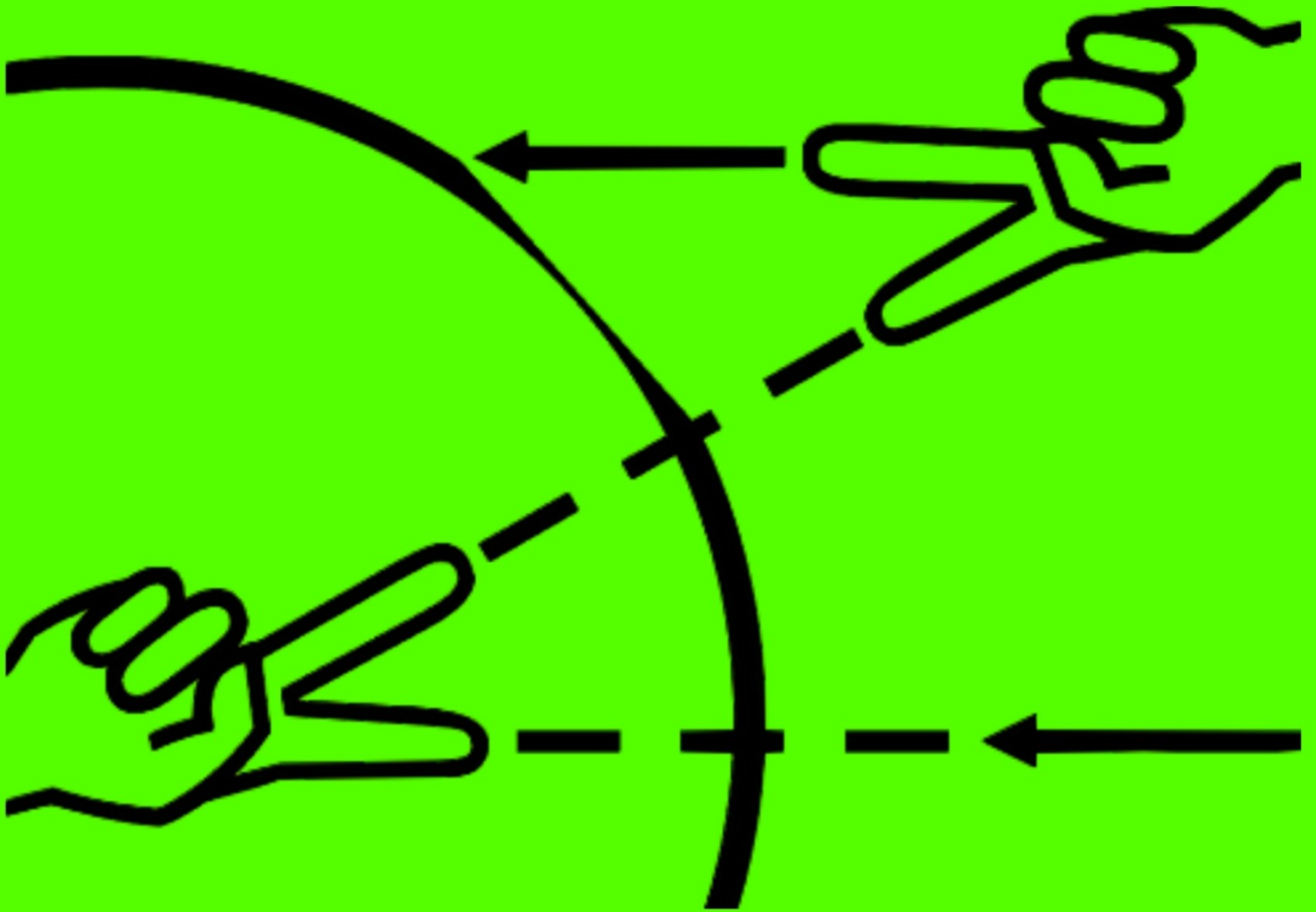


# Eratosthenes



**4** Continents

**9** Countries

**18** Schools

**134** Measures

**4** Continents

**9** Countries

**18** Schools

**134** Measures

ARGENTINA (2)

Alta Gracia, Chivilcoy

BRAZIL (5)

Méier, Rio de Janeiro, Pelotas, Santarém, Magalhães Bastos

COLOMBIA (1)

Guarne

FRANCE (1)

Lafrançaise

GREECE (3)

Aigio, Athens, Ilion

JORDAN (1)

Irbid

PUERTO RICO (1)

Bayamón

ROMANIA (2)

Busteni, Margineni


TUNISIA (2)

Bizerte, Mohammedia

| Flag   | City             | Country     | School                               | Latitude (°)<br>+N/-S | Longitude (°)<br>+E/-W |
|--|------------------|-------------|--------------------------------------|-----------------------|------------------------|
|    | Aigio            | Greece      | 1st High School of Aigio             | 38.252                | 22.079                 |
|    | Alta Gracia      | Argentina   | Fundación Caminos de Anisacate       | -31.659               | -64.417                |
|    | Athens           | Greece      | Experimental College Agion Anargyron | 38.027                | 23.726                 |
|    | Bayamón          | Puerto Rico | AECM Carribean University            | 18.383                | -66.168                |
|    | Bizerte          | Tunisia     | Ecole Primaire Raouabi               | 37.284                | 9.868                  |
|    | Busteni          | Romania     | Colegiul Ion Kalinderu               | 45.416                | 25.535                 |
|    | Chivilcoy        | Argentina   | Parque Cielos del Sur                | -34.911               | -60.014                |
|  | Guarne           | Colombia    | Grupo Astrofanáticos                 | 6.274                 | -76.522                |
|  | Ilion            | Greece      | 11th JuniorHigh School of Ilion      | 38.033                | 23.697                 |
|  | Irbid            | Jordan      | Mashar'eh Military School            | 32.405                | 35.588                 |
|  | Lafrançaise      | France      | Collège Antonin Perbosc              | 44.127                | 1.237                  |
|  | Magalhães Bastos | Brazil      | Escola Municipal Olímpica Carioca    | -22.887               | -43.401                |
|  | Mărgineni        | Romania     | Gh. Popescu School                   | 44.533                | 24.554                 |
|  | Méier            | Brazil      | Escola Municipal Bento Ribeiro       | -22.904               | -43.280                |
|  | Mohammedia       | Tunisia     | Lycée M'hamdia                       | 36.678                | 10.152                 |
|  | Pelotas          | Brazil      | Federal University of Pelotas        | -31.772               | -52.329                |
|  | Rio de Janeiro   | Brazil      | Centro Educacional Nosso Mundo       | -22.890               | -43.317                |
|  | Santarém         | Brazil      | Santarém Adventist College           | -2.439                | -54.699                |

# Aigio, Greece

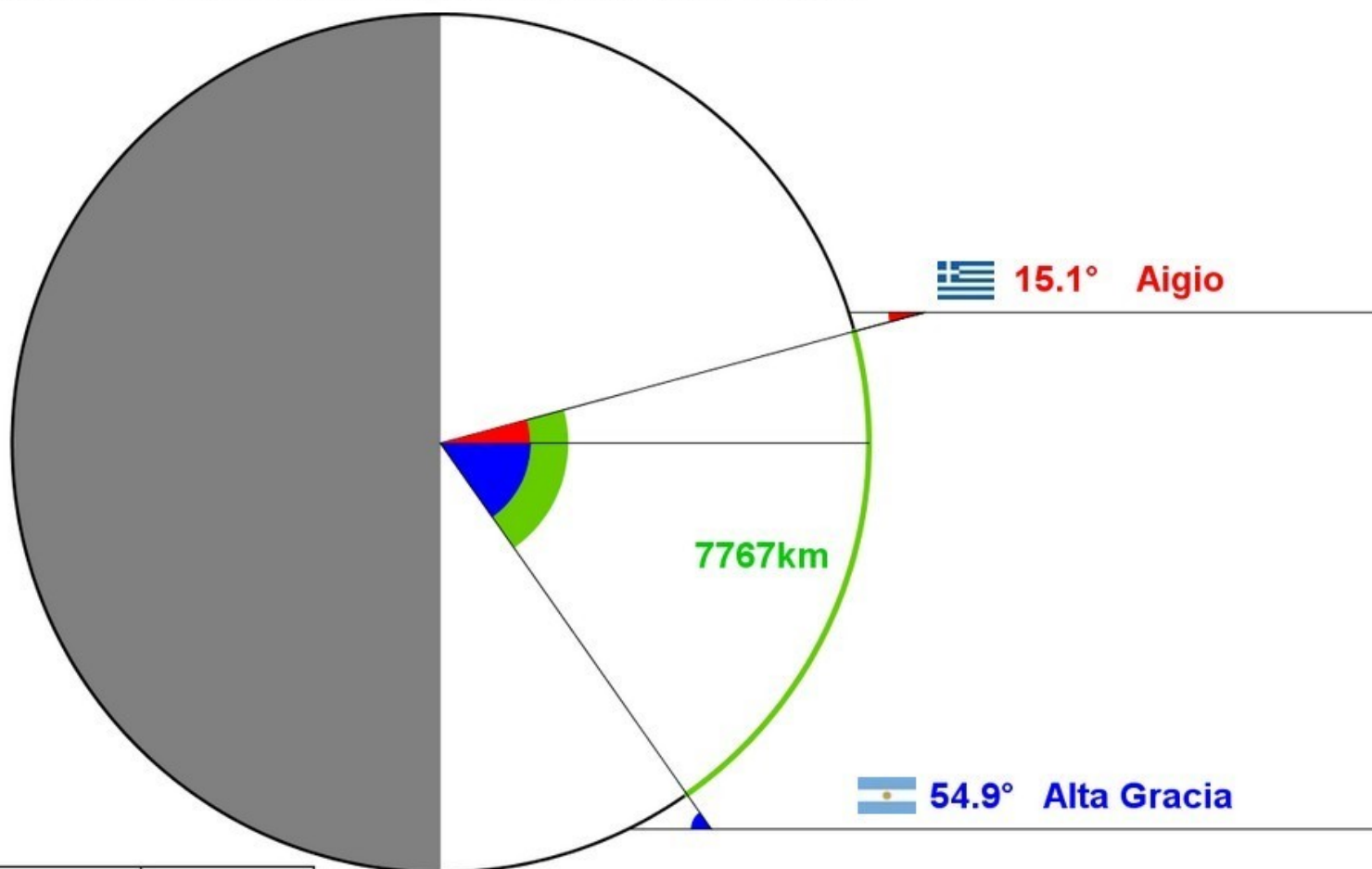


| Flag   | City  | Country | School                   | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|-------|---------|--------------------------|--------------------|---------------------|
|  | Aigio | Greece  | 1st High School of Aigio | 38.252             | 22.079              |

| Date         | Gnomon | Shadow | Angle |
|--------------|--------|--------|-------|
| 14 June 2021 | 33.0cm | 9.1cm  | 15.4° |
| 20 June 2021 | 17cm   | 4.6cm  | 15.1° |

20/06/2021 (Aigio-Greece) Latitude: 38.252°

20/06/2021 (Alta Gracia-Argentina) Latitude: -31.656°



| Distance      | Angle         |
|---------------|---------------|
| circumference | 360°          |
| 7767km        | 15.1° + 54.9° |

$$\text{circumference} = \frac{360^\circ \times 7767\text{km}}{15.1^\circ + 54.9^\circ} = 39945 \text{ km}$$





# Alta Gracia, Argentina

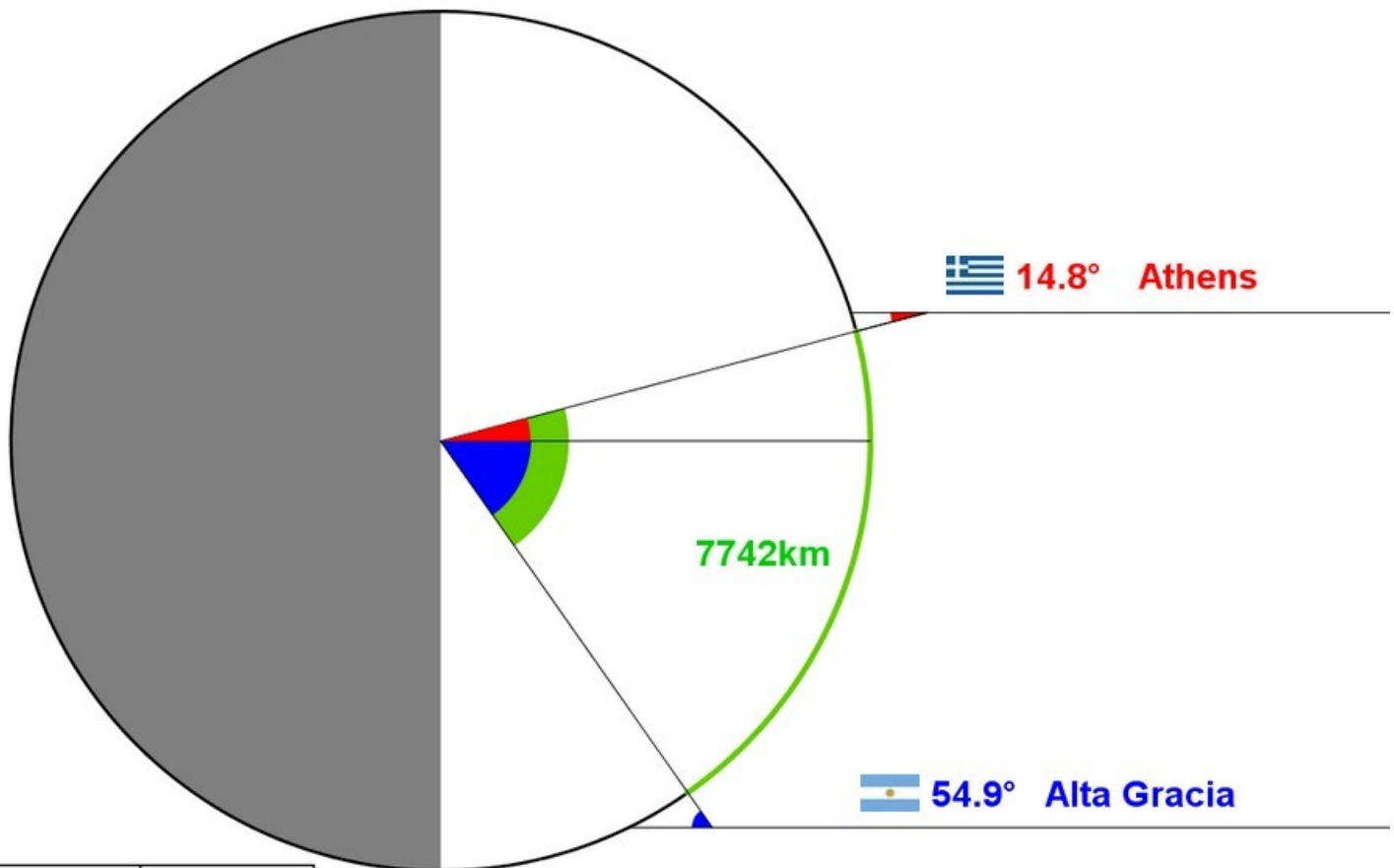


| Flag | City        | Country   | School                         | Latitude (°) +N/-S | Longitude (°) +E/-W |
|------|-------------|-----------|--------------------------------|--------------------|---------------------|
|      | Alta Gracia | Argentina | Fundación Caminos de Anisacate | -31.659            | -64.417             |

