

Title:	CARBON FOOTPRINT FOR TREES AND CAR EMISSIONS
Grade and Subject:	8 th -12 th grades
Number of Days for Completion of the Project:	2
Overarching Project Goals/Outcomes:	<p>Carbon footprint calculations!</p> <p>The past weeks have been dedicated to understanding unit conversions and collecting and displaying data. The next two weeks will focus on calculating the carbon footprints for the neighborhood trees and car emissions.</p> <p>Students have previously tallied the number of cars that pass through their school's neighborhood and measured the height and circumference of trees within the study area.</p> <p>During this lesson, students will follow the basic calculations, outlined on a worksheet, needed to calculate the carbon footprint for each type of vehicle. Following their calculating the carbon footprints by hand, they will learn how these same calculations are possible using Microsoft Excel.</p>
Materials:	<ul style="list-style-type: none"> • Calculators • Pencils/Pens • Computer
Introduction:	1. Previous class' data collection as well as past lessons on converting units.
Instruction/Direct Experience:	<ol style="list-style-type: none"> 1. Analyzing data. 2. Unit conversions.
Independent Activities:	Students will have hands-on experience calculating the carbon footprints car emissions.
Assessment:	Students will submit their calculations.
Follow-up	Following the completion of calculating the carbon footprint for car emissions students will work on their conclusions as well as creating a poster to present in a science fair.

GK-12 Science Research Class

Name _____

Date _____

Car Emission Carbon Footprint!!

Distance From Brooklyn College to Teachers Prep = 4.66 miles.

Car Type	Miles per Gallon (MPG) – City Driving
Coup (2-door)	19
Sedan (4-door)	29
Van/SUV	22

Let's calculate the carbon footprint if a single car of each type drove the distance from Brooklyn College to Teachers Prep.

Step 1 - For a coup, if 4.66 miles are traveled and single gallon allows for 19 miles of travel, then the amount of gallons required to travel 4.66 miles

$$4.66 \text{ miles} / 19 \text{ miles} = 0.245 \text{ gallons}$$

Step 2 - Then, if one gallon of gasoline provides 31470 Calories of energy, then the energy for 0.245 gallons is

$$0.245 \text{ gallons} * 31470 \text{ Calories} = 7718.432 \text{ Calories}$$

Following this, we have a few steps to follow in order to convert our Calories into the carbon footprint.

Step 3 -

$$7718.432 \text{ Calories} / 1313 = 5.878 \text{ Moles of Octane}$$

Step 4 -

$$5.878 \text{ Moles of Octane} * 114 \text{ grams} = 670.146 \text{ grams of Octane}$$

Step 5 -

$$670.146 \text{ grams of Octane} / 100 = 6.701 \text{ kilograms of Octane}$$

Step 6 -

$$6.701 \text{ kilograms of Octane} * 8 = 47.028 \text{ Moles of CO}_2$$

Step 7 -

$$47.028 \text{ Moles of CO}_2 * 44 = \text{Carbon Footprint (kg)}$$

We now have the carbon footprint for a single coup. From here, we can determine the carbon footprint for all of the tallied coups!

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NOW IT'S YOUR TURN!! Follow the steps above used for the carbon footprint of a coup, and calculate the carbon footprint for a sedan.

Step 1:

Step 2:

Step 3:

Step 4:

Step 5:

Step 6:

Step 7:

_____ (kg)

Follow the steps above used for the carbon footprint of a coup, and calculate the carbon footprint for a Van/SUV.

Step 1:

Step 2:

Step 3:

Step 4:

Step 5:

Step 6:

Step 7:

_____ (kg)

Calculating the Carbon Footprint of Brownsville Trees

Photosynthesis:

Schematic representation of the photosynthetic reaction is given by:



$\text{C}_6\text{H}_{12}\text{O}_6$ – represents one of the simplest sugars – glucose

Respiration:



A Simple Model to Estimate the Carbon Footprints of a Tree:

Calculating Weight: Measure the height – h and the circumference c (both in meters).

