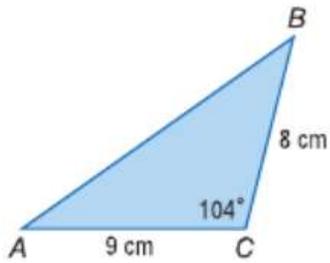


1 Find the area of $\triangle ABC$ to the nearest tenth

$A = \frac{1}{2} \times 8 \times 9 \times \sin(104)$
 $= 34.93 \dots$
 ≈ 34.9

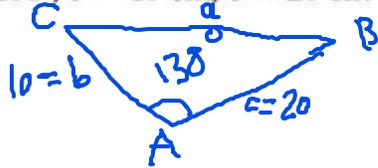
لا قرب جزئياً
 من عشرة



A.	39.4	B.	34.9	C.	42.1	D.	41.2
----	------	----	------	----	------	----	------

2 Find the area of the triangle to the nearest tenth if $A = 138^\circ, b = 10 \text{ cm}, c = 20 \text{ cm}$

$A = \frac{1}{2} \times 10 \times 20 \times \sin(138^\circ)$
 ≈ 66.9

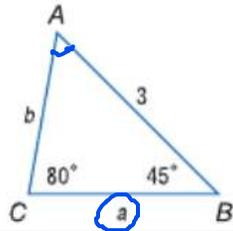


A.	66.9	B.	133.8	C.	267.7	D.	34.1
----	------	----	-------	----	-------	----	------

3 Find the value of a to the nearest tenth

$\frac{\sin 55}{a} = \frac{\sin 80}{3}$
 $a = 2.5$

$\angle A = 180 - 80 - 45 = 55^\circ$



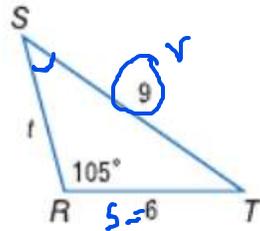
6 If $\triangle FGH$ if $G = 82^\circ, f = 6$, and $h = 4$. then the length of side g to the nearest tenth equal

A.	6.7	B.	7.6	C.	7.5	D.	6.4
----	-----	----	-----	----	-----	----	-----

A.	5	B.	7.5	C.	2.5	D.	10
----	---	----	-----	----	-----	----	----

4 In $\triangle RST, R = 105^\circ, r = 9$, and $s = 6$ Use the Law of Sines to find $m\angle S$.
 (to the nearest Degree)

$\frac{\sin S}{6} = \frac{\sin 105}{9}$
 $S = 40$

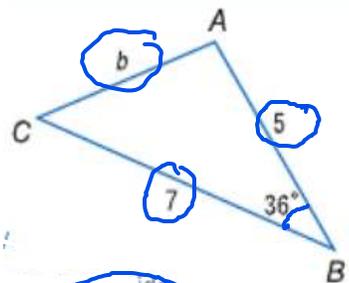


A.	35	B.	40	C.	43	D.	42
----	----	----	----	----	----	----	----

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5 Use the law of cosine to find the value of b to the nearest tenth

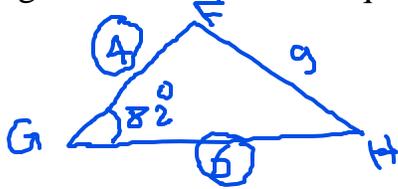
$$b = \sqrt{7^2 + 5^2 - 2 \times 7 \times 5 \times \cos(36^\circ)}$$

$$\approx 4.2$$


- A. 3.9 B. 4 C. 4.1 D. 4.2

6 If $\triangle FGH$ if $G = 82^\circ$, $f = 6$, and $h = 4$. then the length of side g to the nearest tenth equal

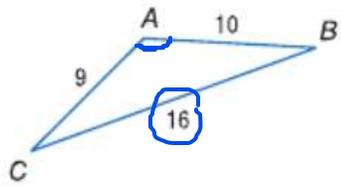
$$g = \sqrt{6^2 + 4^2 - 2 \times 6 \times 4 \times \cos(82^\circ)}$$