| Date         | Gnomon | Shadow  | Angle  |
|--------------|--------|---------|--------|
| 07 June 2021 | 19.0cm | -26.3cm | -54.2° |
| 08 June 2021 | 19.0cm | -26.4cm | -54.3° |
| 10 June 2021 | 19.0cm | -26.8cm | -54.7° |
| 11 June 2021 | 19.0cm | -26.8cm | -54.7° |
| 14 June 2021 | 19.0cm | -27.0cm | -54.9° |
| 19 June 2021 | 17.5cm | -24.9cm | -54.9° |
| 20 June 2021 | 17.5cm | -24.9cm | -54.9° |
| 21 June 2021 | 17.5cm | -24.6cm | -54.6° |
| 22 June 2021 | 17.5cm | -24.6cm | -54.6° |
| 23 June 2021 | 17.5cm | -24.6cm | -54.6° |
| 24 June 2021 | 17.5cm | -24.5cm | -54.5° |
| 25 June 2021 | 17.5cm | -24.6cm | -54.6° |
| 28 June 2021 | 17.5cm | -24.3cm | -54.2° |
| 30 June 2021 | 17.5cm | -24.5cm | -54.5° |

20/06/2021 (Athens-Greece) Latitude: 38.027°

20/06/2021 (Alta Gracia-Argentina) Latitude: -31.656°



| Distance      | Angle         |
|---------------|---------------|
| circumference | 360°          |
| 7742km        | 14.8° + 54.9° |

$$\text{circumference} = \frac{360^\circ \times 7742\text{km}}{14.8^\circ + 54.9^\circ} = 39987 \text{ km}$$





# Athens, Greece

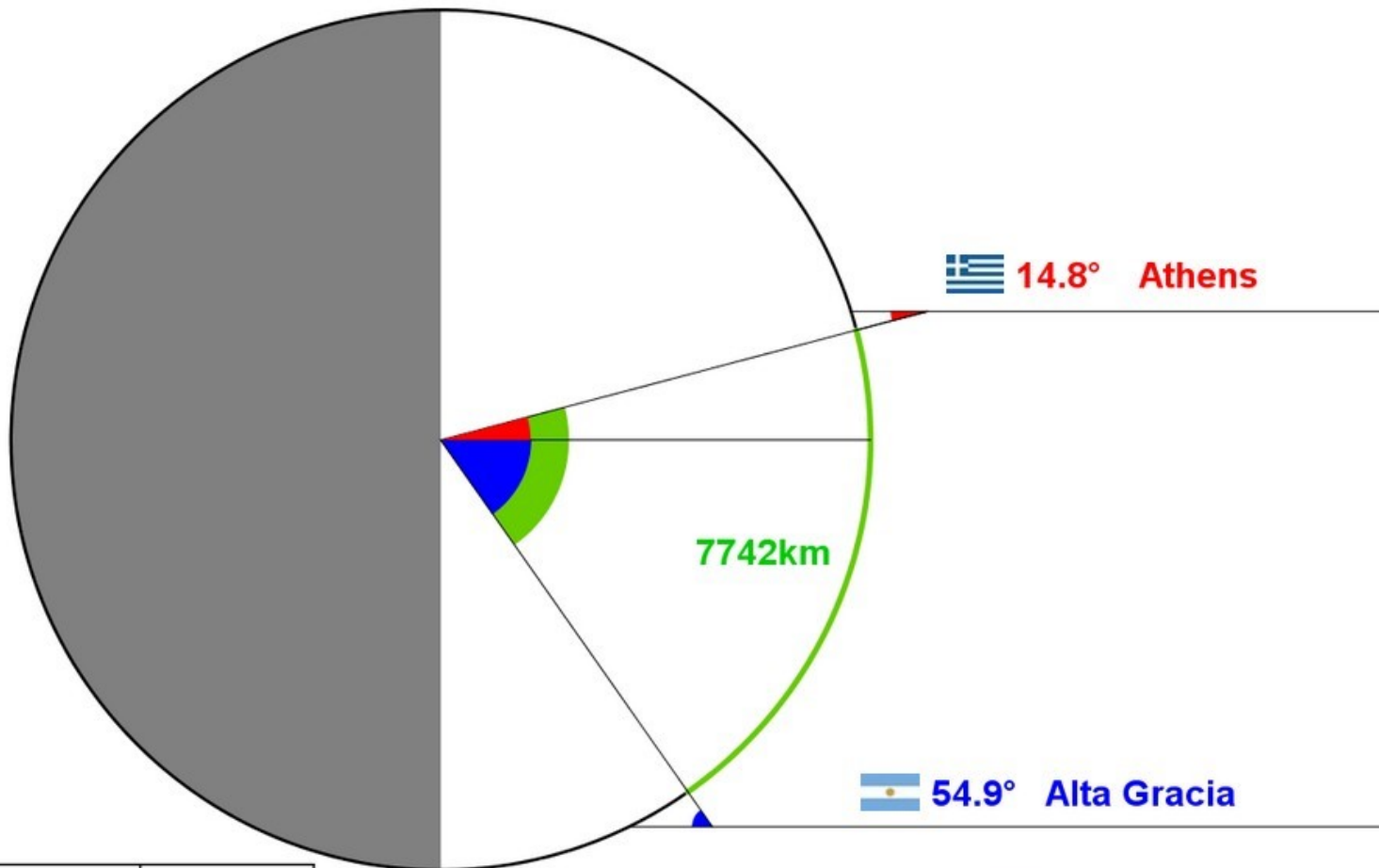


| Flag   | City   | Country | School                               | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|--------|---------|--------------------------------------|--------------------|---------------------|
|  | Athens | Greece  | Experimental College Agion Anargyron | 38.027             | 23.726              |

| Date         | Gnomon | Shadow | Angle |
|--------------|--------|--------|-------|
| 20 June 2021 | 25.0cm | 6.6cm  | 14.8° |
| 21 June 2021 | 19.7cm | 5.0cm  | 14.2° |

20/06/2021 (Athens-Greece) Latitude: 38.027°

20/06/2021 (Alta Gracia-Argentina) Latitude: -31.656°



| Distance      | Angle         |
|---------------|---------------|
| circumference | 360°          |
| 7742km        | 14.8° + 54.9° |

$$\text{circumference} = \frac{360^\circ \times 7742\text{km}}{14.8^\circ + 54.9^\circ} = 39987 \text{ km}$$



Fenia Zacharia

21/6/2021

Time: 13:27

Gnomon: 19.72cm

Shadow: 5cm



Όλγα Βαζούρα 21/06/2021

13:27pm

Gnomon: 12cm

Shadow: 3,3cm

$\epsilon\phi\omega = 3,3/12$

$\epsilon\phi\omega = 0,275 = 16^\circ$  (περίπου)



Ναταλία Χριστοπούλου

21/6/2021

Gnomon: 29cm

Shadow: 8cm



Add comment

Irene Z.

21/6/2021

Time: 13:27

Gnomon: 56cm

Shadow: 14cm



ΣΤΑΜΑΤΗΣ ΣΤΕΦΑΝΟΣ

Μέτρηση 21-06-2021 16:10

Gnomon: 32cm

Shadow: 12cm



Μέτρηση 21/06/2021

Gnomon: 35cm

Shadow: 8,4cm



Add comment



# Bayamón, Puerto Rico

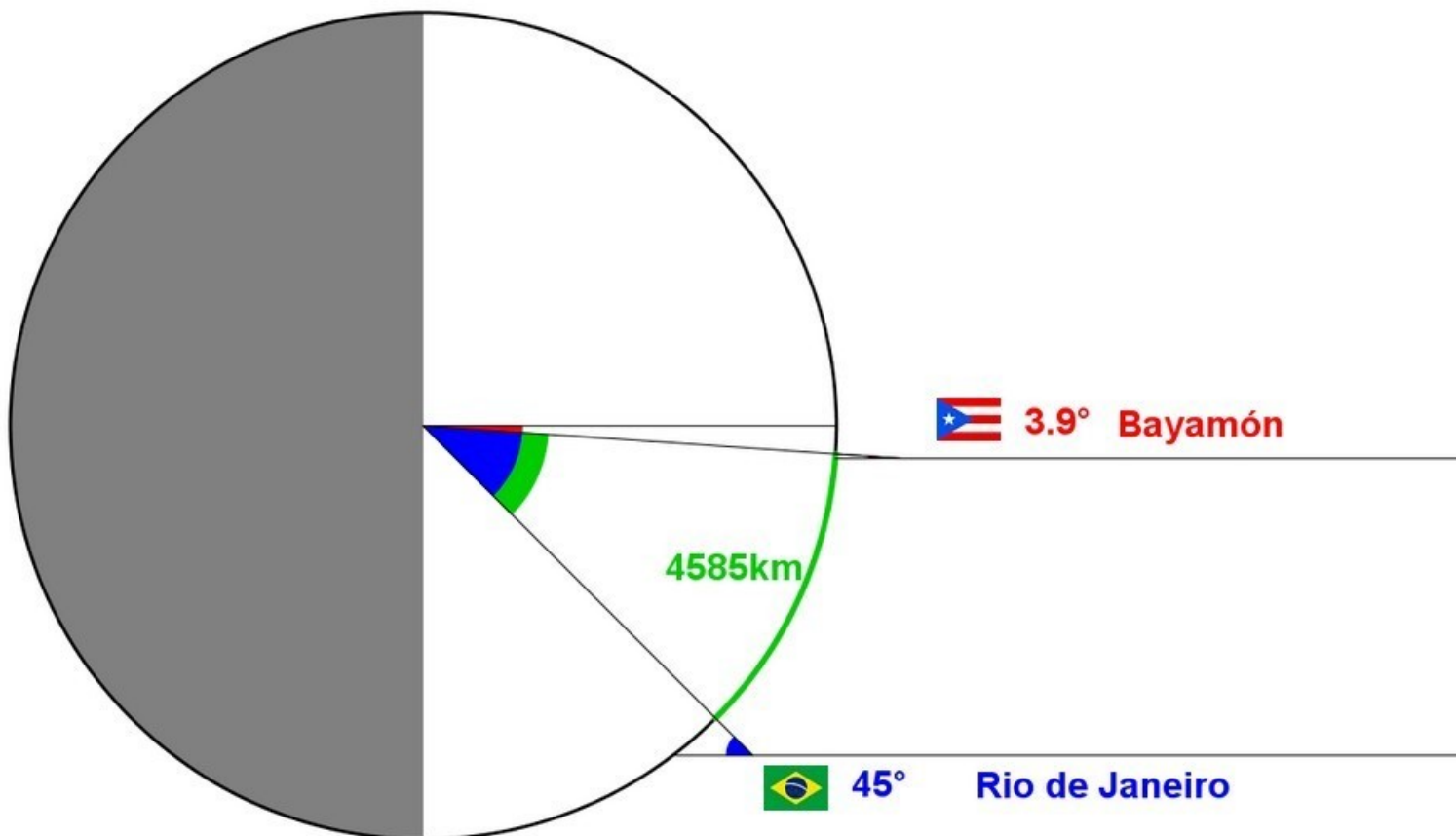


| Flag   | City    | Country     | School                     | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|---------|-------------|----------------------------|--------------------|---------------------|
|  | Bayamón | Puerto Rico | AECM Carribbean University | 18.383             | -66.168             |

| Date         | Gnomon | Shadow | Angle |
|--------------|--------|--------|-------|
| 15 June 2021 | 25.0cm | -2.0cm | -4.6° |
| 19 June 2021 | 25.0cm | -2.0cm | -4.6° |
| 20 June 2021 | 25.0cm | -3.5cm | -8.0° |
| 21 June 2021 | 25.0cm | -1.7cm | -3.9° |
| 22 June 2021 | 25cm   | -0.8cm | -1.8° |
| 24 June 2021 | 25cm   | -3.2cm | -7.3° |

21/06/2021 (Bayamón-Puerto Rico) Latitude: 18.383°

21/06/2021 (Rio de Janeiro-Brazil) Latitude: -22.89°



| Distance      | Angle      |
|---------------|------------|
| circumference | 360°       |
| 4585km        | 45° - 3.9° |

$$\text{circumference} = \frac{360^\circ \times 4585\text{km}}{45^\circ - 3.9^\circ} = 40161 \text{ km}$$