From the circumference calculate the area of the cross section of the bark (assuming circular) by using the following conversion: $A = c^2/12.6$.

Calculate the “volume” of the tree (taking only a uniform bark):

$$V = hxA$$

Take the density of the tree to be = 700kg/m^3 (0.7 gm/cm^3)

Weight of the tree: = volume \times density in kg.

From the photosynthetic reaction 0.264kg of CO_2 are sequestered to produce 0.180 kg of tree.

The weight of the Carbon Dioxide that needs to be sequestered to produce the tree is:

The Carbon Footprints of the tree (in kg) = $0.264 \times \text{weight} / 0.18 = 1.5 \times \text{weight}$.

Name: _____

Date: _____

Calculating Carbon Footprint of Brownsville Trees: Worksheet

Instructions: Using the attached explanations, calculate the carbon footprint of the following trees in our neighborhood. Pay attention to units, and use conversions when needed.

IMPORTANT: *Circumference and height must be in meters.*

Tree 1: Located on Blake

Circumference: 230 cm

Height: 380 cm

Step 1: Convert both to meters

Step 2: Plug into the correct equations to find the Carbon Footprint (in kg). Show your work below

Equations Needed:

$$\text{Area} = c^2/12.6$$

c=circumference

$$\text{Volume} = h \times A$$

h=height

$$\text{Weight} = \text{volume} \times 700\text{kg/m}^3$$

Carbon Footprints
of the tree (in kg) = 1.5xweight

Conversions Needed:

1 meter (m) = 100 centimeters (cm)

1 inch = 2.54 centimeters (cm)

Tree 2: Located on Chester

Circumference: 31.5 inches

Height: 138 inches

Miles Traveled=

4.66

If 1 gal = (CAL) =

31470.000

Car Type:	Most Popular Model	MPG - City Driving	Gal for 4.66 miles
Coup (2-door)	2012 Ford Mustang	19	0.245
Sedan (4-door)	2012 Hyundai Elantra	29	0.161
Van/SUV	2012 Toyota RAV4	22	0.212
Bus		8	0.583
Truck		6	0.777

FACTS:

Buring 1 mole of octane results in 8 moles of CO2.

1 mole of octane weighs 114 g.

Car Type:	11/21/2012	11/21/2012	11/21/2012
Coup (2-door)	2	3	0
Sedan (4-door)	72	109	6
Van/SUV	50	25	7
Bus	2	2	0
Truck	6	2	3
TOTAL/DAY	132	141	16
Amount of Time (mins):	50	30	27
Amount of Time (hr):	0.833	0.500	0.450
Location	Pitkin & Chester	Thomas Boyland & Blake	Sutter & Bristol
Period	3	3	3

Car Type:			
Coup (2-door)	48.00	120.00	0.00
Sedan (4-door)	1728.00	4360.00	266.67
Van/SUV	1200.00	1000.00	311.11
Bus	48.00	80.00	0.00
Truck	144.00	80.00	133.33
TOTAL/DAY	3168.00	5640.00	711.11
# to convert to 20 hrs	24.00	40.00	44.44

Car Type:			
Coup (2-door)	57.60	144.00	0.00
Sedan (4-door)	2073.60	5232.00	320.00
Van/SUV	1440.00	1200.00	373.33
Bus	57.60	96.00	0.00
Truck	172.80	96.00	160.00
TOTAL/DAY	34560.00	48000.00	16592.59
# to convert to 24 hrs	28.80	48.00	53.33

Calories of Energy	Moles of Octane Burnt	Weight of Octane (g)	Weight of Octane (kg)
7718.432	5.878	670.146	6.701
5056.903	3.851	439.061	4.391
6665.918	5.077	578.762	5.788
18331.275	13.961	1591.596	15.916
24441.700	18.615	2122.128	21.221

