MATHS

BOOKS - OBJECTIVE RD SHARMA MATHS VOL I (HINGLISH)

SOLUTIONS OF TRIANGLES

Illustration

1. In a right triangle ABC, right angled at C, if a = 7 cm and b = $7\sqrt{3}$ cm, then $\angle A$=

A. $30°$

B. $60°$

C. $45°$

D. none of these

Answer: A

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2. In a $\triangle ABC$, if $B = 90°$, then $\tan^2. \dfrac{A}{2} =$

A. $\dfrac{a - b}{a + b}$

B. $\dfrac{b-c}{b+c}$

C. $\dfrac{c-a}{c+a}$

D. $\dfrac{b+c}{b-c}$

Answer: B

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3. If $A = 30°, c = 7\sqrt{3}$ and $C = 90°$ in $\triangle ABC$, then a =

A. $7\sqrt{3}$

B. $7\sqrt{3}/2$

C. $7/2$

D. none of these

Answer: B

4. If two sides and included angle of a triangle are respectively $3 + \sqrt{3}, 3 - \sqrt{3}$ and $60°$, then the third sides is

A. $2\sqrt{2}$

B. $4\sqrt{2}$

C. $3\sqrt{2}$

D. none of these

Answer: C

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5. If the angles of a triangle are $30^0 and 45^0$ and the included side is $\left(\sqrt{3}+1\right)cm$ then the area of the triangle is_____.

A. $\dfrac{\sqrt{3}-1}{2}cm^2$

B. $\dfrac{\sqrt{3}+1}{2} cm^2$

C. $\left(\sqrt{3}-1\right) cm^2$

D. none of these

Answer: B

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6. If $b=3, c=4, and B = \dfrac{\pi}{3},$ then find the number of triangles that can be constructed.

A. 0

B. 1

C. 2

D. Infinite

Answer: A

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7. In a $\triangle ABC$, a,c, A are given and b_1, b_2 are two values of third side b such that $b_2 = 2b_1$. Then, the value of sin A.

A. $\sqrt{\dfrac{9a^2 - c^2}{8a^2}}$

B. $\sqrt{\dfrac{9a^2 - c^2}{8c^2}}$

C. $\sqrt{\dfrac{9a^2 + c^2}{8a^2}}$

D. none of these

Answer: B

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Section I Solved Mcqs

1. In a $\triangle ABC$ if the length of the sides are $\sqrt{2}, \sqrt{6}$ and $\sqrt{8}$, then the measures of the angles are

    A. $30°, 60°, 90°$

    B. $45°, 75°, 60°$

    C. $45°, 30°, 105°$

    D. none of these

Answer: A

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2. In a $\triangle ABC$, if a 100, c = 100 $\sqrt{2}$ and $A = 30°$,

then B equals to

    A. $45°$ or $135°$

    B. $105°$ or $15°$

    C. $60°$ or $120°$

    D. none of these

Answer: B

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3. In a $\triangle ABC$, if $A = 45°$ and $B = 75°$, then $a + \sqrt{2}c =$

A. b

B. 2b

C. 3b

D. none of these

Answer: B

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4. In a $\triangle ABC$, if a = 40, $c = 40\sqrt{3}$ and $B = 30°$

, then the triangle is

   A. isosceles

   B. equilateral

   C. right angled

   D. none of these

Answer: A

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5. If $a = \sqrt{3} + 1$, $B = 30°$, $C = 45°$, then $c =$

A. 3

B. 2

C. 4

D. none of these

Answer: B

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6. In a $\triangle ABC$, if a = 4, b = 3 and $\angle A = 60°$, then c is a root of the equation

A. $c^2 - 3c - 7 = 0$

B. $c^2 + 3c + 7 = 0$

C. $c^2 - 3c + 7 = 0$

D. $c^2 + 3c - 7 = 0$

Answer: A

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7. In a triangle, the lengths of the two larger sides are 10 and 9, respectively. If the angles are in A.P., then the length of the third side can be

