Final Work Sheet- 3
Class- Nine, Chapter- Eight
Exercise-8.2
Trigonometry

Creative Multiplication Choice Questions

Answer to the questions no. (1 - 5)

**If $\cos\theta = \frac{4}{5}$ then -**

1. What is the value of $\sin\theta$ = What?
   a) $\frac{3}{5}$
   b) 2
   c) 4
   d) $\frac{5}{3}$

2. The value of $\tan\theta$ is -
   a) $\frac{3}{5}$
   b) 2
   c) $\frac{3}{4}$
   d) $\frac{5}{3}$

3. What is the value of $\sec\theta$ is?
   a) $\frac{3}{5}$
   b) 2
   c) $\frac{5}{4}$
   d) $\frac{5}{3}$

4. What is the value of $\csc\theta$ is?
   a) $\frac{3}{5}$
   b) 2
   c) 4
   d) $\frac{5}{3}$

5. The value of $\cot\theta$ is-
   a) $\frac{3}{5}$
   b) 2
   c) $\frac{4}{3}$
   d) $\frac{5}{3}$

6. If $\sin\theta = \frac{1}{2}$ then what is the value of $\cos^2\theta$?
   a) $\frac{1}{4}$
   b) $\frac{3}{4}$
   c) 1
   d) 2

7. If $\theta = 45°$ then what is the value of $\sec^2\theta - \tan^2\theta$?
   a) 0
   b) 1
   c) 2
   d) 3

8. $\sin^2 0° + \cos^2 0° =$ What?
   a) 0
   b) -1
   c) 1
   d) 2

9. What is the value of $\sec^2\frac{\pi}{4} - \tan^2\frac{\pi}{4}$?
   a) $2\sqrt{3}$
   b) $\frac{\sqrt{3}}{2}$
   c) 1
   d) 0

10. If $\csc\theta = \sqrt{2}$ then $\cot\theta =$ What?
    a) 0
    b) 1
    c) $\frac{1}{\sqrt{2}}$
    d) $\frac{\sqrt{2}}{3}$

11. If θ is an acute angle -
    i. $\sin^2\theta + \cos^2\theta = 1$
    ii. $\sec^2\theta - \tan^2\theta = 1$
    iii. $\csc^2\theta + \cot^2\theta = 1$
    Which one of the following is correct?
    a) i and ii
    b) ii and iii
    c) i and iii
    d) i, ii and iii

12. If $\cos\theta = \frac{1}{\sqrt{2}}$ then -
    i. $\sec^2\theta = 2.$
    ii. $\tan^2\theta = 1$
    iii. $\cot^2\theta = 2$
    Which one of the following is correct?
    a) i and ii
    b) i and iii
    c) ii and iii
    d) i, ii and iii

Answer to the questions no. (13 – 14) in the above figure:
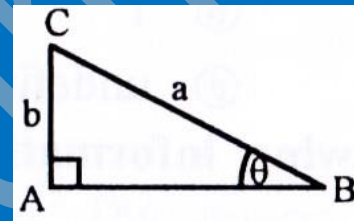
13. $\sin B + \cos C =$ What?
    a) $\frac{2b}{a}$
    b) $\frac{2a}{b}$
    c) $\frac{a^2+b^2}{ab}$
    d) $\frac{ab}{a^2+b}$

14. Which is the value of $\tan B$?
    a) $\frac{a}{a^2+b^2}$
    b) $\frac{b}{a^2+b^2}$
    c) $\frac{a}{\sqrt{a^2+b^2}}$
    d) $\frac{b}{\sqrt{a^2-b^2}}$

If $\cos\theta = \frac{1}{\sqrt{2}}$ then answer to the questions no. (15 - 17):

15. Which is the value of $\sin\theta$?
    a) $\pm\frac{1}{2}$
    b) $\pm\frac{1}{\sqrt{2}}$
    c) $\pm\frac{1}{\sqrt{3}}$
    d) None