# Bizerte, Tunisia

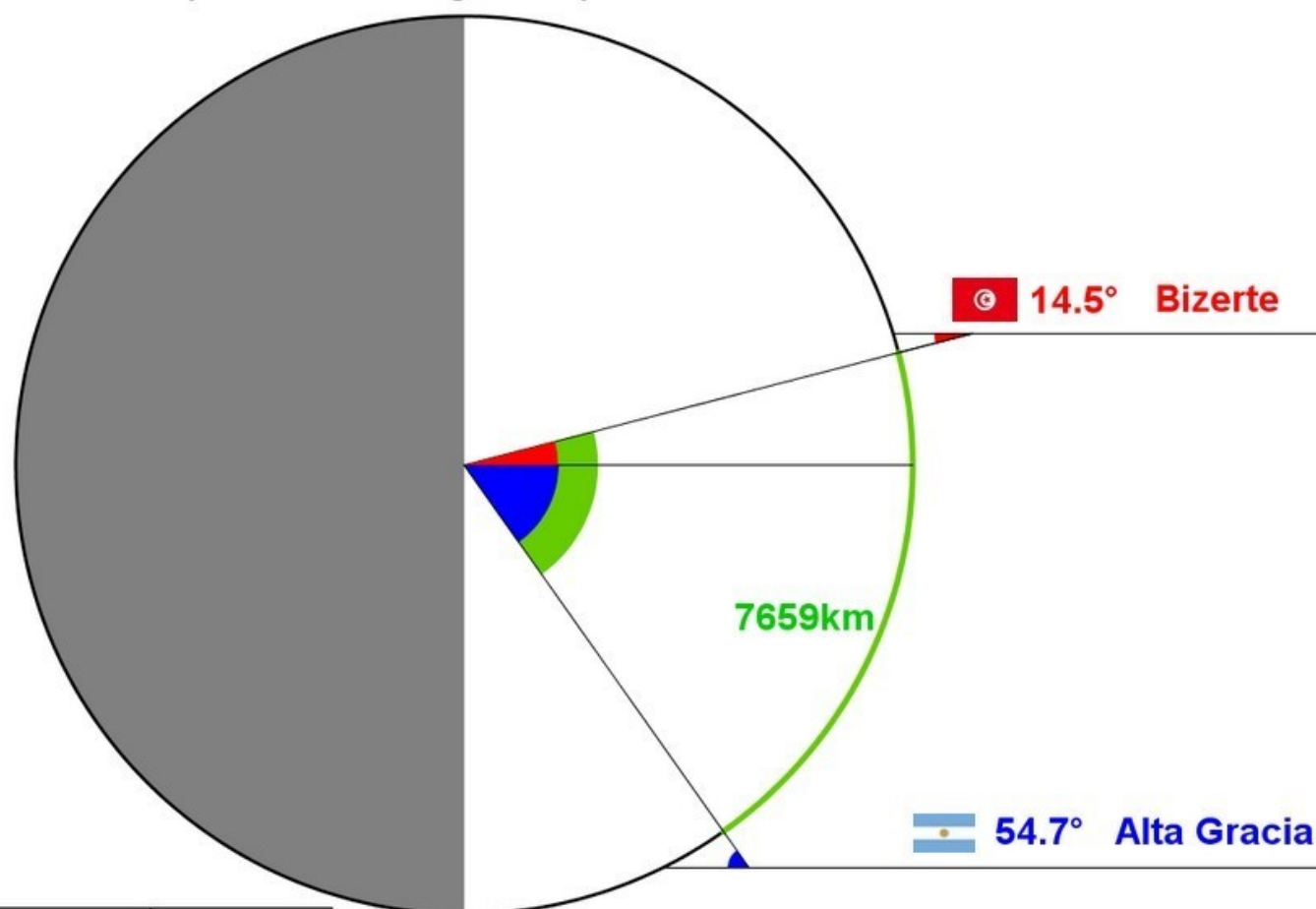


| Flag   | City    | Country | School                 | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|---------|---------|------------------------|--------------------|---------------------|
|  | Bizerte | Tunisia | Ecole Primaire Raouabi | 37.284             | 9.868               |

| Date         | Gnomon | Shadow | Angle |
|--------------|--------|--------|-------|
| 11 June 2021 | 32.5cm | 8.4cm  | 14.5° |
| 16 June 2021 | 19.5cm | 5.0cm  | 14.4° |
| 17 June 2021 | 32.5cm | 9.0cm  | 15.5° |
| 18 June 2021 | 19.5cm | 4.7cm  | 13.6° |
| 19 June 2021 | 17cm   | 4cm    | 13.2° |
| 20 June 2021 | 17.9cm | 6.7cm  | 20.5° |
| 21 June 2021 | 32.5cm | 9.5cm  | 16.3° |

11/06/2021 (Bizerte-Tunisia) Latitude: 37.284°

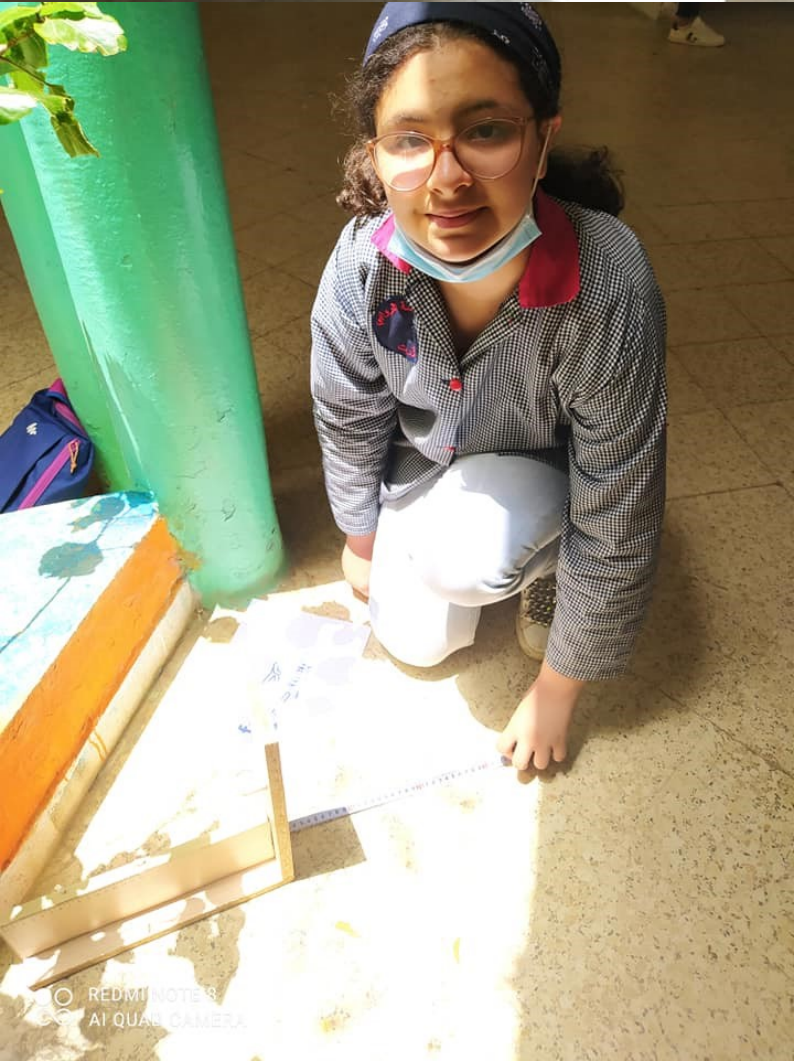
11/06/2021 (Alta Gracia-Argentina) Latitude: -31.656°



| Distance      | Angle         |
|---------------|---------------|
| circumference | 360°          |
| 7659km        | 14.5° + 54.7° |

$$\text{circumference} = \frac{360^\circ \times 7659\text{km}}{14.5^\circ + 54.7^\circ} = 39845 \text{ km}$$








# Busteni, Romania

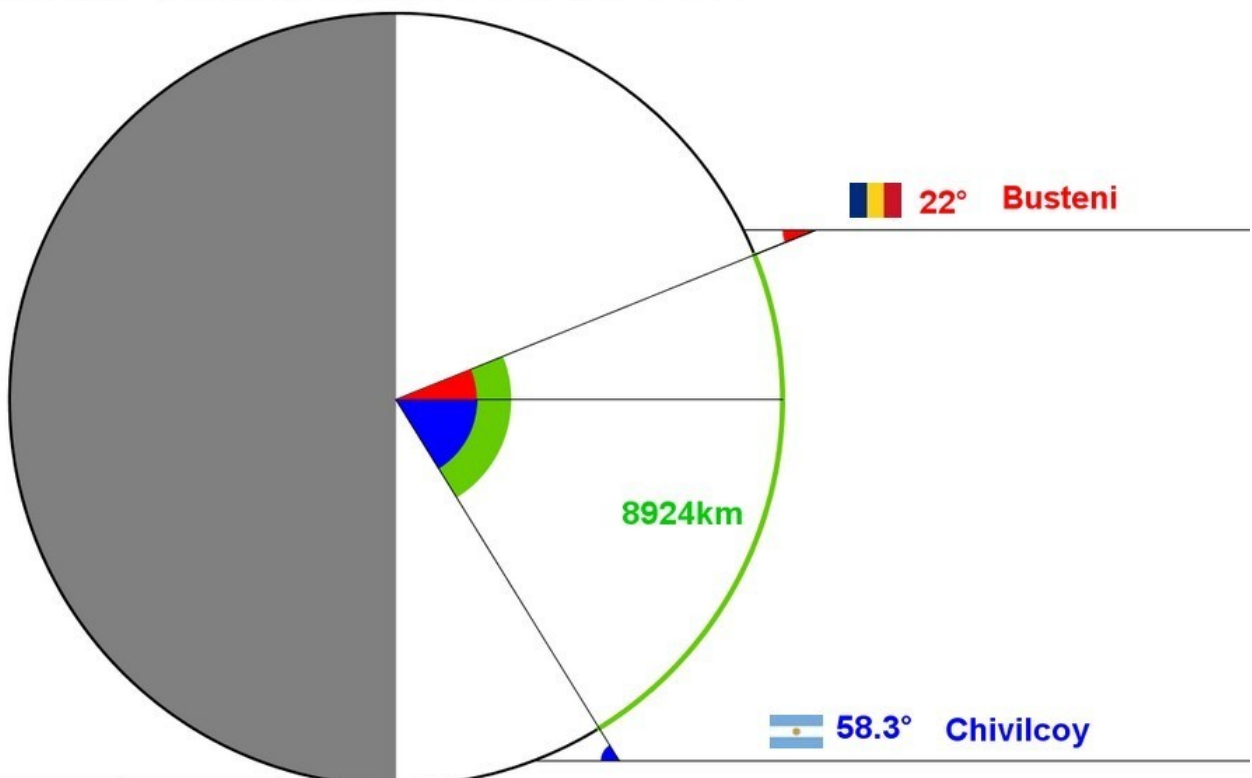


| Flag  | City    | Country | School                 | Latitude (°) +N/-S | Longitude (°) +E/-W |
|---|---------|---------|------------------------|--------------------|---------------------|
|  | Busteni | Romania | Colegiul Ion Kalinderu | 45.416             | 25.535              |

| Date         | Gnomon | Shadow | Angle |
|--------------|--------|--------|-------|
| 03 June 2021 | 16.6cm | 7.0cm  | 22.9° |
| 05 June 2021 | 47.8cm | 20.0cm | 22.7° |
| 06 June 2021 | 30.0cm | 12.5cm | 22.6° |
| 07 June 2021 | 48.3cm | 20.0cm | 22.5° |
| 08 June 2021 | 48.2cm | 20.0cm | 22.5° |
| 09 June 2021 | 80.2cm | 33.0cm | 22.4° |
| 10 June 2021 | 48.8cm | 20.0cm | 22.3° |
| 11 June 2021 | 50.0cm | 20.4cm | 22.2° |
| 14 June 2021 | 49.3cm | 20.0cm | 22.1° |
| 16 June 2021 | 62.0cm | 25.0cm | 22.0° |
| 17 June 2021 | 39.6cm | 16.0cm | 22.0° |
| 19 June 2021 | 24.8cm | 10cm   | 22°   |
| 20 June 2021 | 62cm   | 25cm   | 22°   |
| 21 June 2021 | 34.7cm | 14.0cm | 22.0° |
| 22 June 2021 | 62cm   | 25cm   | 22°   |
| 23 June 2021 | 24.7cm | 10cm   | 22°   |
| 24 June 2021 | 24.7cm | 10cm   | 22°   |
| 25 June 2021 | 73.0cm | 29.6cm | 22.1° |
| 28 June 2021 | 35.0cm | 14.3cm | 22.2° |
| 29 June 2021 | 35cm   | 14.4cm | 22.4° |

16/06/2021 (Busteni-Romania) Latitude: 45.416°

16/06/2021 (Chivilcoy-Argentina) Latitude: -34.911°



| Distance      | Angle       |
|---------------|-------------|
| circumference | 360°        |
| 8924km        | 22° + 58.3° |

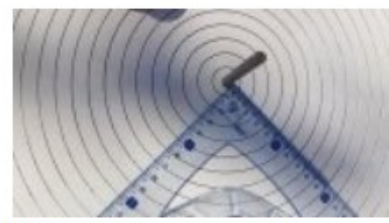
$$\text{circumference} = \frac{360^\circ \times 8924\text{km}}{22^\circ + 58.3^\circ} = 40008 \text{ km}$$








