

Els deures d'estiu no tenen caràcter obligatori, però seran comptats, com a nota d'ampliació, fins a un 1 punt de la nota de la 1a avaluació. Cal entregar-los la 1a setmana d'inici de curs.

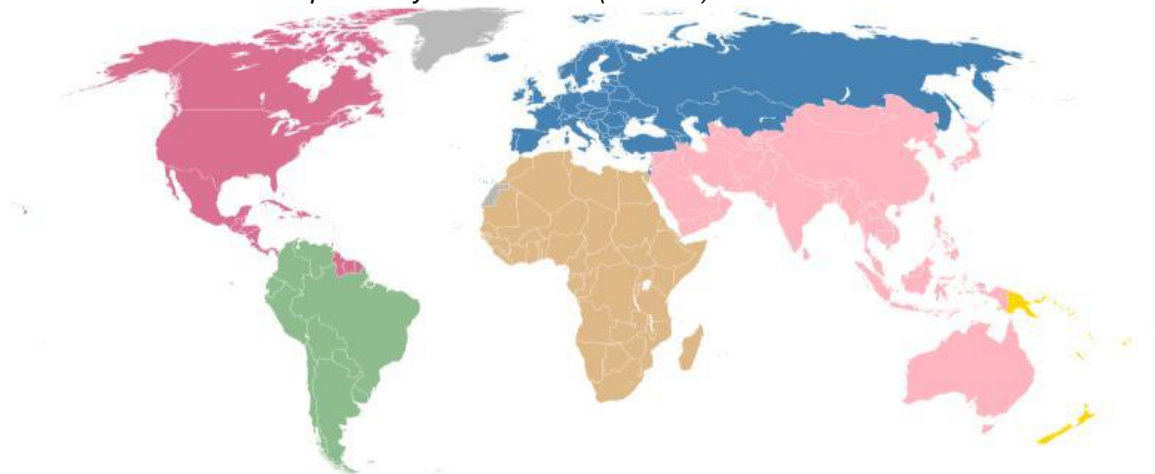
<b>MATÈRIA:</b>	MATEMÀTIQUES
<b>CURS:</b>	3r ESO


### World Soccer and the FIFA rankings

*Fédération Internationale de Football Association (FIFA)*

Beginning on June 14<sup>th</sup> and ending on July 15<sup>th</sup>, 2018, the world will be watching a soccer event that only happens once every 4 years. Of all of the soccer teams in the world, 32 national teams were selected to play in the games of the FIFA Men's World Cup soccer tournament ... the World Cup.

*Below is map and key of the Soccer (Football) Confederations:*



	AFC	Asian football confederation in Asia and Australia
	CAF	Confederation of African football in Africa
	CONCACAF	Confederation of north, central American and Caribbean association football in North America and Central America
	CONMEBOL	Confederación Sudamericana de fútbol in South America
	OFC	Oceania football confederation in Oceania
	UEFA	Union of European football associations in Europe

The 32 selected teams are chosen by a point system that covers 4 years of data.

$$P_{\text{oints}} = M_{\text{atch}} \cdot I_{\text{mportance}} \cdot T_{\text{eam's strength}} \cdot C_{\text{onfederation strength}}$$

The points are calculated for each match and then the matches are all averaged to get the average points for the year.

Germany is presently seated # 1 in all the FIFA ranking of soccer teams.

Here are Germany's points over the last 4 years.

Year	Average Points for Year	Weight of year	Weighted average points
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2018	775.06	100%	
2017	832	50%	
2016	424.26	30%	
2015	1200.77	20%	
Total points =			

1. Calculate the weighted points (Average year's points · Weight of year) for each of the past 4 years of Germany's soccer games.

2. Add your weighted averages together to find Germany's present total points for their ranking.

3. Why do you think that the 2018 data is weighted at 100% while the 2015 data is weighted 20%? What effect does that weighting have on the combined scores for all 4 years?

The **M** value in the total point formula is the points earned for a single match win, lose, or draw.

Match outcome	NFFA Points given
Victory	3 points
Draw	1 point
Defeat	0 points
Penalty shoot out	Winning team gets 2points, Losing team gets 1 point

4. In 2014, Germany beat Brazil on July 8<sup>th</sup> in the 2014 World Cup semi finals in Brazil. Germany won the game with a score of 7 to Brazil's 1. What was the **M** value for this game?

a. Germany?

b. Brazil?

5. On June 10, 2015 Germany played USA. The USA won that match 2 to 1 in an international friendly match. What were the resulting **M** values of those two teams?

a. Germany?

b. USA?

5. What affect do you think the M value of a match has on a team's final ranking points?

The  $I$  value is the importance of the match.