16. What is the value of $\tan\theta$?
    a) 1
    b) ± 1
    c) $\pm\frac{1}{\sqrt{3}}$
    d) None

17. What is the value of $\sin^2\theta + \cos^2\theta$?
    a) 1
    b) ± 1
    c) 2
    d) 3

18. tan and cot are positive in which quadrant?
    a) 1st
    b) 2nd

c) 3rd   d) 4th

19. If $\tan\theta = \sqrt{3}$ then which is the value of $\tan(-\theta)$?

a) $-\dfrac{1}{\sqrt{3}}$ b) $-\sqrt{3}$

c) $\dfrac{1}{\sqrt{3}}$ d) $\sqrt{3}$

20. If $\cos\theta = \dfrac{4}{5}$ and $0 < \theta < \dfrac{\pi}{2}$ then what is the value of $\cot\theta$?

a) $\dfrac{5}{4}$ b) $\dfrac{5}{3}$

c) $\dfrac{4}{3}$ d) $\dfrac{3}{4}$

21. If $\sin\theta = \dfrac{4}{5}$ and $\dfrac{\pi}{2} < \theta < \pi$ then what is the value of $\tan\theta$?

a) $-\dfrac{5}{3}$ b) $-\dfrac{4}{3}$

c) $\dfrac{4}{3}$ d) $\dfrac{5}{4}$

22. If $\tan\theta = \dfrac{1}{2}$ and $\pi < \theta < \dfrac{3\pi}{2}$ then what is the value of $\cos\theta$?

a) $\dfrac{1}{\sqrt{5}}$ b) $-\dfrac{1}{\sqrt{5}}$
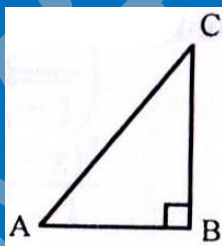
c) $\dfrac{2}{\sqrt{5}}$ d) $-\dfrac{2}{\sqrt{5}}$

23. If $\sec\theta = \dfrac{5}{4}$ and $\pi < \theta < \dfrac{3\pi}{2}$ then what is the value of $\csc\theta$?

a) $-\dfrac{3}{5}$ b) $-\dfrac{5}{3}$

c) $\dfrac{3}{5}$ d) $\dfrac{5}{3}$

24. $\csc(-\theta) =$ What?

a) $-\csc\theta$ b) $\csc\theta$

c) $\sin\theta$ d) $-\sin\theta$

25.

$\tan\dfrac{A+C}{2} =$ What?

a) 0 b) 1

c) $\sqrt{3}$ d) $\dfrac{1}{\sqrt{3}}$

26. If $\cos\theta = \dfrac{1}{2}$ then what is the value of θ?

a) $\dfrac{\pi}{4}$ b) $\dfrac{\pi}{3}$

c) $\dfrac{\pi}{2}$ d) π

27. $\dfrac{\sec x}{\sqrt{\sec^2 x - 1}}$ is equal to -

a) $\sin x$ b) $\cos x$

c) $\csc x$ d) $\sec x$

28. $\sec x . \csc x$ is equal to -

a) $\sec x + \csc x$

b) $\sec x + \tan x$

c) $\cot x + \tan x$

d) $\csc x + \cot x$

29. If $\sin A = \dfrac{1}{\sqrt{2}}$ then which is the value of $\tan A$?

a) $\dfrac{1}{\sqrt{3}}$ b) $\dfrac{\sqrt{3}}{2}$

c) 1 d) $\sqrt{3}$

30. What is the maximum value of $\sin\theta + \cos\theta$?

a) -2 b) -1

c) 1 d) 2

31. If $\sec\theta + \tan\theta = 2$ then which one of the following indicates the value of $\sec\theta - \tan\theta$?

a) 0 b) $\dfrac{1}{2}$

c) $\dfrac{2}{3}$ d) 3

32. If $(\dfrac{\pi}{2} < 0 < \pi)$ and $\tan\theta = -\dfrac{1}{2}$ then what is the value of $\sin\theta$?

a) $\dfrac{-1}{\sqrt{5}}$ b) $\dfrac{1}{\sqrt{5}}$

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

33. If $A = \dfrac{\pi}{3}$ and $B = \dfrac{\pi}{6}$ then what is the value of $\cot(A + B)$?

a) 0 b) 1

c) $\dfrac{1}{2}$ d) $\dfrac{\sqrt{3}}{2}$

34. If $\sin\theta = \dfrac{5}{13}$ and θ is positive then -

i. Base $= 12$

ii. $\tan\theta = \dfrac{5}{12}$

iii. $\cot\theta = -\dfrac{12}{5}$

Which one of the following is correct?

a) i and ii   b) i and iii

c) ii and iii   d) i, ii and iii

35. If $A = 30°$ then -

i. $\sin 2A = 2\sin A \cos A$

ii. $\sin 3A = 3\sin A \cos A$

iii. $\sin^2 A + \cos^2 A = 1$

Which one of the following is correct?

