



**INDIAN SCHOOL AL WADI AL KABIR**  
**Class X, Mathematics *Worksheet- INTRODUCTION TO TRIGONOMETRY***  
**26-08-2021**

**Multiple Choice Questions**

<b>Q.1.</b>	If $\sin(A+B) = \frac{\sqrt{3}}{2}$ and $\cos(A-B) = \frac{\sqrt{3}}{2}$ , find A and B where (A+B) and (A-B) are acute angles.							
<b>A</b>	$A = 15^\circ$ $B = 45^\circ$	<b>B</b>	$A = 45^\circ$ $B = 15^\circ$	<b>C</b>	$A = 30^\circ$ $B = 30^\circ$	<b>D</b>	$A = 90^\circ$ $B = 45^\circ$	
<b>Q.2.</b>	Simplest form of $\frac{1 + \tan^2 A}{1 + \cot^2 A}$ is:							
<b>A</b>	$\operatorname{cosec}^2 A$	<b>B</b>	$\cot^2 A$	<b>C</b>	$\tan^2 A$	<b>D</b>	1	
<b>Q.3.</b>	Evaluate: $\frac{2 \tan 45^\circ \times \cos 60^\circ}{\sin 30^\circ}$							
<b>A</b>	$2\sqrt{2}$	<b>B</b>	2	<b>C</b>	1	<b>D</b>	$\frac{1}{2}$	
<b>Q.4.</b>	$\sqrt{\frac{1 + \sin A}{1 - \sin A}} =$							
<b>A</b>	$\sec A + \tan A$	<b>B</b>	$\operatorname{cosec} A + \tan A$	<b>C</b>	$\sec A + \cot A$	<b>D</b>	$\operatorname{cosec} A + \cot A$	
<b>Q.5.</b>	The value of $\theta$ for which $\cos(10^\circ + \theta) = \sin 30^\circ$ , is:							
<b>A</b>	$50^\circ$	<b>B</b>	$40^\circ$	<b>C</b>	$80^\circ$	<b>D</b>	$20^\circ$	
<b>Q.6.</b>	If $\tan A = 1$ , then $2 \sin A \cos A =$							
<b>A</b>	2	<b>B</b>	$\cot A$	<b>C</b>	$\sec A$	<b>D</b>	1	
<b>Q.7.</b>	If $\cot \theta = \frac{7}{8}$ , then the value of $\frac{(1 + \sin \theta)(1 - \sin \theta)}{(1 + \cos \theta)(1 - \cos \theta)}$ is:							
<b>A</b>	$\frac{49}{64}$	<b>B</b>	$\frac{64}{49}$	<b>C</b>	$\sqrt{\frac{7}{8}}$	<b>D</b>	$\sqrt{\frac{8}{7}}$	

Q.8.	The value of $\left(\frac{1}{1+\cot^2\theta} + \frac{1}{1+\tan^2\theta}\right)$ is:							
A	$\frac{1}{2}$	B	$\frac{\sqrt{3}}{2}$	C	$\sqrt{2}$	D	1	
Q.9.	If $\tan \theta = \frac{3}{4}$ , the value of $\left(\frac{1-\cos^2\theta}{1+\cos^2\theta}\right)$ is:							
A	$\frac{16}{25}$	B	$\frac{25}{16}$	C	$\frac{9}{41}$	D	$\frac{41}{9}$	
Q.10.	If $\tan \theta = \sqrt{3}$ , the value of $\left(\frac{2 \sec \theta}{1+\tan^2\theta}\right)$ is:							
A	1	B	2	C	$\frac{1}{2}$	D	$\frac{1}{4}$	
Q.11.	If $\sin A + \sin^2 A = 1$ , the value of $\cos^2 A + \cos^4 A$ is:							
A	1	B	$\sin^2 A$	C	$\cos^2 A$	D	2	
Q.12.	The value of $(1 + \tan^2\theta)(1 + \sin\theta)(1 - \sin\theta)$							
A	$\cos^2\theta$	B	$\sec^2\theta$	C	1	D	0	
Q.13.	$8 \cot^2 A - 8 \operatorname{cosec}^2 A =$							
A	8	B	$\frac{1}{8}$	C	$-\frac{1}{8}$	D	-8	
Q.14.	If $\sin A = \cos A$ , $0 \leq A \leq 90^\circ$ , then the angle A is equal to							
A	$30^\circ$	B	$60^\circ$	C	$45^\circ$	D	$0^\circ$	
Q.15.	If $3 \tan \theta = 4$ , then the value of $\left(\frac{3 \sin \theta + 2 \cos \theta}{3 \sin \theta - 2 \cos \theta}\right)$ is:							
A	0	B	1	C	2	D	3	

**Assertion Reason Questions:**

Direction: In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R).