Type of match	Weight of points
Friendly match (including small competitions)	1.0
FIFA World Cup™ qualifier or confederation-level qualifier	2.5
Confederation-level final competition or FIFA Confederations Cup	3.0
FIFA World Cup™ final competition	4.0

7. In the 2014 Brazil versus Germany match mentioned in #4, the game was a World Cup final competition. What  $I$  value did this game earn for both the winner and the loser?

8. In the match mentioned in problem #5 above the USA beat Germany with a score of 2 to 1. What was the  $I$  value for both the losing and winning teams of that match?

9. What effect do you think the  $I$  value has on the total points earned by a team?

The **T** and **C** values have to do with how strong the opposing team is and how strong the Confederation is. When teams are from different Confederations the mean of their two strengths is used.

**T: Strength of opposing team** = 200 – the most recent FIFA World ranking. The team on top is always assigned the value of 200.

Teams ranked 150<sup>th</sup> or below are given the value of 50.

**C: Strength of confederation** is as follows

UEFA	0.99
CONMEBOL	1.00
CONCACAF	0.85
AFC	0.85
CAF	0.85
OFC	0.85

10. In our previous example from problem #4, Germany was in the Union of European Football Associations (UEFA) and Brazil was in the Confederación Sudamericana de fútbol in South America (CONMEBOL). Germany was ranked # 2 in the World FIFA ranking and Brazil was ranked # 3 in that year.

a. What were the T and C values for Germany?

- T =
- C =

b. What were the T and C values for Brazil?

- T =
- C =

These factors are brought together in the following formula to ascertain the total number of points (**P**) of a team.

$$P = M \cdot I \cdot T \cdot C$$

11. Use the values that you calculated in problems #4 through #9 to calculate the 2010 Spain versus Switzerland match points earned.

	<b>M</b>	<b>I</b>	<b>T</b>	<b>C</b>	<b>P</b>
Germany					
Brazil					



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So for each match, points are earned and the average of that year's matches is used to calculate the team's World ranking.

12. Below we've listed the top 10 teams from each Confederation. For the Union of European Football Associations (UEFA), we've listed the top 20 teams in their confederation. Why do you think we did that?

CAF				AFC			
Confederation of African Football				Asian Football Confederation			
World rank	Rank in confederation	Team	Points	World rank	Rank in confederation	Team	Points
21	1	Tunisia	910	36	1	Australia	718
27	2	Senegal	838	37	2	IR Iran	708
38	3	Congo DR	706	57	3	Korea Republic	544
41	4	Morocco	686	61	4	Japan	521
45	5	Egypt	649	67	5	Saudi Arabia	465
47	6	Ghana	624	73	6	Syria	440
48	7	Nigeria	618	75	7	China PR	423
49	8	Cameroon	614	77	8	United Arab Emirates	418
52	9	Burkina Faso	604	79	9	Lebanon	411
64	10	Mali	484	84	10	Oman	391

<b>CONCACAF</b>				<b>CONMEBOL</b>			
<b>Confederation of North, Central American and Caribbean Association Football</b>				<b>South American Football Confederation</b>			
World rank	Rank in confederation	Team	Points	World rank	Rank in confederation	Team	Points
15	1	Mexico	989	2	1	Brazil	1431
23	2	Costa Rica	884	5	2	Argentina	1241
25	3	USA	873	9	3	Chile	1135
54	4	Jamaica	588	11	4	Peru	1125
55	5	Panama	571	14	5	Uruguay	1018
62	6	Honduras	503	16	6	Colombia	986
72	7	El Salvador	442	32	7	Paraguay	773
79	8	Canada	411	33	8	Venezuela	755
81	9	Curaçao	408	59	9	Bolivia	536
91	10	Trinidad and Tobago	370	60	10	Ecuador	506

<b>OFC</b>				<b>UEFA</b>			
<b>Oceania Football Confederation</b>				<b>Union of European Football Associations</b>			
World rank	Rank in confederation	Team	Points	World rank	Rank in confederation	Team	Points
120	1	New Zealand	256	1	1	Germany	1558
143	2	Solomon Islands	190	3	2	Belgium	1298
154	3	New Caledonia	150	4	3	Portugal	1274
157	4	Tahiti	130	6	4	Switzerland	1199
162	5	Vanuatu	117	7	5	France	1198
165	6	Fiji	104	8	6	Poland	1183
166	7	Papua New Guinea	103	10	7	Spain	1126
192	8	American Samoa	38	12	7	Denmark	1051
192	9	Cook Islands	38	12	9	England	1051
197	10	Samoa	32	17	10	Netherlands	981
				18	11	Wales	953
				19	12	Italy	951
				20	13	Croatia	945
				22	14	Iceland	908
				24	15	Sweden	880
				26	16	Austria	845
				28	17	Slovakia	804
				29	18	Northern Ireland	803
				30	19	Romania	782
				31	20	Republic of Ireland	777