A. $5 \pm \sqrt{6}$

B. $3\sqrt{3}$

C. 5

D. none of these

Answer: A

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8. In a ΔABC, if $b = \sqrt{3} + 1, c = \sqrt{3} - 1$ and $A = 60°$, then the value of $\tan\left(\dfrac{B - C}{2}\right)$ is

A. -1

B. $1/2$

C. 1

D. none of these

Answer: C

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9. Let the angles A, B and C of triangle ABC be in $AP.$ and let $b:c$ be $\sqrt{3}:\sqrt{2}.$ Find angle $A.$

A. 75°

B. 60°

C. 45°

D. 30°

Answer: A

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10. In a $\triangle ABC$, if $A = 120°$, $b = 2$ and $C = 30°$, then a=

A. $2\sqrt{3}$

B. 2

C. $\dfrac{\sqrt{3}}{2}$

D. $\dfrac{1}{2}$

Answer: A

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11. In a $\triangle ABC$, if $A = 30°$, $C = 105°$ and $b = 3\sqrt{2}$, then a =

A. $\sqrt{2}$

B. 3

C. $3\sqrt{2}$

D. 2

Answer: B

12. If $a = \sqrt{3} + 1, B = 30°, C = 45°$, then

$c =$

A. 2

B. 3

C. 4

D. none of these

Answer: A

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13. In a $\triangle ABC$, if a = 3, $b = 2\sqrt{3}$ and $c = \sqrt{3}$, then A=

    A. $30°$

    B. $45°$

    C. $60°$

    D. $75°$

Answer: C

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14. In a ΔABC, if a = 5, $B = 45°$ and $c = 2\sqrt{2}$, then b=

A. $\sqrt{3}$

B. 6

C. $2\sqrt{13}$

D. $\sqrt{13}$

Answer: D

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15. In $\triangle ABC$, If $\dfrac{b}{c^2 - a^2} + \dfrac{a}{c^2 - b^2} = 0$, then $\angle C =$

A. $\dfrac{\pi}{2}$

B. $\dfrac{\pi}{4}$

C. $\dfrac{2\pi}{3}$

D. $\dfrac{\pi}{3}$

Answer: D

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16. In the ambiguous case, if a, b and A are given and c_1, c_2 are the two values of the third $(c_1 - c_2)^2 + (c_1 + c_2)^2 \tan^2 A$ is equal to

A. 4

B. $4a^2$

C. $4b^2$

D. $4c^2$

Answer: B

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1. If $b = 3, c = 4, and B = \dfrac{\pi}{3},$ then find the number of triangles that can be constructed.

    A. Infinite

    B. two

    C. one

    D. nil

Answer: D

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2. If the data given to construct a triangle ABC are a = 5, b= 7, sin $A = 3/4$, then it is possible to construct

    A. only one triangle

    B. two triangles

    C. infinitely many triangles

    D. no triangles

Answer: D

3. We are given b, c and sin B such that B is acute and $b < c \sin B$. Then,

  A. no triangle is possible

  B. one triangle is possible

  C. two triangles are possible

  D. a right-angled triangle is possible

Answer: A

4. In a

ABC, if $= 2, \angle B = 60^0 and \angle C = 75^0$,

then $b = \sqrt{3}$ (b) $\sqrt{6}$ (c) $\sqrt{9}$ (d) $1 + \sqrt{2}$

A. $\sqrt{3}$

B. $\sqrt{6}$

C. $\sqrt{9}$

D. $1 + \sqrt{2}$

Answer: B

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5.