# Chivilcoy, Argentina

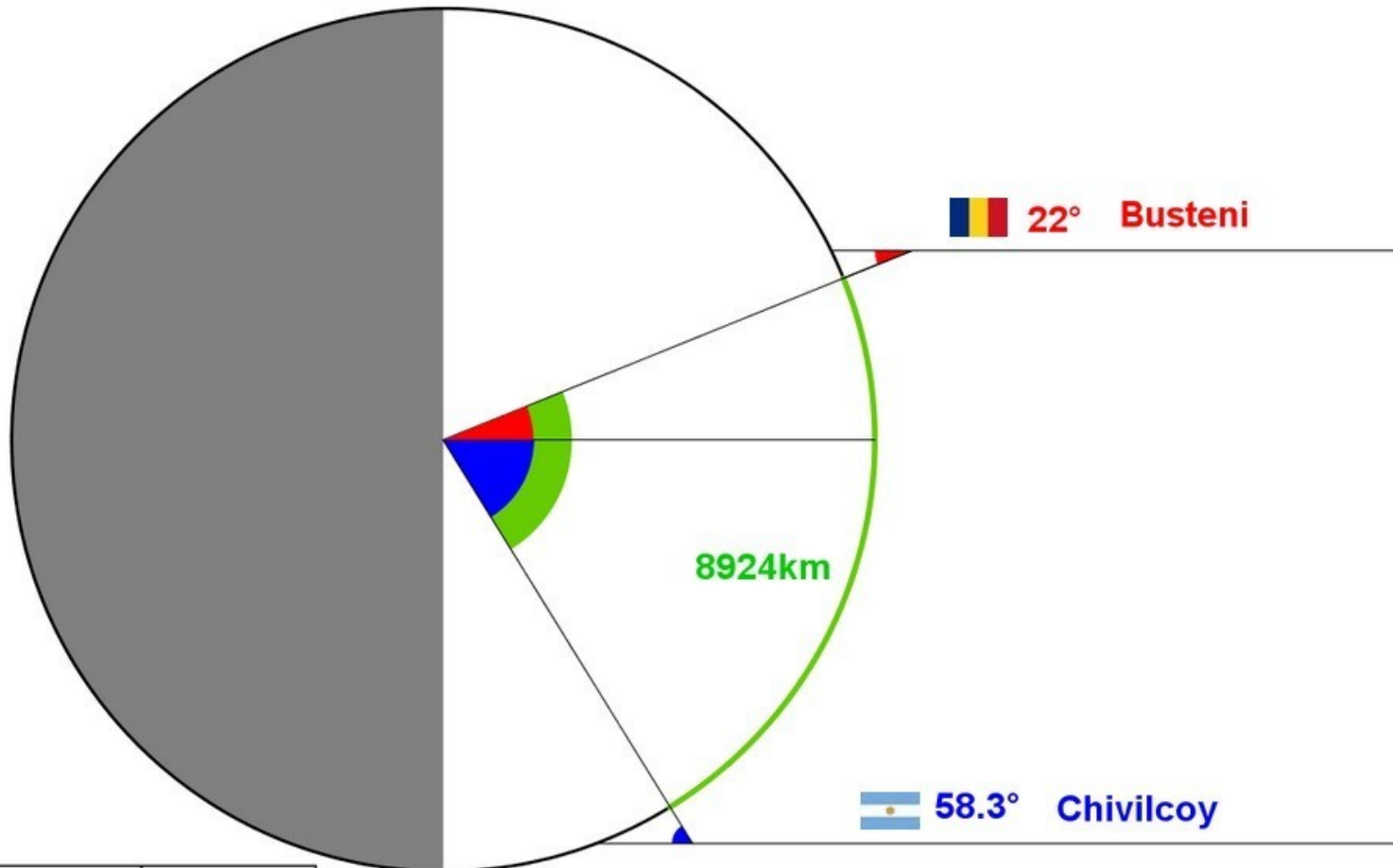


| Flag   | City      | Country   | School                | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|-----------|-----------|-----------------------|--------------------|---------------------|
|  | Chivilcoy | Argentina | Parque Cielos del Sur | -34.911            | -60.014             |

| Date         | Gnomon | Shadow  | Angle  |
|--------------|--------|---------|--------|
| 06 June 2021 | 12.0cm | -18.9cm | -57.6° |
| 08 June 2021 | 6.0cm  | -9.5cm  | -57.7° |
| 13 June 2021 | 6.0cm  | -9.6cm  | -58.0° |
| 15 June 2021 | 6.0cm  | -9.7cm  | -58.3° |
| 16 June 2021 | 6.0cm  | -9.7cm  | -58.3° |
| 17 June 2021 | 6.0cm  | -9.7cm  | -58.3° |
| 18 June 2021 | 6.0cm  | -9.7cm  | -58.3° |
| 19 June 2021 | 6cm    | -9.7cm  | -58.3° |
| 20 June 2021 | 6.0cm  | -9.5cm  | -57.7° |
| 22 June 2021 | 120cm  | -194cm  | -58.3° |
| 24 June 2021 | 12.0cm | -19.4cm | -58.3° |

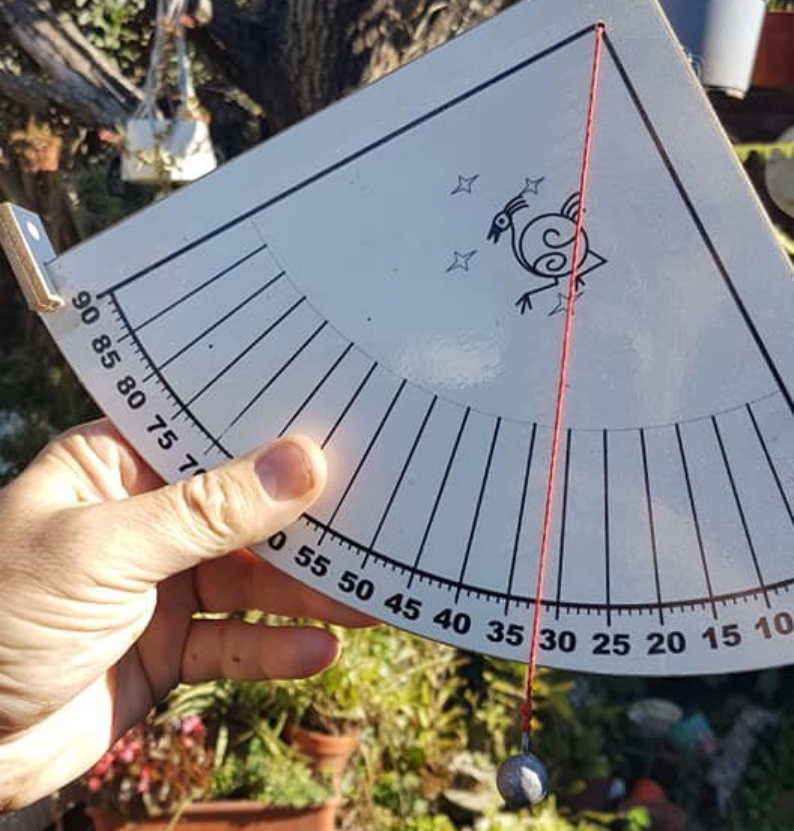
16/06/2021 (Busteni-Romania) Latitude: 45.416°

16/06/2021 (Chivilcoy-Argentina) Latitude: -34.911°



| Distance      | Angle       |
|---------------|-------------|
| circumference | 360°        |
| 8924km        | 22° + 58.3° |


$$\text{circumference} = \frac{360^\circ \times 8924\text{km}}{22^\circ + 58.3^\circ} = 40008 \text{ km}$$





# Guarne, Colombia

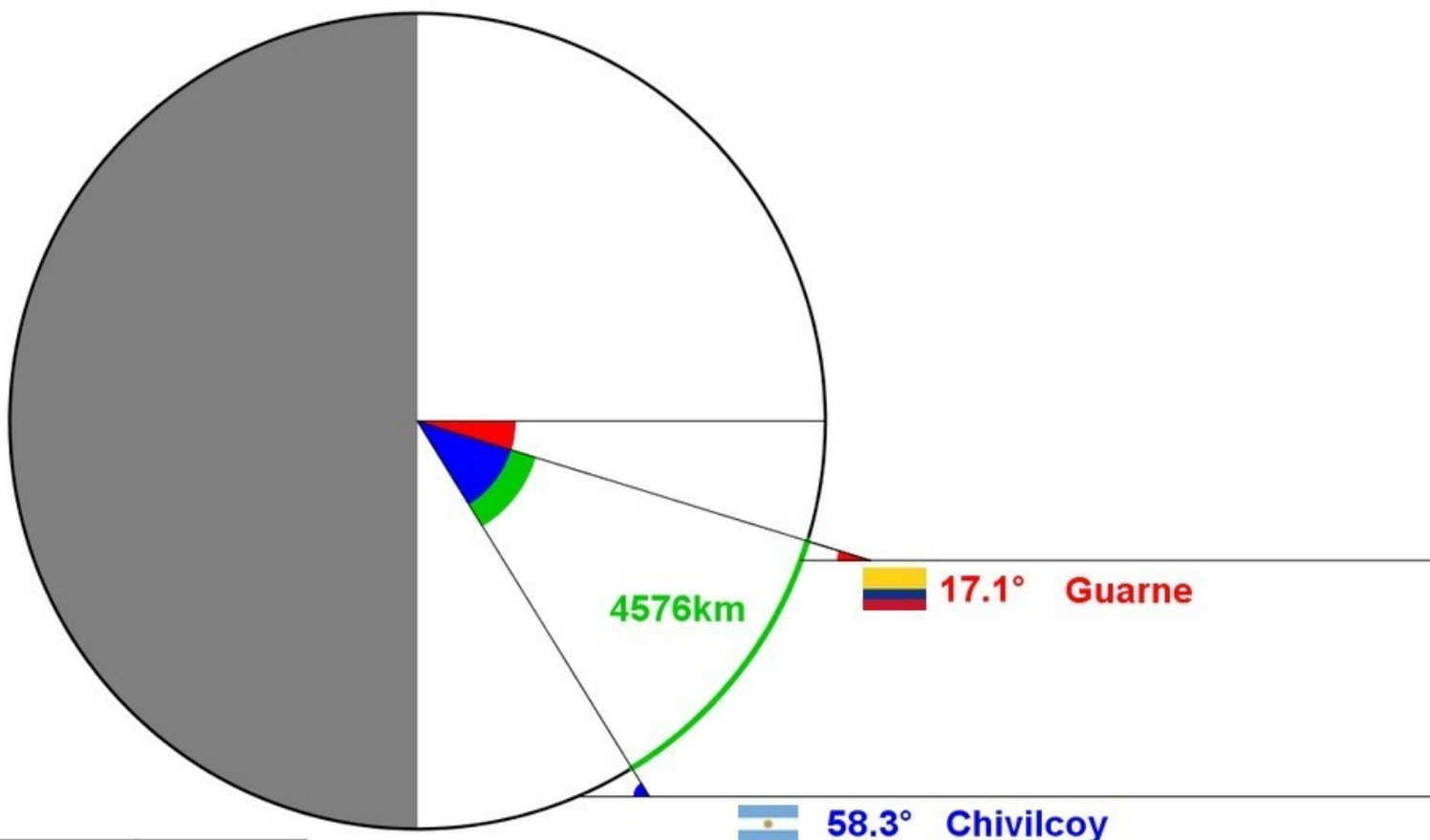


| Flag   | City   | Country  | School               | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|--------|----------|----------------------|--------------------|---------------------|
|  | Guarne | Colombia | Grupo Astrofanáticos | 6.274              | -76.522             |

| Date         | Gnomon | Shadow | Angle  |
|--------------|--------|--------|--------|
| 03 June 2021 | 12.0cm | -3.5cm | -16.3° |
| 11 June 2021 | 12.0cm | -3.7cm | -17.1° |
| 18 June 2021 | 12.0cm | -3.7cm | -17.1° |
| 21 June 2021 | 12.0cm | -3.7cm | -17.1° |

18/06/2021 (Guarne-Colombia) Latitude: 6.274°

18/06/2021 (Chivilcoy-Argentina) Latitude: -34.911°



| Distance      | Angle         |
|---------------|---------------|
| circumference | 360°          |
| 4576km        | 58.3° - 17.1° |

$$\text{circumference} = \frac{360^\circ \times 4576\text{km}}{58.3^\circ - 17.1^\circ} = 39984 \text{ km}$$