11/21/2012	11/21/2012	11/21/2012	11/21/2012
0	2	1	7
47	58	66	81
38	56	34	45
2	4	2	2
1	6	7	12
88	126	110	147
22	30	50	33
0.367	0.500	0.833	0.550
Sutter & Bristol	Thomas Boyland & Blake	Pitkin & Chester	Thomas Boyland & Blake
3	3	3	5

ABOVE EXTRAPOLATED O			
0.00	80.00	24.00	254.55
2563.64	2320.00	1584.00	2945.45
2072.73	2240.00	816.00	1636.36
109.09	160.00	48.00	72.73
54.55	240.00	168.00	436.36
4800.00	5040.00	2640.00	5345.45
54.55	40.00	24.00	36.36

ABOVE EXTRAPOLATED O			
0.00	96.00	28.80	305.45
3076.36	2784.00	1900.80	3534.55
2487.27	2688.00	979.20	1963.64
130.91	192.00	57.60	87.27
65.45	288.00	201.60	523.64
135669.42	107520.00	23500.80	71404.96
65.45	48.00	28.80	43.64

Moles of CO2	CO2 Released (kg)
47.028	2069.222
30.811	1355.697
40.615	1787.055
111.691	4914.401
148.921	6552.535

11/21/2012	11/21/2012	11/21/2012	11/21/2012	11/21/2012
3	6	4	2	5
57	88	58	81	66
35	40	28	54	70
2	4	3	10	7
5	41	2	8	12
102	179	95	155	160
28	42	42	30	30
0.467	0.700	0.700	0.500	0.500
Thomas Boyland & Blake	Pitkin & Chester	Pitkin & Chester	Thomas Boyland & Blake	Thomas Boyland & Blake
5	5	5	6	6

VER 20 HRS

128.57	171.43	114.29	80.00	200.00
2442.86	2514.29	1657.14	3240.00	2640.00
1500.00	1142.86	800.00	2160.00	2800.00
85.71	114.29	85.71	400.00	280.00
214.29	1171.43	57.14	320.00	480.00
4371.43	5114.29	2714.29	6200.00	6400.00
42.86	28.57	28.57	40.00	40.00

VER 24 HRS

154.29	205.71	137.14	96.00	240.00
2931.43	3017.14	1988.57	3888.00	3168.00
1800.00	1371.43	960.00	2592.00	3360.00
102.86	137.14	102.86	480.00	336.00
257.14	1405.71	68.57	384.00	576.00
77142.86	39183.67	27428.57	103680.00	134400.00
51.43	34.29	34.29	48.00	48.00

11/21/2012	11/21/2012
1	8
70	122
21	34
4	2
30	15
126	181
45	45
0.750	0.750
Thomas Boyland & Blake Thomas Boyland & Blake	
6	6

26.67	213.33
1866.67	3253.33
560.00	906.67
106.67	53.33
800.00	400.00
3360.00	4826.67
26.67	26.67

32.00	256.00
2240.00	3904.00
672.00	1088.00
128.00	64.00
960.00	480.00
17920.00	29013.33
32.00	32.00

TOTAL for 20 hrs:
1460.83
33382.04
19145.73
1643.53
4699.10
60331.23

TOTAL for 24 hrs:
1753.00
40058.45
22974.87
1972.24
5638.92
866016.21

	CARBON FOOTPRINT 20 hrs (kg)	CARBON FOOTPRINT 24 hrs (kg)
Coup (2-door)	3022783.358	3627340.03
Sedan (4-door)	45255932.2	54307118.64
Van/SUV	34214464.85	41057357.82
Bus	8076977.961	9692373.553
Truck	30791014.19	36949217.02
TOTAL	121361172.6	145633407.1

)