$$\approx 6.7$$


- A. 6.7 B. 7.6 C. 7.5 D. 6.4

7 Depend on the figure below find $m \angle A$ to the nearest degree

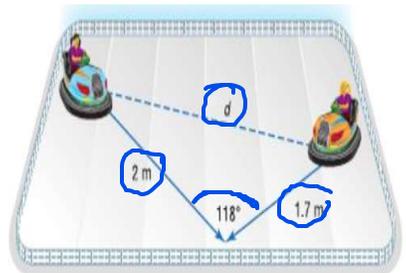
$$16 = \sqrt{10^2 + 9^2 - 2 \times 10 \times 9 \times \cos A}$$

$$A \approx 115$$


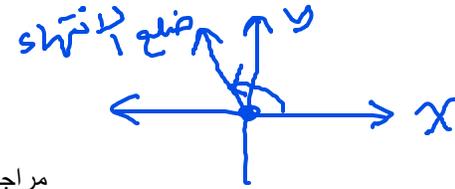
- A. 34 B. 31 C. 115 D. 105

8 Two bumper cars at an amusement park ride collide as shown below.
 How far apart d were the two cars before they collided?

$$d = \sqrt{2^2 + 1.7^2 - 2 \times 2 \times 1.7 \times \cos(118^\circ)}$$

$$\approx 3.2$$


- A. 3.2 B. 3.5 C. 7.4 D. 5.3



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9 The terminal side of angle θ in standard position intersects the unit circle at $P\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$. Find $\cos \theta$ and $\sin \theta$.

\uparrow $\cos \theta$ \uparrow $\sin \theta$

- A. $\cos \theta = \frac{\sqrt{3}}{2}, \sin \theta = \frac{1}{2}$ **B.** $\cos \theta = \frac{1}{2}, \sin \theta = \frac{\sqrt{3}}{2}$ C. $\cos \theta = \frac{\sqrt{3}}{2}, \sin \theta = \frac{\sqrt{3}}{2}$ D. $\cos \theta = \frac{1}{2}, \sin \theta = \frac{1}{2}$

10 The period of the function in the figure equal

$\pi - 0 = \pi$
 $2\pi - \pi = \pi$

- A. $\frac{\pi}{2}$ B. 2π **C.** π D. $\frac{3\pi}{2}$

11 The Amplitude of the function $y = 4\cos 3\theta$ equal

$y = -4\cos 3\theta$
 Amplitude = $|-4| = 4$

- A. -4 B. 3 **C.** 4 D. -3
- * الجواب هو صحت دا عني

12 The Period of the function $y = 4\cos 3\theta$ equal

period = $\frac{360}{3} = 120^\circ$

- A. 360 B. 180 **C.** 120 D. 90
- $x = 4 \tan 3\theta$
 $p = \frac{180}{3} = 60$

13 Which graph for the function $y = 2\sin x$

A. B. C. D.

14 $\cos^{-1}\left(-\frac{1}{2}\right)$

\rightarrow shift + $\cos = \cos^{-1}$

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	A. $\frac{2\pi}{3}$	B. $\frac{\pi}{3}$	C. $\frac{\pi}{2}$	D. π				
15	If $\tan \theta = 1.8$, find θ .							
	$\tan(60.9) \approx 1.8$							
	A. 0.03°	B. 29.1°	C. 60.9°	D. no solution				
16	What angle has a tangent and sine that are both negative?							
	<table border="1"> <tr> <td>+ Sin</td> <td>+ All</td> </tr> <tr> <td>+ Tan</td> <td>+ Cos</td> </tr> </table>		+ Sin	+ All	+ Tan	+ Cos	$\sin \theta = \text{negative}$ $\tan \theta = \text{negative}$ $\cos \theta = \text{positive}$	
+ Sin	+ All							
+ Tan	+ Cos							
	A. 65°	B. 120°	C. 265°	<u>D.</u> 310°				
17	If $\cos \theta = \frac{1}{2}$ then $\sec \theta = \frac{2}{1} = 2$							
	$\sec \theta = \frac{1}{\cos \theta}$ $\csc \theta = \frac{1}{\sin \theta}$							
	A. $\frac{1}{2}$	B. <u>2</u>	C. $-\frac{1}{2}$	D. -2				
18	$\sin^2 x + \cos^2 x =$							
	A. $\tan^2 x$	B. <u>1</u>	C. 0	D. $\cot^2 x$				

