

APPLICATIONS OF TRIGONOMETRY

1. How many important elements a triangle has.....

- a) 5
- b) 6
- c) -5
- d) 4
- e) None of these

Answer: b

2. Angle above the eye level

- a) Angle of elevation
- b) Angle of depression
- c) Constant angle
- d) Right angle
- e) Obtuse angle

Answer: a

3. $a = 5429, c = 6294, b = \dots$

- a) 2142
- b) 3184
- c) 8413
- d) 1415
- e) None of these

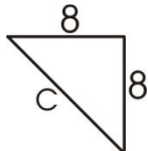
Answer: b

4. Angle below the eye level

- a) Angle of elevation
- b) Angle of depression
- c) Constant angle
- d) Right angle
- e) Obtuse angle

Answer: b

5. The value of c in the triangle is



- a) 128
- b) 64
- c) $c = \frac{\sqrt{2}}{2}$
- d) $c = 2\sqrt{2}$
- e) $c = 8\sqrt{2}$

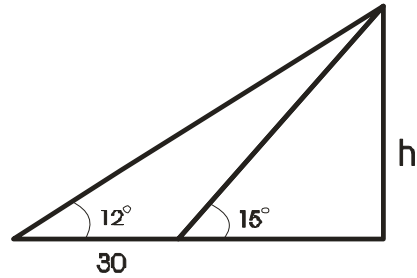
Answer: e

6. The sum of the three angles of triangle is

- a) 360°
- b) 073°
- c) 225°
- d) 180°
- e) 90°

Answer: d

7. The value of h is



- a) 15.3
- b) 30.3
- c) 60.3
- d) 120.3
- e) None of these

Answer: b

8. The law of sine is

- a) $\frac{a}{\sin \alpha} + \frac{b}{\sin \beta} + \frac{c}{\sin \gamma}$
- b) $\frac{a}{\sin \alpha} - \frac{b}{\sin \beta} - \frac{c}{\sin \gamma}$
- c) $\frac{a}{\sin \alpha} = \frac{b}{\sin \beta} = \frac{c}{\sin \gamma}$
- d) $\frac{a}{\sin \alpha} + \frac{b}{\sin \beta} - \frac{c}{\sin \gamma}$
- e) None of these

Answer: c)

9. The law of sine is

- a) $\frac{a}{\sin \alpha} + \frac{b}{\sin \beta} + \frac{c}{\sin \gamma}$
- b) $\frac{a}{\sin \alpha} = \frac{b}{\sin \beta} = \frac{c}{\sin \gamma}$
- c) $\frac{a}{\sin \alpha} - \frac{b}{\sin \beta} - \frac{c}{\sin \gamma}$
- d) $\frac{a}{\sin \alpha} + \frac{b}{\sin \beta} - \frac{c}{\sin \gamma}$

e) None of these

Answer: b)

10. The law of cosine is

a) $a^2 = b^2 + c^2 - 2bc \cos \alpha$

b) $a^2 = b^2 + c^2 + 2bc \cos \alpha$

c) $a^2 = b^2 - c^2 - 2bc \cos \alpha$

d) $a^2 = b^2 - c^2 + 2bc \cos \alpha$

e) None of these

Answer: a)

11. The law of tangent is

a) $\frac{a-b}{a+b} = \frac{\tan \frac{1}{2}(\alpha + \beta)}{\tan \frac{1}{2}(\alpha - \beta)}$

b) $\frac{a+b}{a-b} = \frac{\tan \frac{1}{2}(\alpha + \beta)}{\tan \frac{1}{2}(\alpha - \beta)}$

c) $\frac{a+b}{a-b} = \frac{\tan(\alpha + \beta)}{\tan(\alpha - \beta)}$

d) $\frac{a-b}{a+b} = \frac{\tan(\alpha + \beta)}{\tan(\alpha - \beta)}$

e) None of these

Answer: b)

12. The law of tangent is

a) $\frac{c+a}{c-a} = \frac{\tan \frac{1}{2}(\gamma + \alpha)}{\tan \frac{1}{2}(\gamma - \alpha)}$

b) $\frac{c-a}{c+a} = \frac{\tan \frac{1}{2}(\gamma + \alpha)}{\tan \frac{1}{2}(\gamma - \alpha)}$

c) $\frac{c+a}{c-a} = \frac{\tan(\gamma + \alpha)}{\tan(\gamma - \alpha)}$

d) $\frac{c+a}{c-a} = \frac{\tan(\gamma + \alpha)}{\tan(\gamma - \alpha)}$

e) None of these

Answer: a)

