

**MATHEMATICS 6 PERIODS**  
**PART A**

**NAME OF STUDENT:** \_\_\_\_\_

**DATE:** 15<sup>th</sup> June 2021

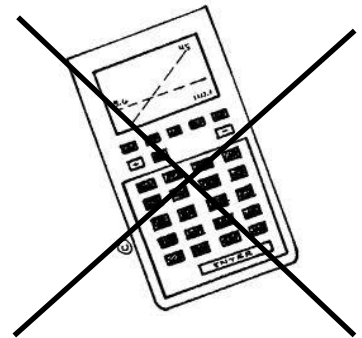
**TIME:** 11:35 – 12:20

**DURATION OF THE EXAMINATION:**

0.75 h (45 minutes).

**AUTHORIZED MATERIAL:**

Examination without technological tool.  
Pencil for the graphs.



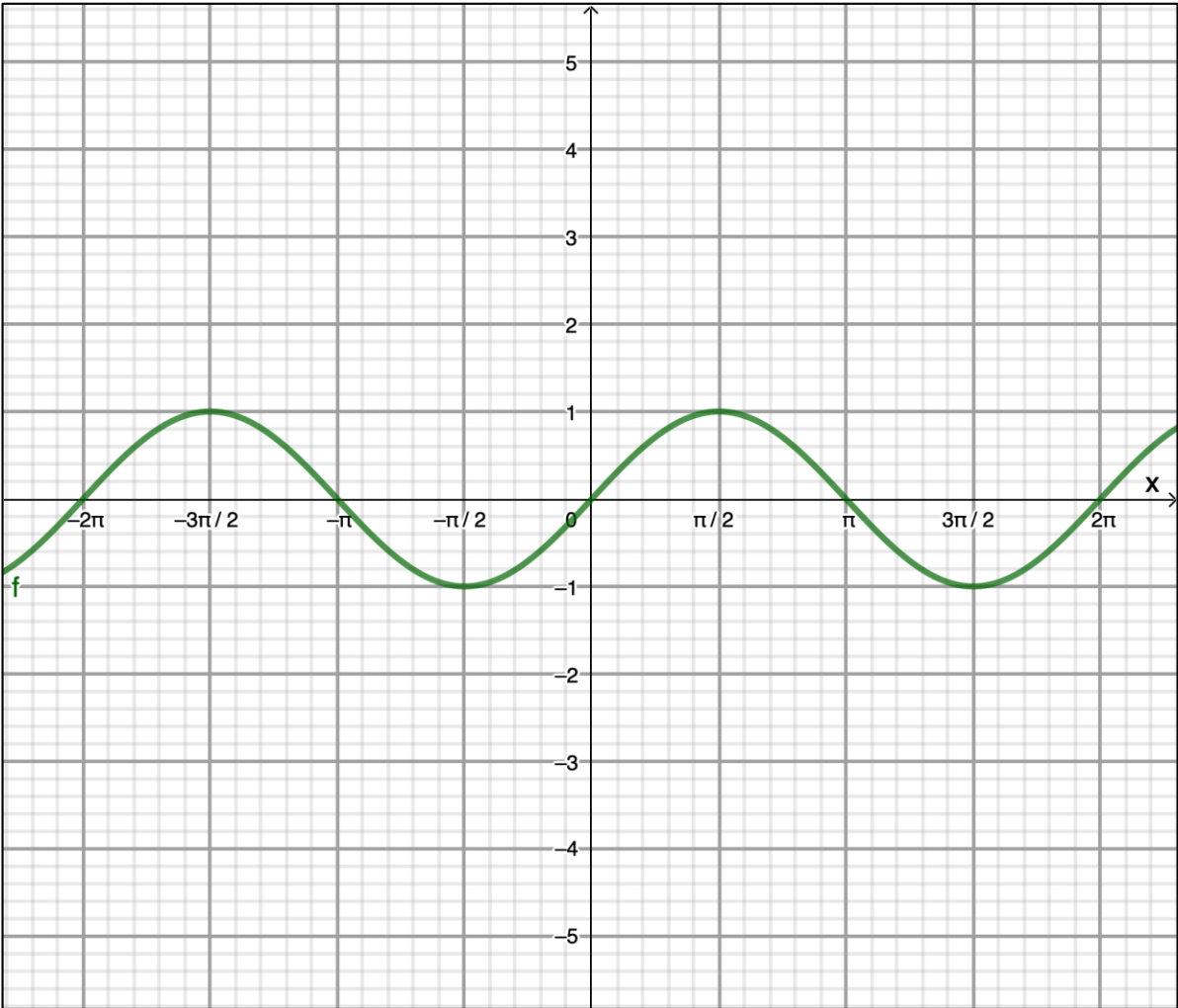
**SPECIFIC INSTRUCTIONS:**

- Answers must be supported by explanations.
- They must show the reasoning behind the results or solutions provided.
- If graphs are used to find a solution, they must be sketched as part of the answer.
- Unless indicated otherwise, full marks will not be awarded if a correct answer is not accompanied by supporting evidence or explanations of how the results or the solutions have been achieved.
- When the answer provided is not the correct one, still some marks can be awarded if it is shown that an appropriate method and/or a correct approach has been used.

# EXAM 2020-2021: MATHEMATICS 6 PERIODS

PART A		
	page 1/3	Marks
1. Convert:		<b>2 marks</b>
a) $\frac{\pi}{12}$ rad into degrees		1 mark
b) $24^\circ$ into radians		1 mark
2. Solve in $\mathbb{R}$		<b>7 marks</b>
a) $\sin(x) = -\frac{\sqrt{3}}{2}$		1 mark
b) $\tan\left(2x - \frac{\pi}{5}\right) = -1$		3 marks
c) $\cos^2(x) - \cos(x) - 2 = 0$		3 marks
3. Answer the following questions.		<b>3 marks</b>
a) Determine $\cos\left(\frac{11}{3}\pi\right)$		1 mark
b) Use addition formulas to determine $\sin(30^\circ + 45^\circ)$ .		2 marks
4. Given $\alpha \in \left[\frac{\pi}{2}, \pi\right]$ and $\sin(\alpha) = \frac{1}{5}$ determine $\cos\left(\alpha - \frac{\pi}{6}\right)$ .		<b>4 marks</b>

**EXAM 2020-2021: MATHEMATICS 6 PERIODS**

<b>PART A</b>		
	<b>page 2/3</b>	<b>Marks</b>