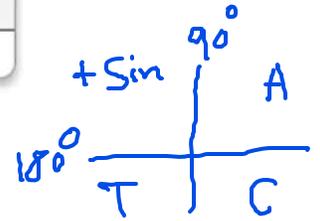
KeyConcept Basic Trigonometric Identities		
Quotient Identities		
$\tan \theta = \frac{\sin \theta}{\cos \theta}$ $\cos \theta \neq 0$		$\cot \theta = \frac{\cos \theta}{\sin \theta}$ $\sin \theta \neq 0$
Reciprocal Identities		
$\sin \theta = \frac{1}{\csc \theta}, \csc \theta \neq 0$		$\csc \theta = \frac{1}{\sin \theta}, \sin \theta \neq 0$
$\cos \theta = \frac{1}{\sec \theta}, \sec \theta \neq 0$		$\sec \theta = \frac{1}{\cos \theta}, \cos \theta \neq 0$
$\tan \theta = \frac{1}{\cot \theta}, \cot \theta \neq 0$		$\cot \theta = \frac{1}{\tan \theta}, \tan \theta \neq 0$
Pythagorean Identities		
$\cos^2 \theta + \sin^2 \theta = 1$	$\tan^2 \theta + 1 = \sec^2 \theta$	$\cot^2 \theta + 1 = \csc^2 \theta$
Cofunction Identities		
$\sin\left(\frac{\pi}{2} - \theta\right) = \cos \theta$	$\cos\left(\frac{\pi}{2} - \theta\right) = \sin \theta$	$\tan\left(\frac{\pi}{2} - \theta\right) = \cot \theta$
Negative Angle Identities		
$\sin(-\theta) = -\sin \theta$	$\cos(-\theta) = \cos \theta$	$\tan(-\theta) = -\tan \theta$

$\sec \theta \cdot \cos \theta = 1$
 $\csc \theta \cdot \sin \theta = 1$
 $\cot \theta \cdot \tan \theta = 1$

The negative angle identities are sometimes called odd-even identities.

$\cos^2 \theta + \sin^2 \theta = 1$

$\cos^2 \theta + \left(\frac{1}{4}\right)^2 = 1 \rightarrow \cos \theta = -0.97$



19	Find the exact value of $\cos \theta$ if $\sin \theta = \frac{1}{4}$ and $90^\circ < \theta < 180^\circ$.							
	A.	$\frac{\sqrt{15}}{4}$	B.	$-\frac{\sqrt{15}}{4}$	C.	$\frac{1}{4}$	D.	$-\frac{1}{4}$
20	Simplify $\frac{\sin \theta \csc \theta}{\cot \theta} = \frac{1}{\cot \theta} = \tan \theta$							
	A.	$\tan \theta$	B.	$\cot \theta$	C.	$\sin \theta$	D.	$\cos \theta$

21	If $\tan \theta = \frac{2}{1}$ then $\cot \theta = \frac{1}{2}$							
	Type equation here.							
	A.	$\frac{1}{2}$	B.	1	C.	$-\frac{1}{2}$	D.	2

$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

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22	$\cot x + \csc x = \frac{\cos x}{\sin x} + \frac{1}{\sin x} = \frac{\cos x + 1}{\sin x}$		$\tan x + \sec x = \frac{\sin x}{\cos x} + \frac{1}{\cos x} = \frac{\sin x + 1}{\cos x} = \frac{1 + \sin x}{\cos x}$				
A.	$\frac{\cos x + 1}{\sin x}$	B.	$\frac{\sin x + 1}{\cos x}$	C.	$\frac{\tan x + 1}{\sin x}$	D.	$\frac{\cot x + 1}{\sin x}$
23	$\sin(15^\circ) = \frac{\sqrt{6} - \sqrt{2}}{4} \approx 0.26$						
A.	$\sin(45)\sin(30) + \cos(45)\cos(30)$		C.	$\cos(45)\cos(30) + \sin(45)\sin(30)$			
B.	$\sin(45)\cos(30) - \cos(45)\cos(30)$		d	$\sin(45)\cos(30) - \cos(45)\sin(30)$			
23	$\tan(37.5^\circ) \approx 0.77$						
A.	$+\sqrt{\frac{1 - \cos(75)}{2}}$		C.	$-\sqrt{\frac{1 - \cos(75)}{2}}$			
B.	$+\sqrt{\frac{1 + \cos(75)}{2}}$		d	$+\sqrt{\frac{1 + \cos(75)}{2}}$			