13. if Δ is the area of a triangle ABC, then $\Delta =$

a) $\frac{c^2 \sin \alpha \sin \beta}{2 \sin \beta}$

b) $\frac{c^2 \sin \alpha \sin \beta}{2 \sin \gamma}$

c) $\frac{c^2 \sin \alpha}{2 \sin \beta \sin \gamma}$

d) $\frac{b^2 \sin \beta \sin \gamma}{2 \sin \alpha}$

e) $\frac{a^2 \sin \beta \sin \gamma}{2 \sin \alpha}$

Answer: b)

14. if Δ is the area of a triangle ABC, then $\Delta =$

a) $\frac{c^2 \sin \beta \sin \gamma}{2 \sin \beta}$

b) $\frac{c^2 \sin \alpha \sin \beta}{2 \sin \gamma}$

c) $\frac{c^2 \sin \alpha}{2 \sin \beta \sin \gamma}$

d) $\frac{b^2 \sin \beta \sin \gamma}{2 \sin \alpha}$

e) $\frac{a^2 \sin \beta \sin \gamma}{2 \sin \alpha}$

Answer: e)

15. if Δ is the area of a triangle ABC, then $\Delta =$

a) $\frac{1}{2}bc \sin \beta$

b) $\frac{1}{2}ab \sin \alpha$

c) $\frac{1}{2}bc \sin \alpha$

d) $ab \sin \alpha$

e) $bc \sin \alpha$

Answer: c)

16. if Δ is the area of a triangle ABC, then $\Delta =$

a) $\frac{c^2 \sin \beta \sin \gamma}{2 \sin \beta}$

b) $\frac{c^2 \sin \alpha \sin \beta}{2 \sin \gamma}$

c) $\frac{c^2 \sin \alpha}{b^2 \sin \beta \sin \gamma}$

d) $\frac{b^2 \sin \beta \sin \gamma}{2 \sin \alpha}$

$$e) \frac{a^2 \sin \beta \sin \gamma}{2 \sin \alpha}$$

Answer: b)

17. if Δ is the area of a triangle ABC, then $\Delta =$

$$a) \sqrt{s(s+a)(s-b)(s-c)}$$

$$b) \sqrt{s(s-a)(s+b)(s-c)}$$

$$c) \sqrt{s(s-a)(s-b)(s+c)}$$

$$d) \sqrt{s(s+a)(s+b)s+c}$$

$$e) \sqrt{s(s-a)(s-b)s-c}$$

Answer: e

18. if a, b, c are the sides of the triangle ABC, then s

=

$$a) \frac{a+b+c}{3}$$

$$b) \frac{a+b+c}{4}$$

$$c) \frac{a+b+c}{2}$$

$$d) a+b+c$$

$$e) a-b-c$$

Answer: c

19. $r_1 =$

$$a) \frac{\Delta}{s-b}$$

$$b) \frac{\Delta}{s-a}$$

$$c) \frac{\Delta}{s-c}$$

$$d) \frac{s-a}{\Delta}$$

$$e) \frac{\Delta}{s}$$

Answer: b

20. $r_2 =$

$$a) \frac{\Delta}{s-b}$$

$$b) \frac{\Delta}{s-a}$$

$$c) \frac{\Delta}{s-c}$$

$$d) \frac{s-a}{\Delta}$$

$$e) \frac{\Delta}{s}$$

Answer: a

21. $r_3 =$

$$a) \frac{\Delta}{s-b}$$

$$b) \frac{\Delta}{s-a}$$

$$c) \frac{\Delta}{s-c}$$

$$d) \frac{s-a}{\Delta}$$

$$e) \frac{\Delta}{s}$$

Answer: c

22. $r_1 =$

$$a) s \tan \frac{\gamma}{2}$$

$$b) s \tan \frac{\beta}{2}$$

$$c) s \tan \frac{\alpha}{2}$$

$$d) s \tan \alpha$$

$$e) s \tan \beta$$

Answer: c)