# Ilion, Greece

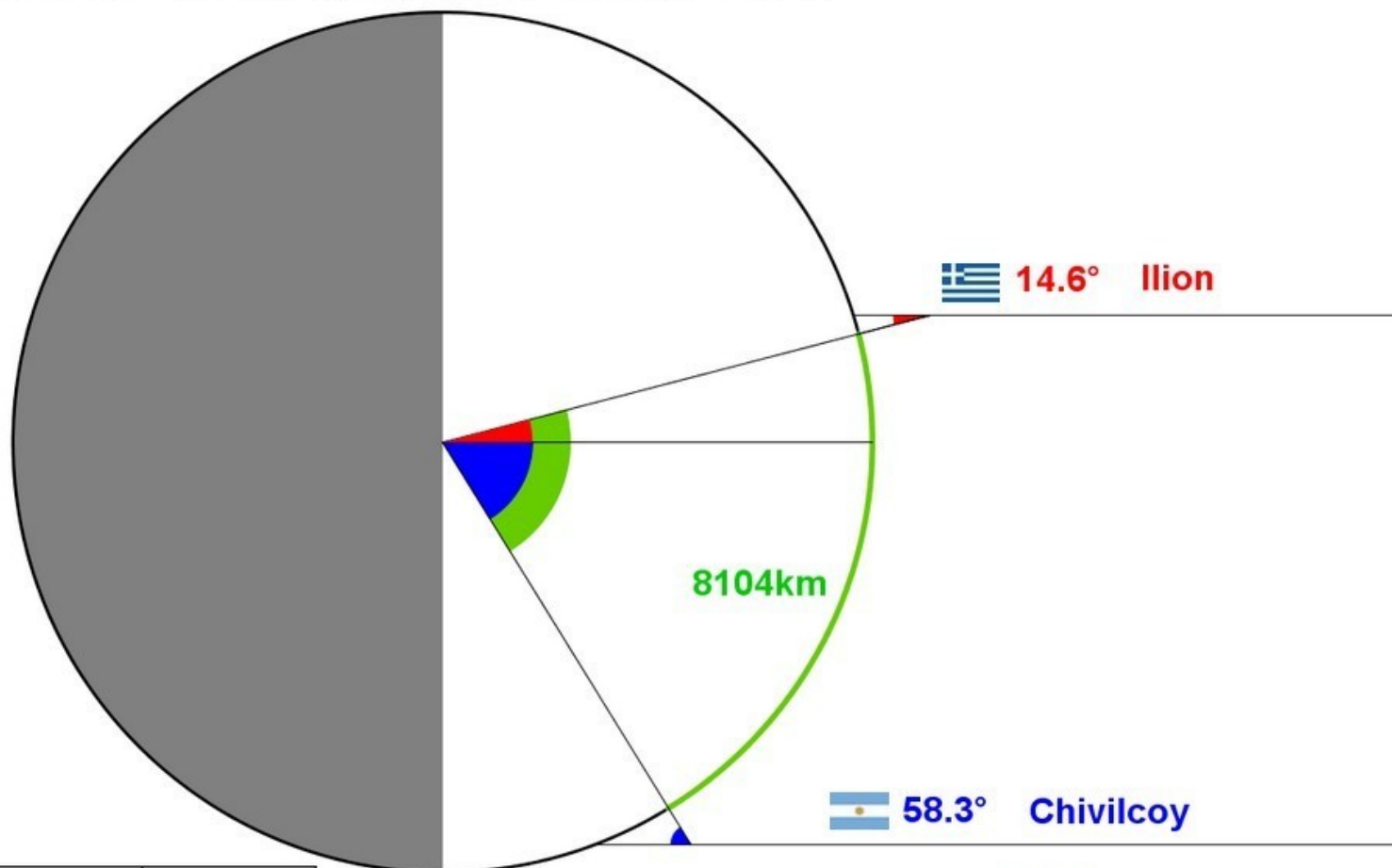


| Flag   | City  | Country | School                          | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|-------|---------|---------------------------------|--------------------|---------------------|
|  | Ilion | Greece  | 11th JuniorHigh School of Ilion | 38.033             | 23.697              |

| Date         | Gnomon | Shadow | Angle |
|--------------|--------|--------|-------|
| 03 June 2021 | 40.0cm | 11.2cm | 15.6° |
| 07 June 2021 | 40.0cm | 10.7cm | 15.0° |
| 08 June 2021 | 40.0cm | 10.7cm | 15.0° |
| 15 June 2021 | 40.0cm | 10.5cm | 14.7° |
| 17 June 2021 | 40.0cm | 10.4cm | 14.6° |

17/06/2021 (Ilion-Greece) Latitude: 38.033°

17/06/2021 (Chivilcoy-Argentina) Latitude: -34.911°



| Distance      | Angle         |
|---------------|---------------|
| circumference | 360°          |
| 8104km        | 14.6° + 58.3° |

$$\text{circumference} = \frac{360^\circ \times 8104\text{km}}{14.6^\circ + 58.3^\circ} = 40020 \text{ km}$$







# Irbid, Jordan

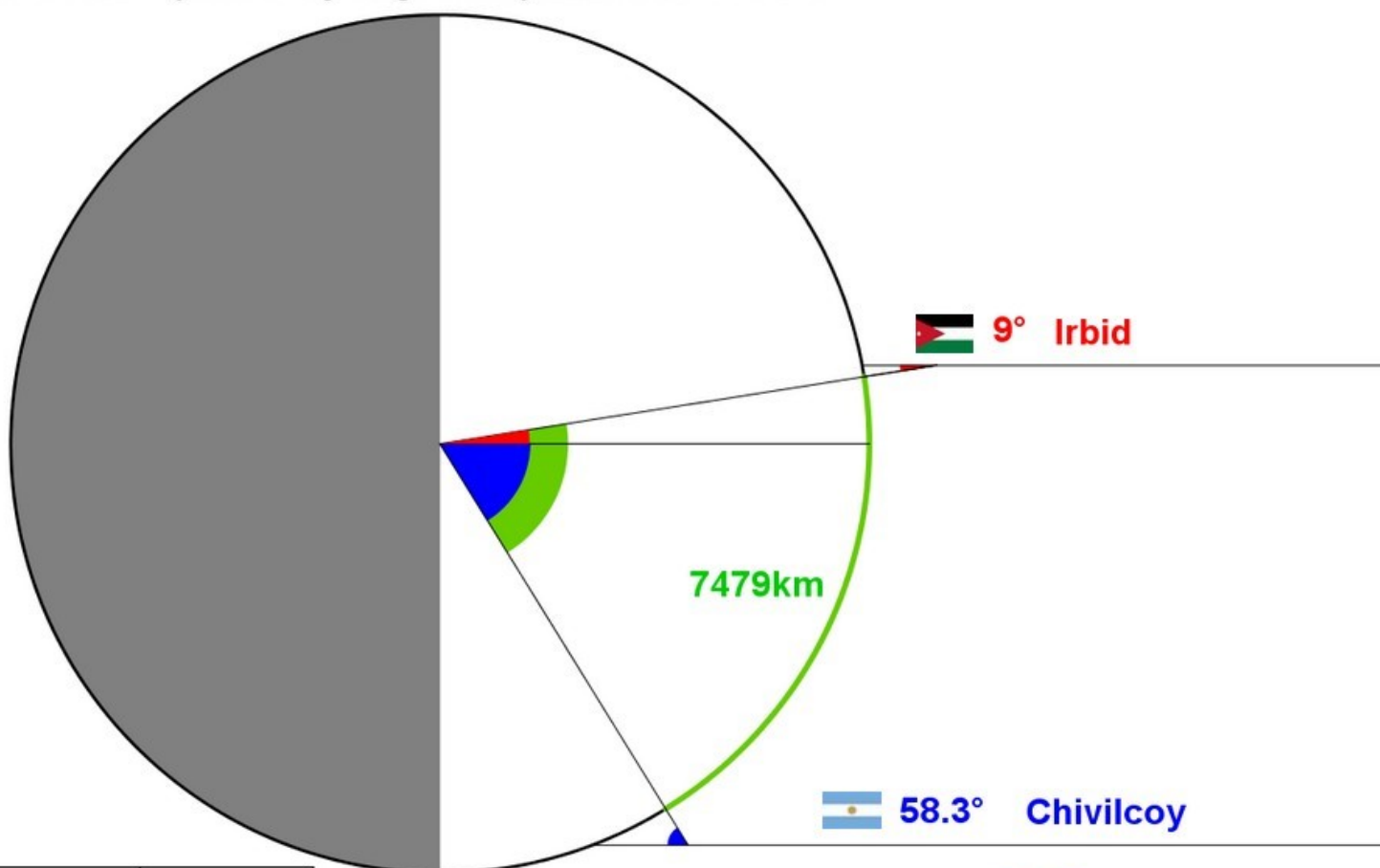


| Flag  | City  | Country | School                    | Latitude (°) +N/-S | Longitude (°) +E/-W |
|---|-------|---------|---------------------------|--------------------|---------------------|
|  | Irbid | Jordan  | Mashar'eh Military School | 32.405             | 35.588              |

| Date         | Gnomon  | Shadow | Angle |
|--------------|---------|--------|-------|
| 01 June 2021 | 87.0cm  | 15.5cm | 10.1° |
| 03 June 2021 | 86.0cm  | 15.0cm | 9.9°  |
| 06 June 2021 | 74.5cm  | 12.2cm | 9.3°  |
| 08 June 2021 | 85.0cm  | 14.1cm | 9.4°  |
| 10 June 2021 | 60.3cm  | 9.8cm  | 9.2°  |
| 13 June 2021 | 42.5cm  | 6.8cm  | 9.1°  |
| 14 June 2021 | 85.0cm  | 13.6cm | 9.1°  |
| 17 June 2021 | 115.0cm | 18.2cm | 9.0°  |
| 20 June 2021 | 88cm    | 13.9cm | 9°    |
| 21 June 2021 | 89.0cm  | 14.1cm | 9.0°  |
| 24 June 2021 | 89.5cm  | 14.2cm | 9.0°  |
| 27 June 2021 | 25cm    | 4cm    | 9.1°  |
| 29 June 2021 | 74.5cm  | 12.2cm | 9.3°  |

17/06/2021 (Irbid-Jordan) Latitude: 32.405°

17/06/2021 (Chivilcoy-Argentina) Latitude: -34.911°



| Distance      | Angle      |
|---------------|------------|
| circumference | 360°       |
| 7479km        | 9° + 58.3° |

$$\text{circumference} = \frac{360^\circ \times 7479\text{km}}{9^\circ + 58.3^\circ} = 40007 \text{ km}$$







# Lafrançaise, France

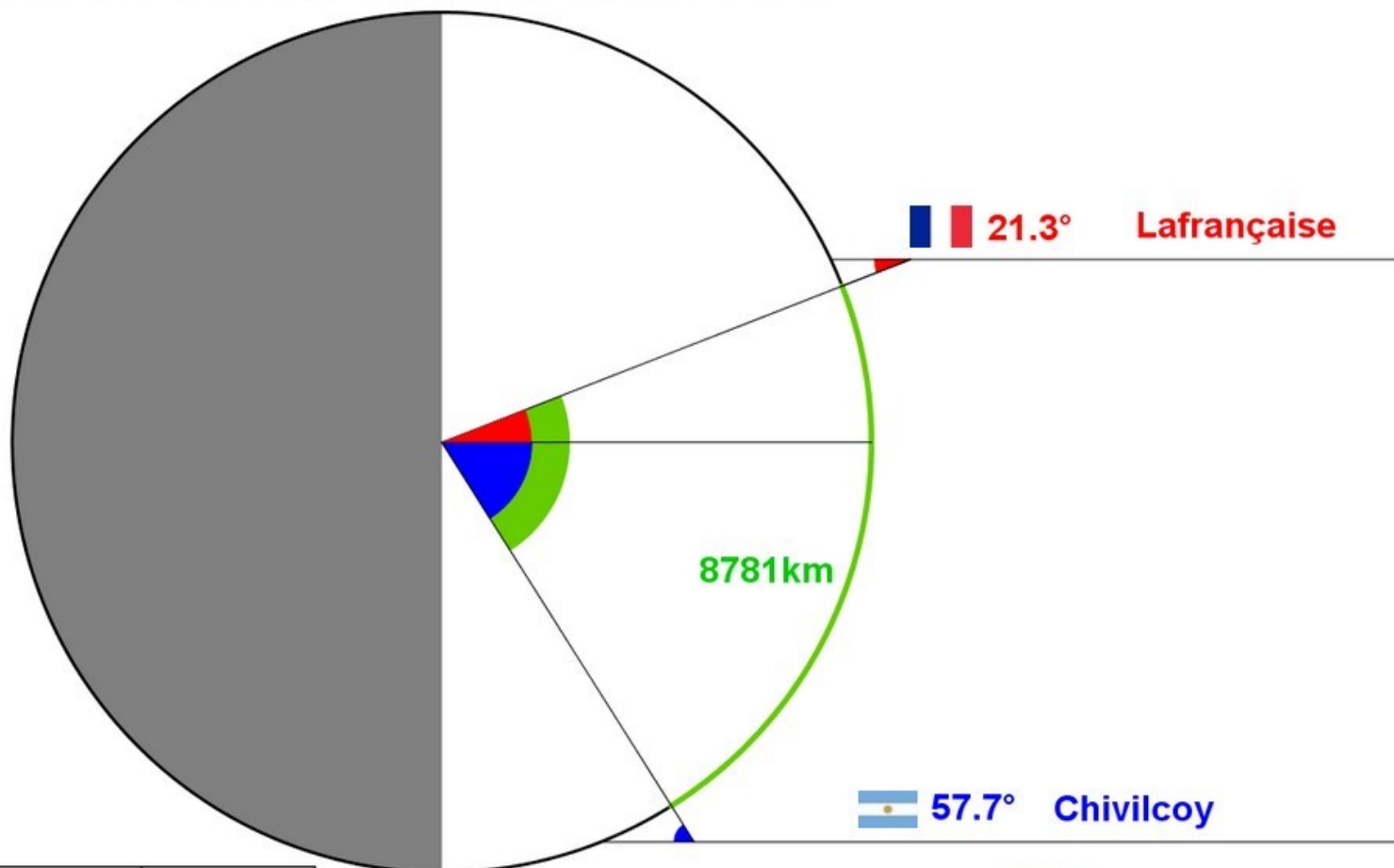


| Flag   | City        | Country | School                  | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|-------------|---------|-------------------------|--------------------|---------------------|
|  | Lafrançaise | France  | Collège Antonin Perbosc | 44.127             | 1.237               |

| Date         | Gnomon  | Shadow | Angle |
|--------------|---------|--------|-------|
| 03 June 2021 | 100.0cm | 40.0cm | 21.8° |
| 08 June 2021 | 100.0cm | 39.0cm | 21.3° |
| 10 June 2021 | 100cm   | 39cm   | 21.3° |
| 11 June 2021 | 100.0cm | 38.0cm | 20.8° |
| 15 June 2021 | 100.0cm | 38.0cm | 20.8° |
| 18 June 2021 | 100.0cm | 37.8cm | 20.7° |
| 21 June 2021 | 100cm   | 37.7cm | 20.7° |
| 22 June 2021 | 100cm   | 39.5cm | 21.6° |