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24	the exact value of $\sin \frac{\theta}{2}$ if $\cos \theta = -\frac{3}{5}$ and θ				<table border="1"> <tr> <td>+ Sin</td> <td>+ All</td> </tr> <tr> <td>+ Tan</td> <td>+ Cos</td> </tr> </table>	+ Sin	+ All	+ Tan	+ Cos
+ Sin	+ All								
+ Tan	+ Cos								
$\sin \frac{\theta}{2} = \pm \sqrt{\frac{1 - \cos \theta}{2}}$ $= \pm \sqrt{\frac{1 - (-\frac{3}{5})}{2}}$ $\sin \frac{\theta}{2} = \pm \frac{2\sqrt{5}}{5}$ $\sin \frac{\theta}{2} = \frac{2\sqrt{5}}{5} = \frac{2}{\sqrt{5}}$									
A	$\frac{2}{\sqrt{5}}$	B	$-\frac{2}{\sqrt{5}}$	C	$\frac{1}{\sqrt{5}}$	D	$-\frac{1}{\sqrt{5}}$		
25	all solutions of $\sin 2\theta - \cos \theta = 0$ if $0 \leq \theta < 2\pi$.				$\sin 2\theta = 2 \sin \theta \cos \theta$				
$2 \sin \theta \cos \theta - \cos \theta = 0$ $\cos \theta (2 \sin \theta - 1) = 0$ $\left. \begin{array}{l} \cos \theta = 0 \\ \theta = \cos^{-1}(0) \\ \theta = \frac{\pi}{2}, \frac{3\pi}{2} \end{array} \right\} \begin{array}{l} 2 \sin \theta - 1 = 0 \\ \frac{2 \sin \theta}{2} = \frac{1}{2} \\ \sin \theta = \frac{1}{2} \\ \theta = \sin^{-1}(\frac{1}{2}) \Rightarrow \theta = \frac{\pi}{6}, \frac{5\pi}{6} \end{array}$									
A	$\left\{ \frac{\pi}{2}, \frac{3\pi}{2}, \frac{\pi}{6}, \frac{5\pi}{6} \right\}$	B	$\left\{ \frac{\pi}{6}, \frac{5\pi}{6} \right\}$	C	$\left\{ \frac{\pi}{2}, \frac{3\pi}{2} \right\}$	D	$\left\{ \frac{\pi}{2}, \frac{3\pi}{2}, \frac{\pi}{6} \right\}$		

1. **MULTIPLE CHOICE** Which expression is equivalent to

$\sin \theta + \cos \theta \cot \theta$ **D**

A $\cot \theta$

B $\tan \theta$

C $\sec \theta$

D $\csc \theta$

$$\sin \theta + \cos \theta \cdot \frac{\cos \theta}{\sin \theta}$$

$$\frac{\sin \theta + \sin \theta + \frac{\cos^2 \theta}{\sin \theta}}{\sin \theta \times 1}$$

$$\frac{\sin^2 \theta + \cos^2 \theta}{\sin \theta} = \frac{1}{\sin \theta} = \csc \theta$$

2. Verify that $\cos(30^\circ - \theta) = \sin(60^\circ + \theta)$ is an identity. **See margin.**

3. Verify that $\cos(\theta - \pi) = -\cos \theta$. **See margin.**

$\cos \theta \cos \pi + \sin \theta \sin \pi = -\cos \theta$

4. **MULTIPLE CHOICE** What is the exact value of $\sin \theta$ if

$\cos \theta = -\frac{3}{5}$ and $90^\circ < \theta < 180^\circ$? **J**

~~F~~ $\frac{5}{3}$

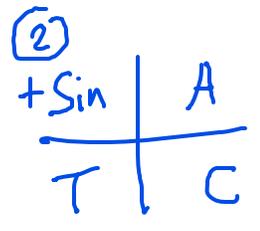
G $\frac{\sqrt{34}}{8}$

~~H~~ $-\frac{4}{5}$

J $\frac{4}{5}$

II ربع

$\cos^2 \theta + \sin^2 \theta = 1$
 $(-\frac{3}{5})^2 + \sin^2 \theta = 1$
 $\sin \theta = \pm 0.8$



15. **MULTIPLE CHOICE** What is the exact value of $\tan \frac{\pi}{8}$?

A $\frac{\sqrt{2} - \sqrt{3}}{2}$

B $\sqrt{2} - 1$

C $1 - \sqrt{2}$

~~D~~ $-\frac{\sqrt{2} - \sqrt{3}}{2}$

+ 0.4142.....