$\triangle ABC,$ if $A = 30°, b = 8, a = 6, B = \sin^{-1} x$

, then $x =$

A. $1/2$

B. $1/3$

C. $2/3$

D. 1

Answer: C

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6. If $a = 2, b = 3, c = 5$ in $\triangle ABC$, then C=

A. $\dfrac{\pi}{6}$

B. $\dfrac{\pi}{3}$

C. $\dfrac{\pi}{2}$

D. none of these

Answer: D

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7. A triangle side are few $7cm$, $4\sqrt{3}cm$ and $\sqrt{13}cm$ then the smallest angle is

A. $15°$

B. $45°$

C. $30°$

D. none of these

Answer: C

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8. In a $\triangle ABC$, if c = 2, $A = 120°$, $a = \sqrt{6}$, then

C=

A. $30°$

B. $60°$

C. $45°$

D. none of these

Answer: C

9. If $A = 30^0$, $a = 7$, $and b = 8$ in ABC, then find the number of triangles that can be constructed.

A. one solution

B. two solutions

C. no solutions

D. none of these

Answer: B

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10. If a $\triangle ABC$, $b = 2, C = 60°, c = \sqrt{6}$, then a

=

A. $\sqrt{3} - 1$

B. $\sqrt{3}$

C. $\sqrt{3} + 1$

D. none of these

Answer: C

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11. If in

$$\Delta ABC, a = 5, b = 4 \text{ and } \cos(A - B) = \frac{31}{32},$$

then

A. 6

B. 7

C. 9

D. none of these

Answer: A

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12. In a $\triangle ABC$, If $A = 30°, b = 2, c = \sqrt{3} + 1$, then $\dfrac{C - B}{2}$ is

A. $15°$

B. $30°$

C. $45°$

D. none of these

Answer: B

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13. In a $\triangle ABC$ if a = 2, $b = \sqrt{6}, c = \sqrt{3} + 1$,

then cos A=

A. $30°$

B. $45°$

C. $60°$

D. none of these

Answer: B

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14. In a $\triangle ABC$, if $A = 45°$, $b = \sqrt{6}$, a=2, then

B=

A. $30°$ or $150°$

B. $60°$ or $120°$

C. $45°$ or $135°$

D. none of these

Answer: B

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15. In a triangle, the lengths of the two larger sides are 10 and 9, respectively. If the angles are in A.P., then the length of the third side can be $5 - \sqrt{6}$ (b) $3\sqrt{3}$ (c) 5 (d) $5 + \sqrt{6}$

A. $5 \pm \sqrt{6}$

B. 0.7

C. $\sqrt{5} + 6$

D. none of these

Answer: A

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16. The sides of a triangle are $3x + 4y$, $4x + 3y$ and $5x + 5y$ units, where $x, y > 0$. The $\triangle$ is

A. right angled

B. equilateral

C. obtuse angled

D. none of these

Answer: C

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17. In a $\triangle ABC$, a,b,A are given and c_1, c_2 are two values of the third side c. The sum of the areas of two triangles with sides a,b,c_1 and a,b,c_2 is

A. $(1/2)b^2 \sin 2A$

B. $(1/2)a^2 \sin 2A$

C. $b^2 \sin 2A$

D. none of these

Answer: A

18. In the ambiguous case, if a, b and A are given and c_1, c_2 are the two values of the third $(c_1 - c_2)^2 + (c_1 + c_2)^2 \tan^2 A$ is equal to

A. $2\sqrt{a^2 - b^2}$

B. $\sqrt{a^2 - b^2 \sin^2 A}$

C. $2\sqrt{a^2 - b^2 \sin^2 A}$

D. $\sqrt{a^2 - b^2}$

Answer: C

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19. In the ambiguous case, if a, b and A are given and c_1, c_2 are the two values of the third $(c_1 - c_2)^2 + (c_1 + c_2)^2 \tan^2 A$ is equal to

A. $4a^2 \cos^2 A$

B. $4a^2 \cos A$

C. $4a \cos^2 A$

D. none of these

Answer: A

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20. The smallest angle of the triangle whose sides are $6 + \sqrt{12}, \sqrt{48}, \sqrt{24}$ is

A. $\pi/3$

B. $\pi/4$

C. $\pi/6$

D. none of these

Answer: C