08/06/2021 (Lafrançaise-France) Latitude: 44.127°

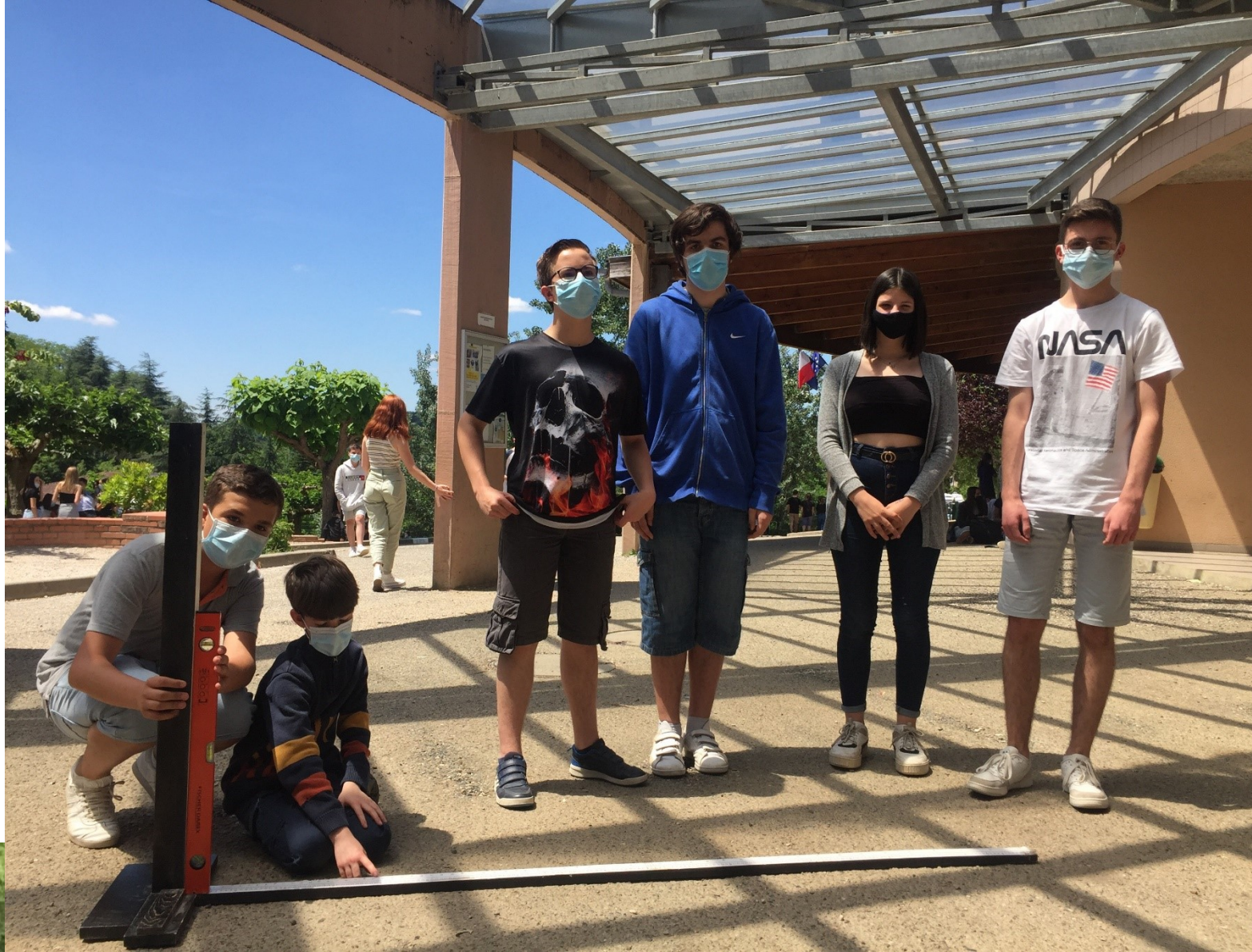
08/06/2021 (Chivilcoy-Argentina) Latitude: -34.911°



| Distance      | Angle         |
|---------------|---------------|
| circumference | 360°          |
| 8781km        | 21.3° + 57.7° |

$$\text{circumference} = \frac{360^\circ \times 8781\text{km}}{21.3^\circ + 57.7^\circ} = 40015 \text{ km}$$







# Magalhães Bastos, Brazil

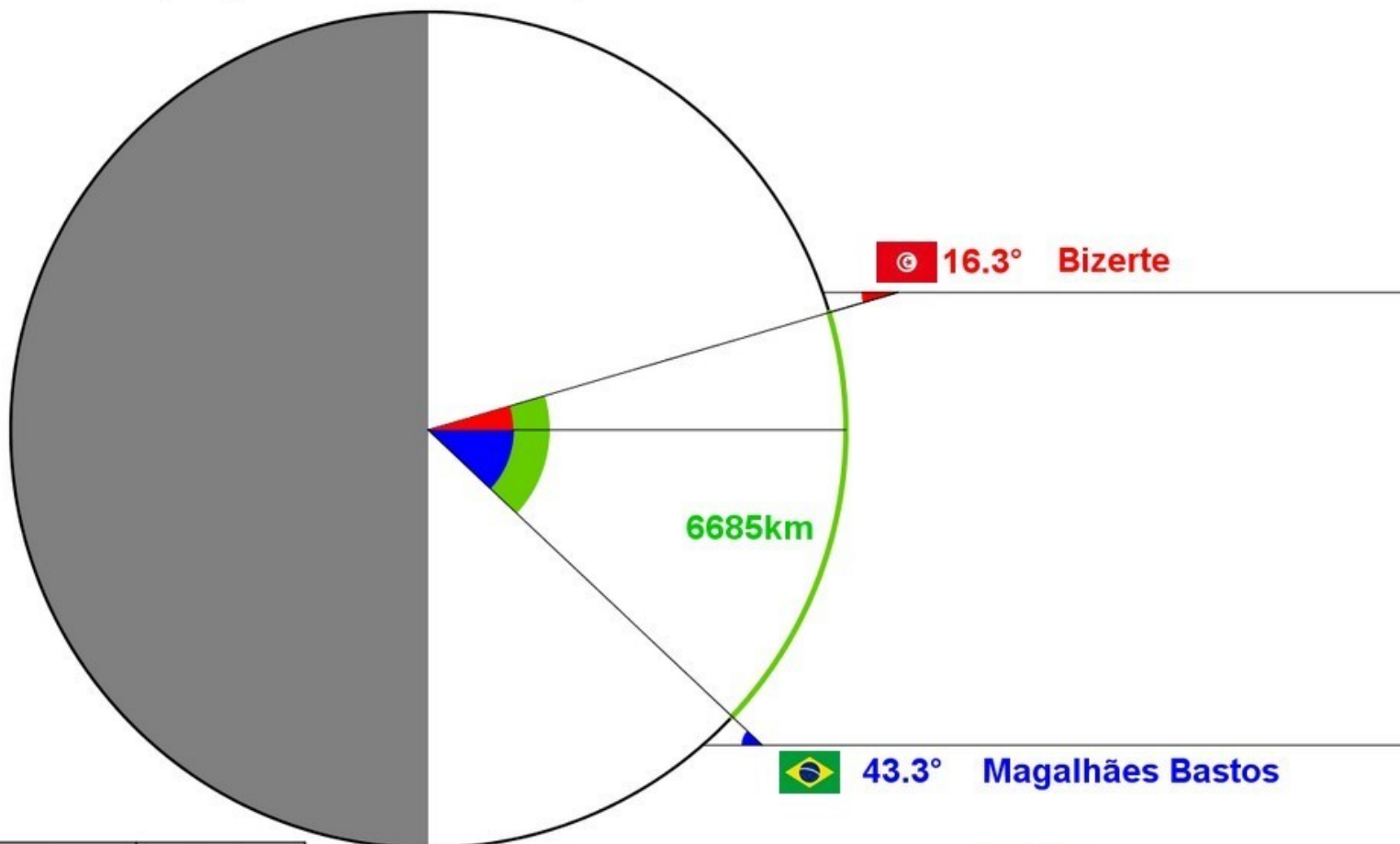


| Flag   | City             | Country | School                            | Latitude (°)<br>+N/-S | Longitude (°)<br>+E/-W |
|--|------------------|---------|-----------------------------------|-----------------------|------------------------|
|  | Magalhães Bastos | Brazil  | Escola Municipal Olímpica Carioca | -22.887               | -43.401                |

| Date         | Gnomon | Shadow  | Angle  |
|--------------|--------|---------|--------|
| 21 June 2021 | 17.0cm | -16.0cm | -43.3° |

21/06/2021 (Bizerte-Tunisia) Latitude: 37.284°

21/06/2021 (Magalhães Bastos-Brazil) Latitude: -22.887°



| Distance      | Angle         |
|---------------|---------------|
| circumference | 360°          |
| 6685km        | 16.3° + 43.3° |

$$\text{circumference} = \frac{360^\circ \times 6685\text{km}}{16.3^\circ + 43.3^\circ} = 40379 \text{ km}$$







# Margineni, Romania



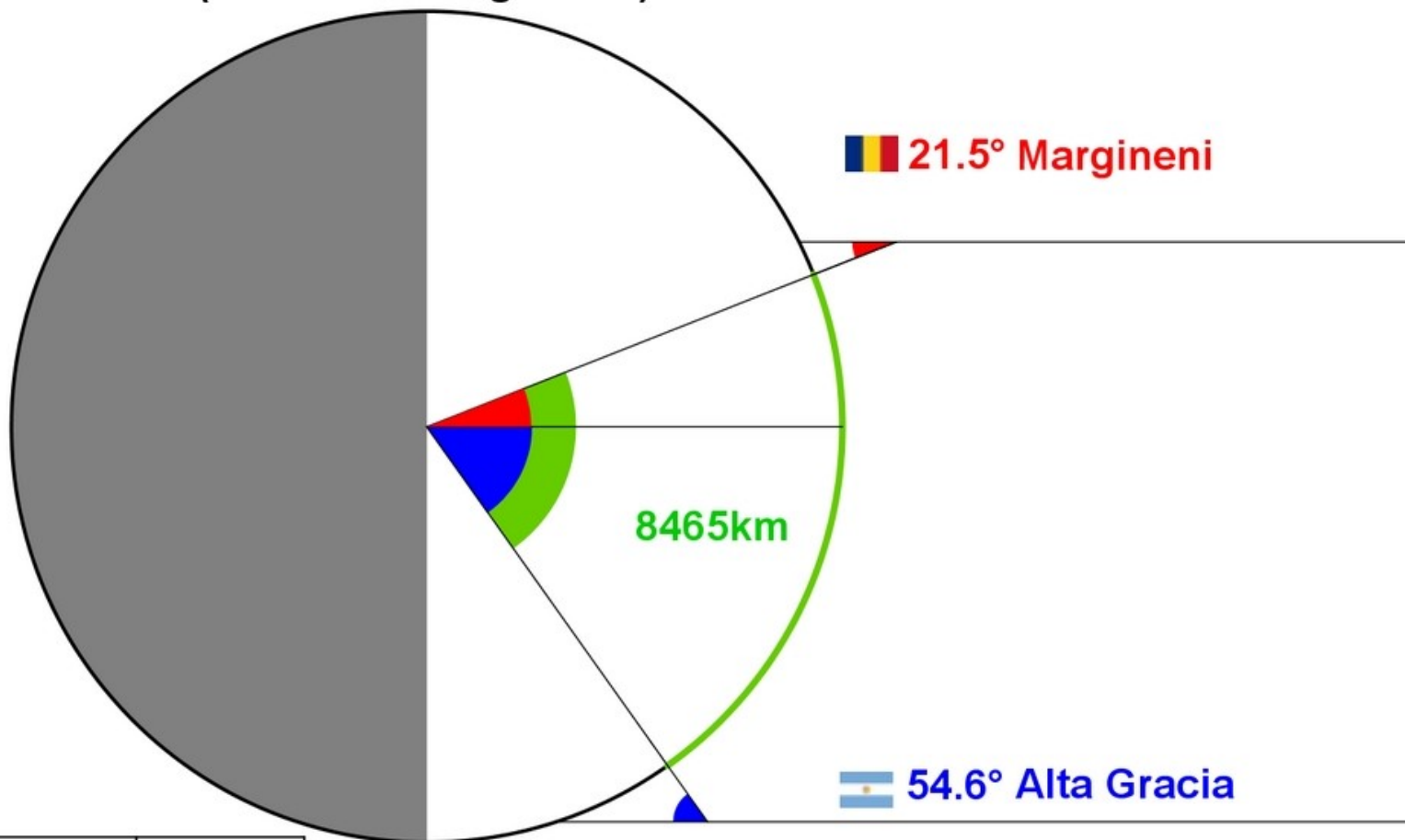
Secondary School Gh. Popescu, Romania  
Margineni 21.06.2021

| Flag   | City      | Country | School             | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|-----------|---------|--------------------|--------------------|---------------------|
|  | Mărgineni | Romania | Gh. Popescu School | 44.533             | 24.554              |

| Date         | Gnomon  | Shadow | Angle |
|--------------|---------|--------|-------|
| 22 June 2021 | 100cm   | 39.4cm | 21.5° |
| 21 June 2021 | 100.0cm | 39.8cm | 21.7° |

22/06.2021 (Margineni-Romania) Latitude: 44.533°

22/06/2021 (Alta Gracia-Argentina) Latitude: -31.656°



| Distance      | Angle       |
|---------------|-------------|
| circumference | 360°        |
| 8465km        | 21.5°+54.6° |

$$\text{circumference} = \frac{360^\circ \times 8465\text{km}}{21.5^\circ + 54.6^\circ} = 40045 \text{ km}$$







