrow h_1 = 15$

280. b) 4:3

$$\cancel{\frac{4}{3}}\pi R^3 : \cancel{\frac{4}{3}}\pi r^3 = 64:27$$

$$R^3 : r^3 = 64:27$$

$$R : r = \sqrt[3]{64} : \sqrt[3]{27} = 4 : 3$$

281. b) 2r Units (Volume of Cone = Volume of Cylinder)

i. $\frac{1}{3}\pi R^2 h = \frac{4}{3}\pi r^3$(h=r)

ii. $\frac{1}{3}\pi R^2 r = \frac{4}{3}\pi r^3$(Cancellation of $\frac{1}{3}\pi$and r of LHS and RHS)

iii. $\frac{1}{3}\pi R^2 = \frac{4}{3}\pi r^2$

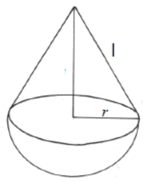
iv. $R^2 = 4r^2 \Rightarrow r = \sqrt{4r^2} = 2r$

282. b) $3\pi r^2$

283. b) Cone and Cylinder

284. c) $2\pi r^2 + \pi rl$(Total Surface Area of Toy

v. =LSA of Hemisphere + LSA of Cone)



285. c) 16:25

$\cancel{4\pi} r^2 : \cancel{4\pi} R^2$

$r^2 : R^2 = 4^2 : 5^2 = 16:25$

286. b) Frustum of Cone And Cylinder

287. b) 3:2

$\cancel{\frac{4}{3}\pi} R^3 : \cancel{\frac{4}{3}\pi} r^3 = 27 : 8$

$R^3 : r^3 = 27 : 8$

$R : r = \sqrt[3]{27} : \sqrt[3]{8} = 3 : 2$

288. b) $\frac{1}{3}\pi H(R^2+r^2+Rr)+ \pi r^2 h$

289. d) 8(No. of balls= $\frac{\text{Volume of } 4\text{cm} \textit{radius}}{\text{Volume of } 2\text{cm } \textit{radius}}$

$= \frac{\frac{4}{3}\pi R^3}{\frac{4}{3}\pi r^3} = \frac{R^3}{r^3} = \frac{4^3}{2^3} = \frac{64}{8} = 8$)

290. b) 2 Hemispheres + Cylinder

291. a) $2 X 2\pi r^2 + 2\pi rh$

292. b) $\pi r(r+l)$

293. b) $\frac{2}{3}\pi r^3$

294. a) $\frac{2}{3}\pi r^3 + \frac{1}{3}\pi r^2 h$

295. c) 90 Cubic units

296. d) $77 cm^2$($4\pi r^2 = 154 \Rightarrow 2\pi r^2 = \frac{154}{2} = 77$)

297. d) 308 cm^2($2\pi r^2 = 2x\,\frac{22}{7}$ x 7x7 = 308)

298. c) 462 cm^2($3\pi r^2 = 3x\,\frac{22}{7}$ x 7x7 = 462)

299. d) 440 cm^2 ($2\pi rh = 2x\,\frac{22}{7}$ x 7x10 = 440)

300. b) $2\pi rh$ (Pipe means lateral surface area)

301. c) 1960π cm^3($2\pi r = 88$

$\Rightarrow 2x\frac{22}{7}$ x r = 88 $\Rightarrow$ r = $\frac{88\ x\ 7}{2\ x\ 22}$ = 14

$\therefore$ Volume= $\pi r^2h = \pi$ x 14 x14 x10 = 1960π

302. b) 35π cm^2 ($2\pi r$=22$\Rightarrow$ 2x$\frac{22}{7}$ x r =22 $\Rightarrow$ r = $\frac{7}{2}$

vi. $2\pi rh = 2x\pi$ x $\frac{7}{2}$x 5 =35 π

$2\pi rxh$ = 22 x 5 = 110

110 x $\frac{\pi}{\pi}$ = 110 x π x $\frac{7}{22}$ = 35 π

303. b) $\pi(r_1 + r_2)l + \pi r_1^2 + \pi r_2^2$(lateral surface area of frustum of cone)