23. $r_2 =$

$$a) s \tan \frac{\gamma}{2}$$

$$b) s \tan \frac{\beta}{2}$$

$$c) s \tan \frac{\alpha}{2}$$

$$d) s \tan \alpha$$

$$e) s \tan \beta$$

Answer: b)

$$24. \frac{1}{ab} + \frac{1}{bc} + \frac{1}{ca} =$$

$$a) \frac{R}{2r}$$

$$b) \frac{r}{2R}$$

c) $\frac{1}{2rR}$

d) $\frac{1}{rs}$

e) None of these

Answer: c)

25. $r_3 =$

a) $s \tan \frac{\gamma}{2}$

b) $s \tan \frac{\beta}{2}$

c) $s \tan \frac{\alpha}{2}$

d) $s \tan \alpha$

e) $s \tan \beta$

Answer: a)

26. $r_1 + r_2 + r_3 - r =$

a) $4r_1$

b) 4Δ

c) $4s$

d) $4R$

e) $4r$

Answer: d)

27. $\cos \frac{\gamma}{2} =$

a) $\sqrt{\frac{s(s-c)}{ab}}$

b) $\sqrt{\frac{s(s-b)}{ac}}$

c) $\sqrt{\frac{s(s-a)}{bc}}$

d) $\sqrt{\frac{s(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: a)

28. $(r_1 + r_2) \tan \frac{1}{2} \gamma =$

a) c

b) Δ

c) R

d) a

e) b

Answer: a)

29. $abc (\sin \beta + \sin \gamma) =$

a) $4\Delta R$

b) $4\Delta s$

c) $4\Delta r$

d) $4rs$

e) $4Rs$

Answer: b)

30. $(r_1 + r_3) \tan \frac{1}{2} \beta =$

a) c

b) Δ

c) R

d) a

e) b

Answer: e)

31. $(r_2 + r_3) \tan \frac{1}{2} \alpha =$

a) c

b) Δ

c) R

d) a

e) b

Answer: d)

32. $\cos \frac{\alpha}{2} =$

a) $\sqrt{\frac{s(s-c)}{ab}}$

b) $\sqrt{\frac{s(s-b)}{ac}}$

c) $\sqrt{\frac{s(s-a)}{bc}}$

d) $\sqrt{\frac{s(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{s(s-c)(s-a)}{ac}}$

Answer: c)

33. $\cos \frac{\beta}{2} =$

$$a) \sqrt{\frac{s(s-c)}{ab}}$$

$$b) \sqrt{\frac{s(s-b)}{ac}}$$

$$c) \sqrt{\frac{s(s-a)}{bc}}$$

$$d) \sqrt{\frac{s(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{s(s-c)(s-a)}{ac}}$$

Answer: b)

$$34. \sin \frac{\alpha}{2} =$$

$$a) \pm \sqrt{\frac{s(s-c)}{ab}}$$

$$b) \pm \sqrt{\frac{s(s-b)}{ac}}$$

$$c) \pm \sqrt{\frac{s(s-a)}{bc}}$$

$$d) \pm \sqrt{\frac{s(s-b)(s-c)}{bc}}$$

$$e) \pm \sqrt{\frac{s(s-c)(s-a)}{ac}}$$

Answer: d)

$$35. \sin \frac{\gamma}{2} =$$

$$a) \sqrt{\frac{s(s-c)}{ab}}$$

$$b) \sqrt{\frac{s(s-b)}{ac}}$$

$$c) \sqrt{\frac{s(s-b)(s-c)}{ac}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \pm \sqrt{\frac{(s-b)(s-a)}{ab}}$$

Answer: e)

$$36. \tan \frac{\alpha}{2} =$$

$$a) \sqrt{\frac{s(s-c)}{ab}}$$

$$b) \sqrt{\frac{s(s-b)}{ac}}$$

$$c) \sqrt{\frac{s(s-b)(s-c)}{s(s-a)}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{(s-c)(s-a)}{ac}}$$

Answer: c)

$$37. \tan \frac{\beta}{2} =$$

$$a) \sqrt{\frac{s(s-c)}{ab}}$$

$$b) \sqrt{\frac{s(s-b)}{ac}}$$

$$c) \sqrt{\frac{s(s-a)}{bc}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{(s-c)(s-a)}{ac}}$$

Answer: e)

$$38. \tan \frac{1}{2}\gamma =$$

$$a) \sqrt{\frac{s(s-c)}{ab}}$$

$$b) \sqrt{\frac{s(s-b)}{ac}}$$

$$c) \sqrt{\frac{s(s-a)}{bc}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{(s-a)(s-b)}{s(s-c)}}$$