Mark the correct choice as:

(A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

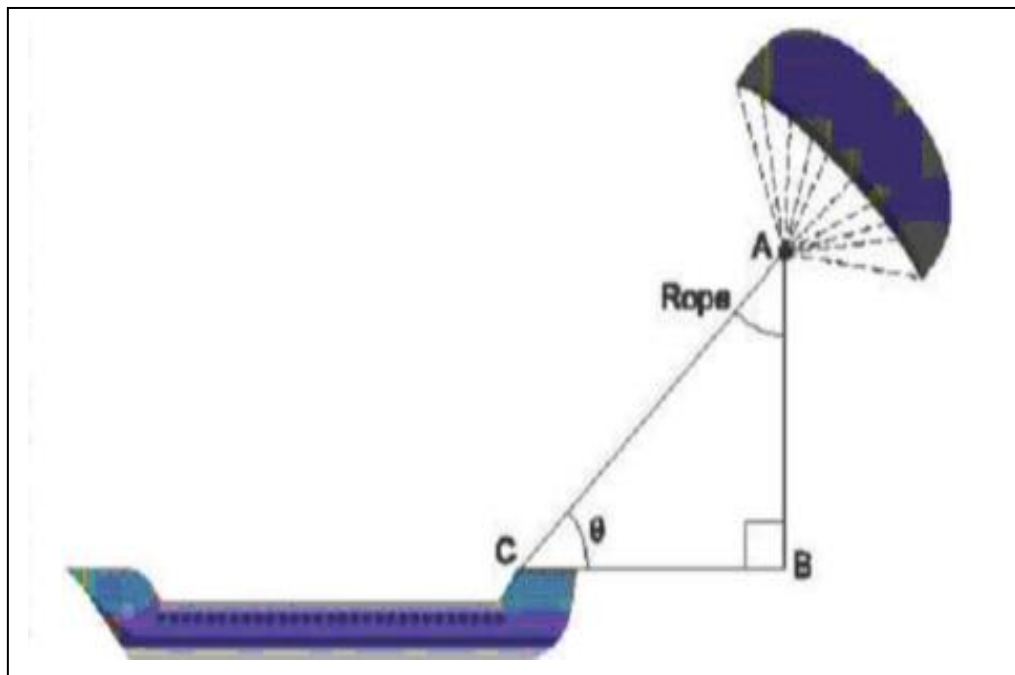
(D) Assertion (A) is false but Reason (R) is true.

- Q.16.** Assertion(A): In a right-angled triangle if  $\theta = \frac{3}{4}$ , the greater side of the triangle is 5 units.  
Reason(R):  $(\text{Greater side})^2 = (\text{Hypotenuse})^2 = (\text{Perpendicular})^2 + (\text{Base})^2$

- Q.17.** Assertion(A): The value of  $\cot^2 45^\circ = 2$ .  
Reason(R): The value of  $\sin 30^\circ = \frac{1}{2}$ .

**Q.18. Case Study Based question**

Skysails' is that genre of engineering science that uses extensive utilization of wind energy to move a vessel in sea water. The Skysails' technology allows the towing kite to gain a height of anything between 100 m to 300 m. The sailing kite is made in such a way that it can be raised to its proper elevation and brought back with the help of a 'telescopic mast' that enables the kite to be raised properly and effectively.



<b>a.</b>	In the given figure, if $\sin\theta = \cos\theta$ where $\theta$ is an acute angle, the value of $\theta$ is: (i) $30^\circ$ (ii) $45^\circ$ (iii) $60^\circ$ (iv) $0^\circ$
<b>b.</b>	What should be the length of the rope of the kite sail in order to pull the ship at the angle $\theta$ (calculated in Part a.) at a vertical height of 200m? (i) 300 m                      (ii) 400 m                      (iii) 200 m                      (iv) $200\sqrt{2}$ m
<b>c.</b>	If $BC = 15$ m, $\theta = 30^\circ$ , then $AB =$ (i) $2\sqrt{3}$ m                      (ii) 15 m                      (iii) 24 m                      (iv) $5\sqrt{3}$ m
<b>d.</b>	Suppose $AB = BC = 12$ m, then $\theta =$ (i) $30^\circ$ (ii) $45^\circ$ (iii) $60^\circ$ (iv) $0^\circ$
<b>e.</b>	Given $BC = 6$ m and $\theta = 45^\circ$ , the values of $AB$ and $AC$ are respectively: (i) $AB = 6$ m, $AC = 6\sqrt{2}$ m                      (ii) $AB = 7$ m, $AC = 7\sqrt{5}$ m (iii) $AB = 9$ m, $AC = 9\sqrt{3}$ m                      (iv) $AB = 4$ m, $AC = 4\sqrt{2}$ m

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### Answers

<b>Answers</b>	<b>1</b>	<b>B</b>	<b>2</b>	<b>C</b>	<b>3</b>	<b>B</b>	<b>4</b>	<b>A</b>
	<b>5</b>	<b>A</b>	<b>6</b>	<b>D</b>	<b>7</b>	<b>A</b>	<b>8</b>	<b>D</b>
	<b>9</b>	<b>C</b>	<b>10</b>	<b>A</b>	<b>11</b>	<b>A</b>	<b>12</b>	<b>C</b>
	<b>13</b>	<b>A</b>	<b>14</b>	<b>C</b>	<b>15</b>	<b>D</b>	<b>16</b>	<b>A</b>
	<b>17</b>	<b>B</b>	<b>18</b>	a.(ii) b.(iv) c(iv) d.(ii) e(i)				