# Méier, Brazil

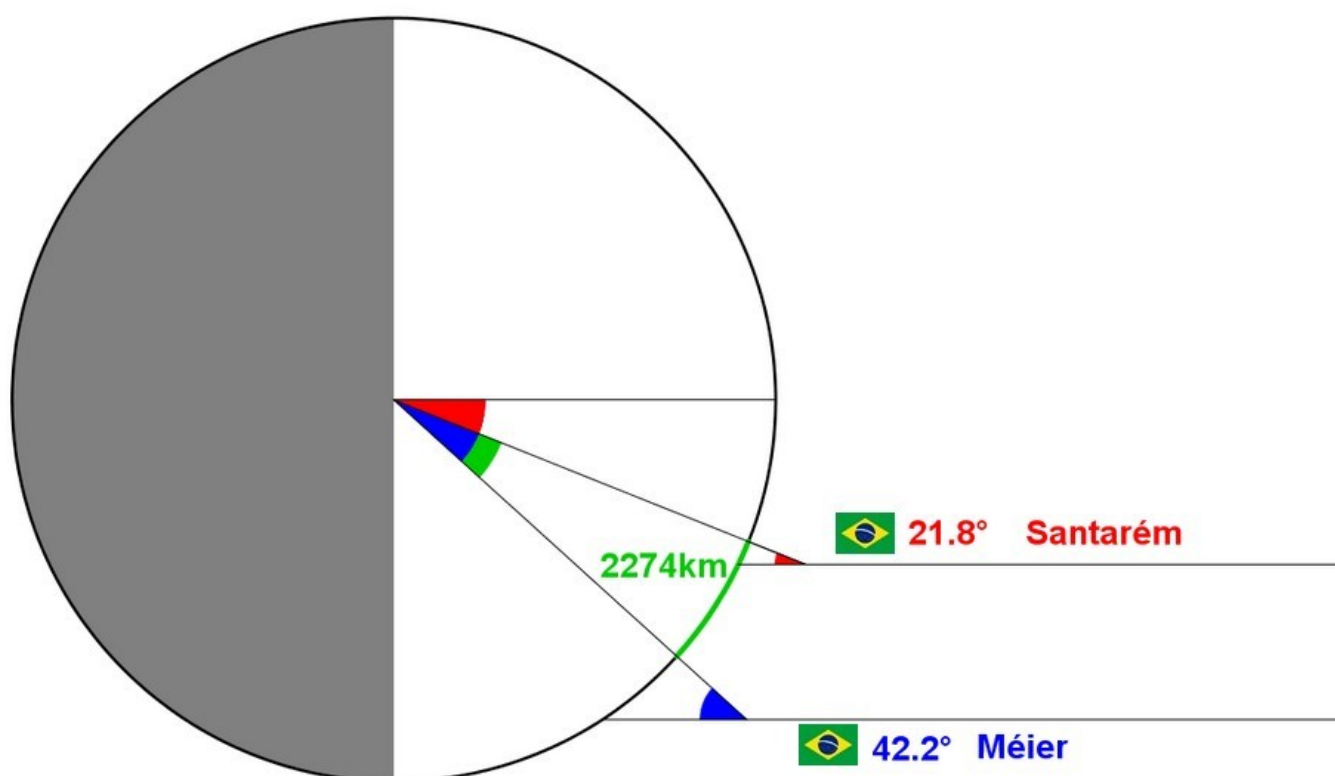


| Flag   | City  | Country | School                         | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|-------|---------|--------------------------------|--------------------|---------------------|
|  | Méier | Brazil  | Escola Municipal Bento Ribeiro | -22.904            | -43.280             |

| Date         | Gnomon | Shadow  | Angle  |
|--------------|--------|---------|--------|
| 01 June 2021 | 54.0cm | -46.0cm | -40.4° |
| 02 June 2021 | 54.0cm | -50.0cm | -42.8° |
| 03 June 2021 | 54.0cm | -50.0cm | -42.8° |
| 05 June 2021 | 54.0cm | -50.0cm | -42.8° |
| 07 June 2021 | 54.0cm | -50.0cm | -42.8° |
| 14 June 2021 | 54.0cm | -49.0cm | -42.2° |
| 15 June 2021 | 54.0cm | -49.0cm | -42.2° |
| 16 June 2021 | 54.0cm | -50.0cm | -42.8° |
| 18 June 2021 | 54.0cm | -54.0cm | -45.0° |
| 20 June 2021 | 54.0cm | -54.0cm | -45.0° |
| 21 June 2021 | 54.0cm | -54cm   | -45.0° |
| 23 June 2021 | 54cm   | -49cm   | -42.2° |
| 24 June 2021 | 54cm   | -50cm   | -42.8° |
| 26 June 2021 | 54cm   | -56cm   | -46°   |
| 27 June 2021 | 54cm   | -56cm   | -46°   |

14/06/2021 (Santarém-Brazil) Latitude: -2.439°

14/06/2021 (Méier-Brazil) Latitude: -22.904°



| Distance      | Angle         |
|---------------|---------------|
| circumference | 360°          |
| 2274km        | 42.2° - 21.8° |

$$\text{circumference} = \frac{360^\circ \times 2274\text{km}}{42.2^\circ - 21.8^\circ} = 40129 \text{ km}$$







# Mohammedia, Tunisia

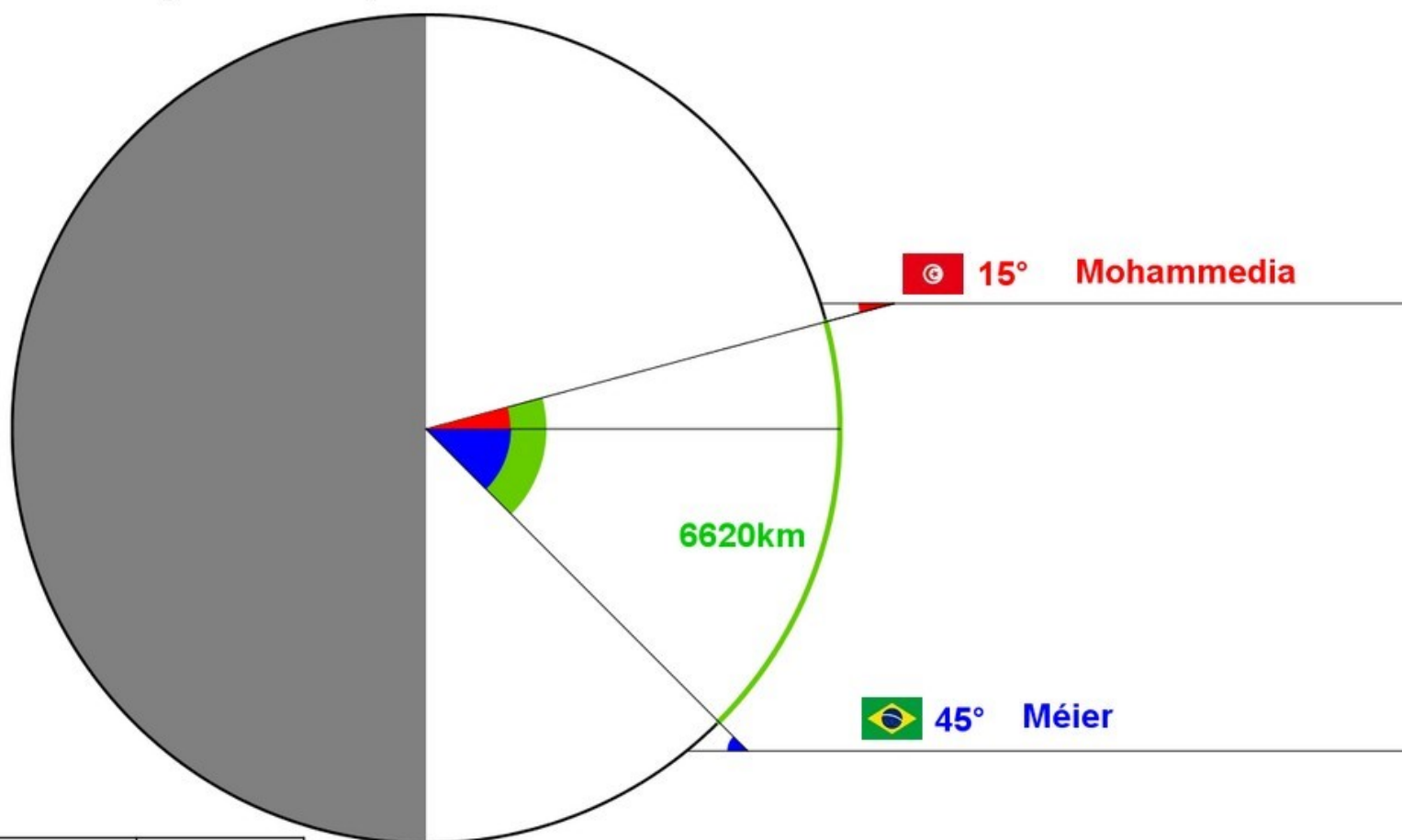


| Flag   | City       | Country | School         | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|------------|---------|----------------|--------------------|---------------------|
|  | Mohammedia | Tunisia | Lycée M'hamdia | 36.678             | 10.152              |

| Date         | Gnomon  | Shadow | Angle |
|--------------|---------|--------|-------|
| 21 June 2021 | 108.5cm | 29.0cm | 15.0° |

21/06/2021 (Mohammedia-Tunisia) Latitude: 36.678°

21/06/2021 (Méier-Brazil) Latitude: -22.904°



| Distance      | Angle     |
|---------------|-----------|
| circumference | 360°      |
| 6620km        | 15° + 45° |

$$\text{circumference} = \frac{360^\circ \times 6620\text{km}}{15^\circ + 45^\circ} = 39720 \text{ km}$$








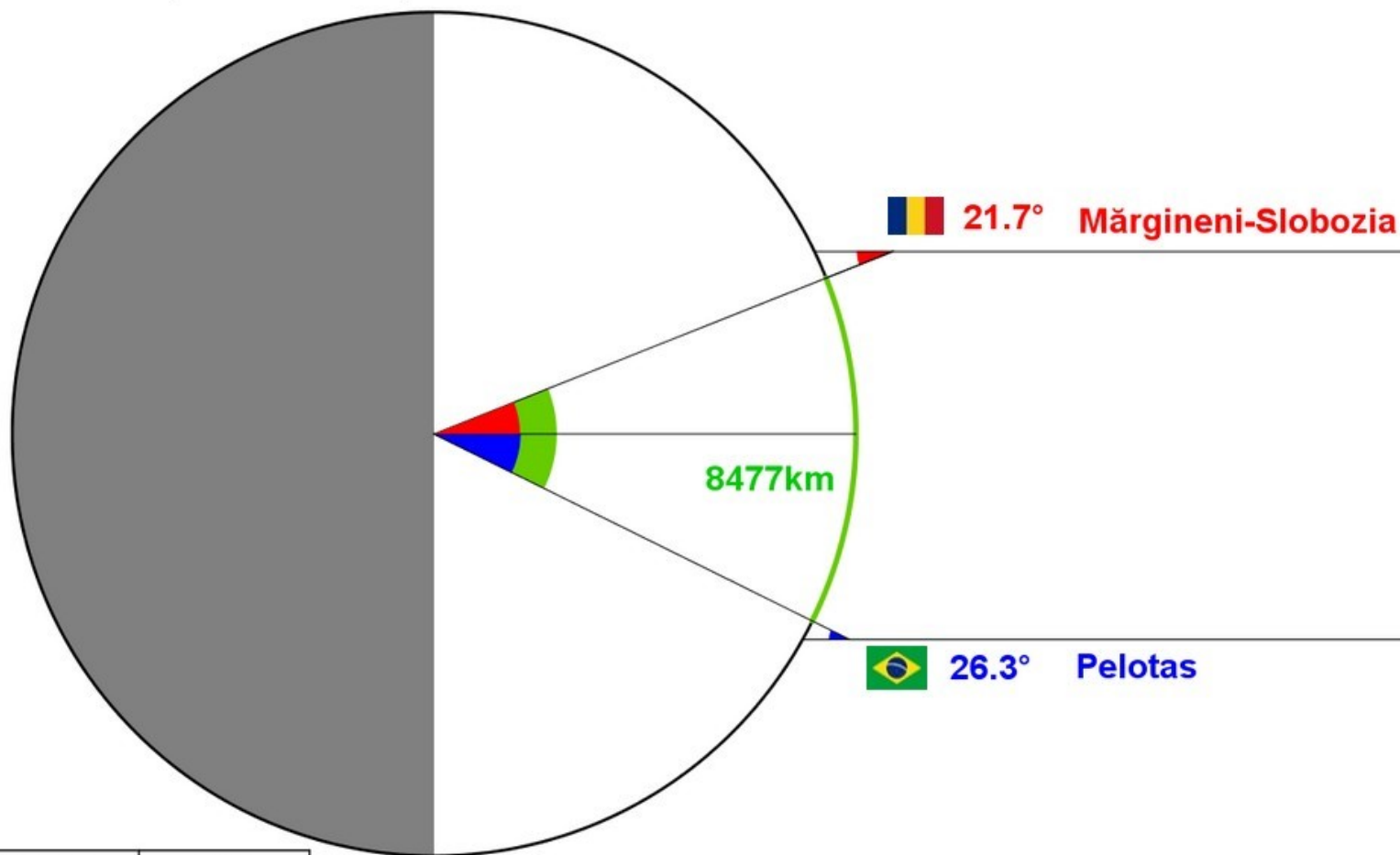
# Pelotas, Brazil



| Flag   | City    | Country | School                        | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|---------|---------|-------------------------------|--------------------|---------------------|
|  | Pelotas | Brazil  | Federal University of Pelotas | -31.772            | -52.329             |

| Date         | Gnomon | Shadow | Angle  |
|--------------|--------|--------|--------|
| 21 June 2021 | 17.8cm | -8.8cm | -26.3° |