5. Given the function $f(x) = \sin(x)$ .		<b>4 marks</b>
		
a) Determine amplitude, period and midline of the function $g(x) = 2\sin\left(\frac{5}{2}x\right) - 1.$		<b>1.5 marks</b>
b) On the diagram above, draw the graph of $g(x)$ .		<b>2.5 marks</b>

## EXAM 2020-2021: MATHEMATICS 6 PERIODS

PART A		
	page 3/3	Marks
6. The Smiths have 8 kids. Each one of the kids receives their allowances each month.  The mean value of the allowances is 54 € per month The standard deviation is 13.3 € per month.  a) This month, the eldest has received 75 €. Determine the mean allowance of the other 7 children.  The parents offer the kids to increase their allowances. They offer two options. Option 1: increase the allowances by 5 €. Option 2: increase the allowances by 5% thus multiplying by 1.05.		<b>5 marks</b>
b) What are the mean value and the standard deviation with the first option?		2 marks
c) What are the mean value and the standard deviation with the first option?		1.5 marks
		1.5 marks

## EXAM 2020-2021: MATHEMATICS 6 PERIODS

POINTS PUNTEGGIO POINTS	MARK VOTO NOTE	PERFORMANCE INDICATOR DESCRITTORE DI PERFORMANCE DESCRIPTEUR DE NIVEAUX
68 - 70	<b>10</b>	Excellent (eccellente) Excellent
65.5 - 67.5	<b>9.5</b>	
63 - 65	<b>9</b>	
59.5 - 62.5	<b>8.5</b>	Very good (molto buono) Très bon
56 - 59	<b>8</b>	
52.5 - 55.5	<b>7.5</b>	Good (buono) Bon
49 - 52	<b>7</b>	
45.5 - 48.5	<b>6.5</b>	Satisfactory (discreto) Satisfaisant
42 - 45	<b>6</b>	
38.5 - 41.5	<b>5.5</b>	Sufficient (sufficiente) Suffisant
35 - 38	<b>5</b>	
31.5 - 34.5	<b>4.5</b>	Failed (weak) - (insufficiente) Insuffisant/Echec
28 - 31	<b>4</b>	
24.5 - 27.5	<b>3.5</b>	
21 - 24	<b>3</b>	
14 - 20.5	<b>2.5</b>	Failed (very weak) (gravemente insufficiente) Très insuffisant/Echec
7 - 13.5	<b>2</b>	
0 - 6.5	<b>0 -1.5</b>	