Answer: e)

$$39. \sin \frac{\beta}{2} =$$

$$a) \sqrt{\frac{s(s-c)}{ab}}$$

$$b) \sqrt{\frac{s(s-b)}{ac}}$$

$$c) \sqrt{\frac{s(s-a)}{bc}}$$

$$d) \sqrt{\frac{s(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{s(s-c)(s-a)}{ac}}$$

Answer: e)

$$40. \sec \frac{1}{2} \gamma =$$

$$a) \sqrt{\frac{ab}{s(s-c)}}$$

$$b) \sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$$

$$c) \sqrt{\frac{s(s-c)}{(s-c)(s-a)}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{(s-c)(s-a)}{ac}}$$

Answer: a)

$$41. \cot \frac{1}{2} \beta =$$

$$a) \sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$$

$$b) \sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$$

$$c) \sqrt{\frac{s(s-c)}{(s-c)(s-a)}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{(s-c)(s-a)}{ac}}$$

Answer: b)

$$42. \sec \frac{\alpha}{2} =$$

$$a) \sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$$

$$b) \sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$$

$$c) \sqrt{\frac{bc}{s(s-a)}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{(s-c)(s-a)}{ac}}$$

Answer: c)

$$43. \sec \frac{\beta}{2} =$$

$$a) \sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$$

$$b) \sqrt{\frac{ac}{s(s-b)}}$$

$$c) \sqrt{\frac{s(s-b)}{(s-c)(s-a)}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{(s-c)(s-a)}{ac}}$$

Answer: b)

$$44. \cot \frac{1}{2} \gamma =$$

$$a) \sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$$

$$b) \sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$$

$$c) \sqrt{\frac{s(s-c)}{(s-b)(s-a)}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{(s-c)(s-a)}{ac}}$$

Answer: a)

$$45. \csc \frac{\gamma}{2} =$$

$$a) \sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$$

$$b) \sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$$

$$c) \sqrt{\frac{s(s-c)}{(s-b)(s-a)}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{(s-c)(s-a)}{ac}}$$

Answer: c)

$$46. \csc \frac{\gamma}{2} =$$

$$a) \sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$$

$$b) \sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$$

$$c) \sqrt{\frac{ab}{(s-a)(s-b)}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{(s-c)(s-a)}{ac}}$$

Answer: c)

$$47. \csc \frac{\alpha}{2} =$$

$$a) \sqrt{\frac{bc}{(s-b)(s-c)}}$$

$$b) \sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$$

$$c) \sqrt{\frac{s(s-c)}{(s-c)(s-a)}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{(s-c)(s-a)}{ac}}$$

Answer: a)

$$48. \csc \frac{\beta}{2} =$$

$$a) \sqrt{\frac{ac}{(s-a)(s-c)}}$$

$$b) \sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$$

$$c) \sqrt{\frac{s(s-c)}{(s-c)(c-a)}}$$

$$d) \sqrt{\frac{(s-b)(s-c)}{bc}}$$

$$e) \sqrt{\frac{(s-c)(s-a)}{ac}}$$

Answer: a)

$$49. R =$$

$$a) \frac{a}{2 \sin \gamma}$$

$$b) \frac{a}{2 \sin \beta}$$

$$c) \frac{c}{2 \sin \alpha}$$

$$d) \frac{b}{2 \sin \alpha}$$

$$e) \frac{a}{2 \sin \alpha}$$

Answer: e)

$$50. R =$$

$$a) \frac{b}{2 \sin \gamma}$$

$$b) \frac{a}{2 \sin \beta}$$

$$c) \frac{c}{2 \sin \alpha}$$

$$d) \frac{b}{2 \sin \beta}$$

$$e) \frac{c}{2 \sin \alpha}$$

Answer: a)

$$51. R =$$

a) $\frac{b}{2\sin \gamma}$

b) $\frac{a}{2\sin \beta}$

c) $\frac{c}{2\sin \alpha}$

d) $\frac{b}{2\sin \beta}$

e) $\frac{c}{2\sin \alpha}$

Answer: d)

52. a circle drawn inside a triangle and touching its sides is called the

- a) Circum circle
- b) In circle
- c) Escribed circle
- d) Normal
- e) None of these

Answer: b)

53. The circle passing through three vertices of a triangle is called a

- a) Circum circle
- b) In circle
- c) Escribed circle
- d) Tangent
- e) None of these

Answer: a)