21/06/2021 (Mărgineni-Slobozia-Romania) Latitude: 44.533°  
 21/06/2021 (Pelotas-Brazil) Latitude: -31.772°



| Distance      | Angle         |
|---------------|---------------|
| circumference | 360°          |
| 8477km        | 21.7° + 26.3° |

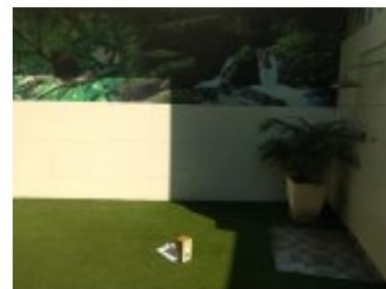
$$\text{circumference} = \frac{360^\circ \times 8477\text{km}}{21.7^\circ + 26.3^\circ} = 63578 \text{ km}$$








# Rio de Janeiro CENOM, Brazil

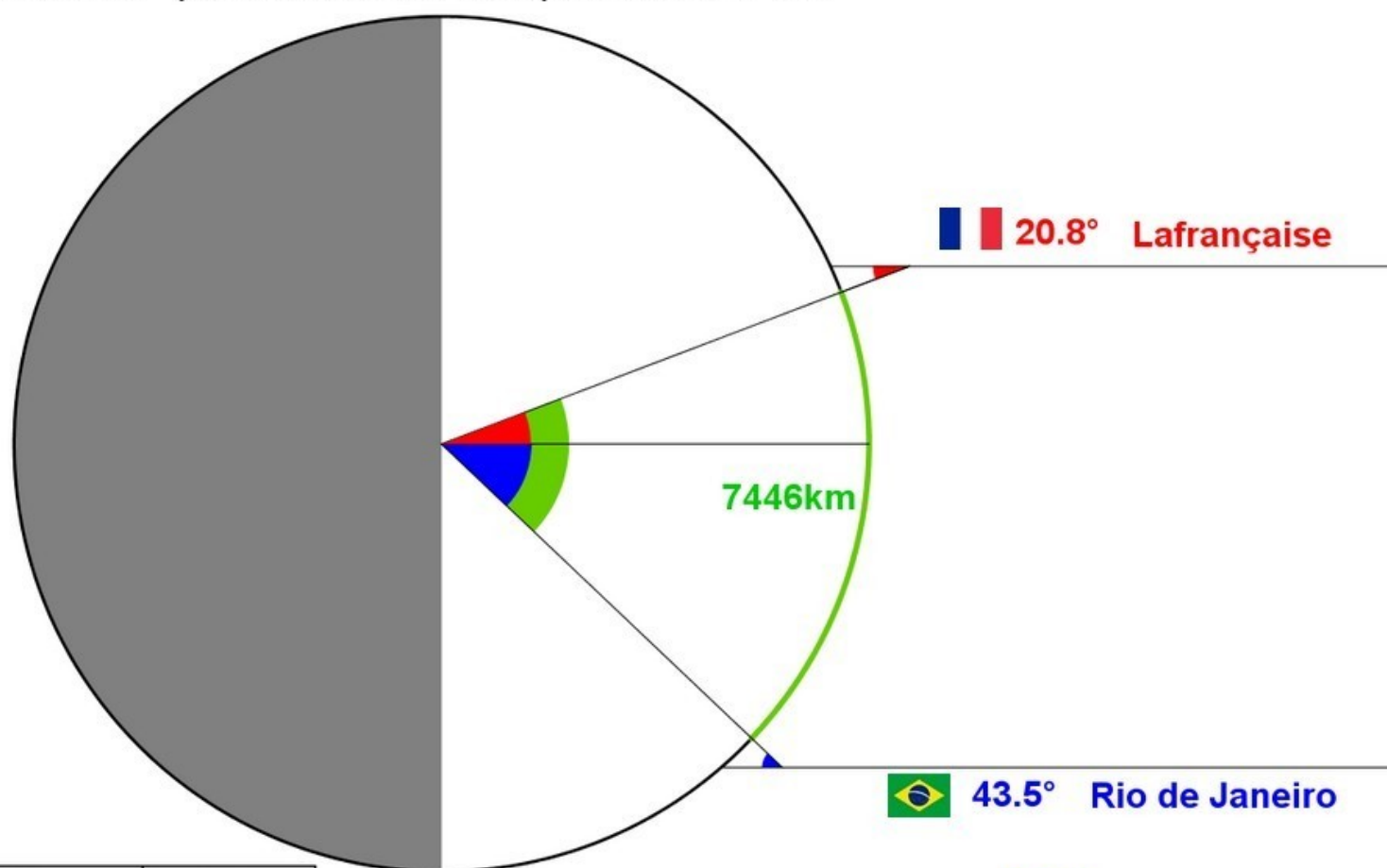


| Flag   | City           | Country | School                         | Latitude (°) +N/-S | Longitude (°) +E/-W |
|--|----------------|---------|--------------------------------|--------------------|---------------------|
|  | Rio de Janeiro | Brazil  | Centro Educacional Nosso Mundo | -22.890            | -43.317             |

| Date         | Gnomon | Shadow  | Angle  |
|--------------|--------|---------|--------|
| 15 June 2021 | 20.0cm | -19.0cm | -43.5° |
| 18 June 2021 | 20.0cm | -20.0cm | -45.0° |
| 21 June 2021 | 20.0cm | -20.0cm | -45.0° |
| 24 June 2021 | 20cm   | -20cm   | -45°   |

15/06/2021 (Lafrançaise-France) Latitude: 44.127°

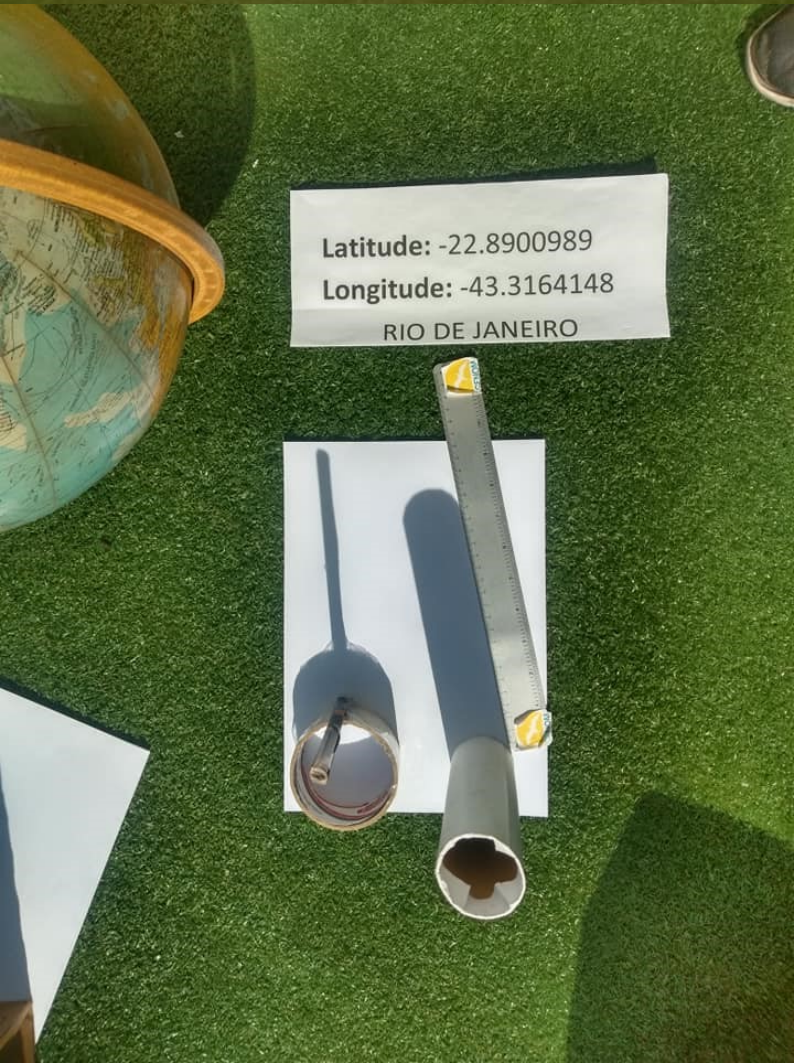
15/06/2021 (Rio de Janeiro-Brazil) Latitude: -22.89°



| Distance      | Angle         |
|---------------|---------------|
| circumference | 360°          |
| 7446km        | 20.8° + 43.5° |

$$\text{circumference} = \frac{360^\circ \times 7446\text{km}}{20.8^\circ + 43.5^\circ} = 41688 \text{ km}$$







# Santarém, Brazil

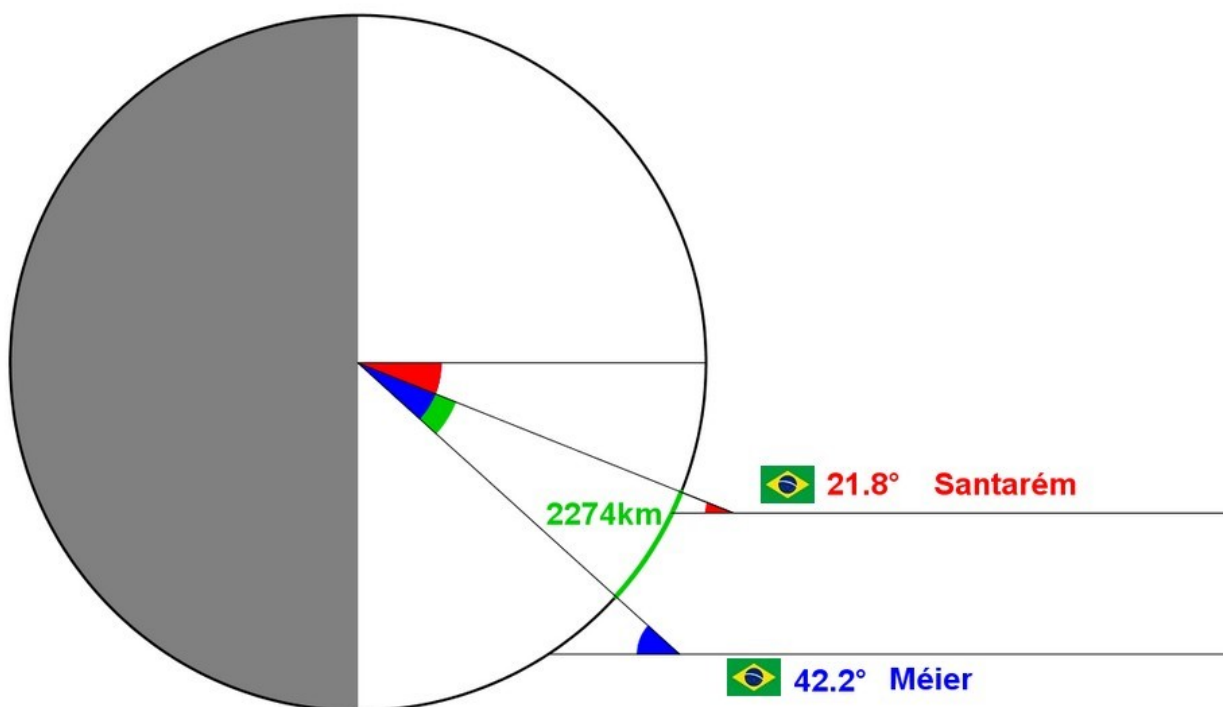


| Flag  | City     | Country | School                     | Latitude (°) +N/-S | Longitude (°) +E/-W |
|---|----------|---------|----------------------------|--------------------|---------------------|
|  | Santarém | Brazil  | Santarém Adventist College | -2.439             | -54.699             |

| Date         | Gnomon | Shadow  | Angle  |
|--------------|--------|---------|--------|
| 01 June 2021 | 10.0cm | -4.0cm  | -21.8° |
| 02 June 2021 | 10.0cm | -3.0cm  | -16.7° |
| 03 June 2021 | 10.0cm | -4.0cm  | -21.8° |
| 05 June 2021 | 10.0cm | -5.0cm  | -26.6° |
| 07 June 2021 | 10.0cm | -4.9cm  | -26.1° |
| 08 June 2021 | 10.0cm | -4.0cm  | -21.8° |
| 09 June 2021 | 10.0cm | -5.5cm  | -28.8° |
| 14 June 2021 | 10.0cm | -4.0cm  | -21.8° |
| 15 June 2021 | 10.0cm | -5.0cm  | -26.6° |
| 16 June 2021 | 10.0cm | -5.0cm  | -26.6° |
| 18 June 2021 | 10.0cm | -5.0cm  | -26.6° |
| 20 June 2021 | 10.0cm | -5.0cm  | -26.6° |
| 23 June 2021 | 10cm   | -5cm    | -26.6° |
| 24 June 2021 | 131cm  | -57cm   | -23.5° |
| 26 June 2021 | 10cm   | -5cm    | -26.6° |
| 28 June 2021 | 10.0cm | -5.0cm  | -26.6° |
| 29 June 2021 | 10.0cm | -5.0cm  | -26.6° |
| 30 June 2021 | 10.0cm | -54.0cm | -21.8° |

14/06/2021 (Santarém-Brazil) Latitude: -2.439°

14/06/2021 (Méier-Brazil) Latitude: -22.904°



| Distance      | Angle         |
|---------------|---------------|
| circumference | 360°          |
| 2274km        | 42.2° - 21.8° |

$$\text{circumference} = \frac{360^\circ \times 2274\text{km}}{42.2^\circ - 21.8^\circ} = 40129 \text{ km}$$