a) i and ii   b) i and iii

c) ii and iii   d) i, ii and iii

36. If $A = \dfrac{\pi}{6}$ and $A = \dfrac{\pi}{4}$ then -

i. $\cos^2 A + \cos^2 B = \frac{5}{4}$.

ii. $2 \sin A \cos B = \frac{1}{\sqrt{2}}$

iii. $\tan^2 B = 1$

Which one of the following is correct?

a) i and ii   b) i and iii

c) ii and iii   d) i, ii and iii

37. **If $A = \frac{\pi}{3}$ then -**

i. $\csc^2 A = \frac{4}{3}$

ii. $\cot^2 \frac{\pi}{3} = \frac{1}{3}$

iii. $\sec^2 A - \tan^2 A = 1$

Which one of the following is correct?

a) i and ii   b) i and iii

c) ii and iii   d) i, ii and iii

On the basis of following information answer to the questions No. (38 - 40):

$\tan\theta = \frac{5}{12}$ and θ lies in the 3rd quadrant.

38. **$\cos(\theta) = $ What?**

a) $\frac{-13}{12}$ b) $\frac{-12}{13}$

c) $\frac{12}{13}$ d) $\frac{13}{12}$

39. **$\sin\theta = $ What?**

a) $\frac{-12}{13}$ b) $\frac{-13}{12}$

c) $\frac{-13}{5}$ d) $-\frac{5}{13}$

40. **$\sec(-\theta) + \tan\theta = $ What?**

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

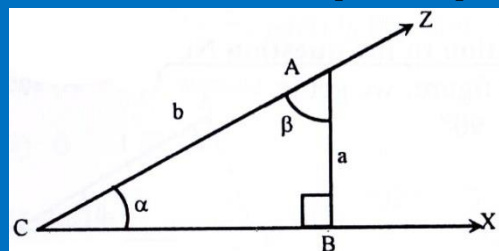c) $\frac{2}{3}$ d) $\frac{3}{2}$

Creative Questions:

1. **$x = a\cos\theta$ and $y = b\sin\theta$**   [R.B.- 19]

a) If $\frac{x}{y} = 1$ then determine the value of $\frac{a\sin\theta + b\cos\theta}{a\sin\theta - b\cos\theta}$.

b) If $x - y = \sqrt{a^2 + b^2 - c^2}$ then prove that, $a\sin\theta + b\cos\theta - c = 0$.

c) If $a = 3$ and $b = \sqrt{2}$ then solve the equation $x + y^2 = 3$, where $0 \le \theta \le 2\pi$.

2.   [C.B.- 16]

a) Find the value of $\sec \alpha$.

b) If $a = 1$ and $b = 2$ then prove that, $\cos 3\beta = 4\cos^3 \beta - 3\cos\beta$.

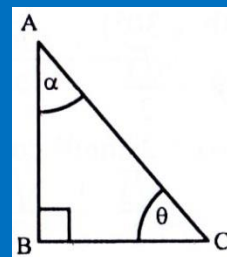c) If $a + \sqrt{b^2 - a^2} = \sqrt{2}b$ then finds the value of β.

3. **$P = a\cos\theta$ and $Q = b\sin\theta$.**   [J.B.- 16]

a) Find the value of $\frac{P^2}{a^2} + \frac{Q^2}{b^2}$.

b) If $P - Q = c$ prove that, $a\sin\theta + b\cos\theta = \pm\sqrt{a^2 + b^2 - c^2}$.

c) If $a^2 = 3, b^2 = 7$ and $Q^2 + P^2 = 4$ then prove that, $\tan\theta = \pm\frac{1}{\sqrt{3}}$.

4.   [Ctg.B.- 16]

a) Find the quadrant in which $-700°$ lie with figure.

b) If $\left(\frac{AC}{BC}\right)^2 + \left(\frac{AB}{BC}\right)^2 = \frac{5}{3}$ then find the value of θ.

c) According to the stem $\sin 2\alpha = 2\sin\alpha.\cos\alpha = \frac{2\tan\alpha}{1 + \tan^2 \alpha}$.

5. **Given, $A = \sec\theta - \tan\theta$**

a) If $\theta = \frac{\pi}{4}$ then what is the value of $A^2 + 2A$.

b) Prove that, $\sin\theta = \frac{1 - A^2}{1 + A^2}$

c) Show that, $\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = \frac{1}{A}$.