Address	Measured Circumferenc
1 Across the Street from Castro Deli (241 Chester St.)	42.5
2 Across the Street from Castro Deli (241 Chester St.)	24
3 Across from 229 Chester	30.07
4 Across from 225 Chester	35
5 Across from 181 Sutter	39.7
6 Across from Hebrn Church on Sutter	15
7 Across from 159 Sutter	24
8 Across from 157 Sutter	15
9 Across from 189 Sutter	53.5
10 Across from 143 Sutter	19
11 Across from Don Carlos Day Care	51
12 Across from Don Carlos Day Care	65
13 Across from the First Fredrick House	6.5
14 Across from the First Fredrick House	70
15 Diagonal from 121 Sutter	7.5
16 Across from 119 Sutter	60
17 Across from 113 Sutter	6.5
18 Infront of Apostolic Gospel Church	10.5
19 Infront of Apostolic Gospel Church	11
20 555 Thomas Boyland	16
21 549 Thomas Boyland	10.5
22 543 Thomas Boyland	10
23 529 Thomas Boyland	21
24 513 Thomas Boyland	25
25 507 Thomas Boyland	25.5
26 505 Thomas Boyland	47
27 501 Thomas Boyland	29
28 481 Thomas Boyland	21.5
29 Game Stop	51.5
30 92 Bristol	15
31 94 Bristol	16
32 96 Bristol	17
33 120 Bristol	20.5
35 1st tree on Blake (at corner with Thomas Boyland)	87.5
36 2nd tree on Blake (at corner with Thomas Boyland)	88.5
37 3rd tree on Blake (at corner with Thomas Boyland)	94.5
38 4th tree on Blake (at corner with Thomas Boyland)	81.5
39 1st tree on Blake (at corner with Bristol)	54
40 2nd tree on Blake (at corner with Bristol)	72.5
41 3rd tree on Blake (at corner with Bristol)	77
42 4th tree on Blake (at corner with Bristol)	55.6
43 5th tree on Blake (at corner with Bristol)	78
44 6th tree on Blake (at corner with Bristol)	67.5
45 7th tree on Blake (at corner with Bristol)	73
46 1st tree on Sutter (at corner with Blake)	67.5
47 2nd tree on Sutter (at corner with Blake)	67.5
48 Across the Street from 247 Bristol Street (B/w Dumont & Bl.	99

49	Across the Street from 251 Bristol Street (B/w Dumont & Bl.	9.5
50	Across the Street from 255 Bristol Street (B/w Dumont & Bl.	22.3
51	Across from Dept. of Health (259 Bristol Street)	86.4
52	Across from Dept. of Health (259 Bristol Street)	96.5
53	Across from Dept. of Health (259 Bristol Street)	92
54	Across from Dept. of Health (259 Bristol Street)	98.5
55	Across the Street from 283 Bristol Street (B/w Dumont & Bl.	91
56	Across the Street from 287 Bristol Street (B/w Dumont & Bl.	90
57	Across the Street from 287 Bristol Street (B/w Dumont & Bl.	104
58	In front of 287 Bristol Street (B/w Dumont & Blake)	100
59	In front of 287 Bristol Street (B/w Dumont & Blake)	50
60	In front of 285 Bristol Street (B/w Dumont & Blake)	17.5
61	In front of 259 Bristol Street (B/w Dumont & Blake)	9.6
62	In front of 259 Bristol Street (B/w Dumont & Blake)	8.9
63	In front of 259 Bristol Street (B/w Dumont & Blake)	8.5
64	In front of 259 Bristol Street (B/w Dumont & Blake)	8.5
65	In front of 255 Bristol Street (B/w Dumont & Blake)	46
66	In front of 253 Bristol Street (B/w Dumont & Blake)	41.4
67	In front of 251 Bristol Street (B/w Dumont & Blake)	45.5
68	In front of 247 Bristol Street (B/w Dumont & Blake)	13.5
69	646 Thomas Boyland	106.5
70	650 Thomas Boyland	107.5
71	656 Thomas Boyland	108.5
72	660 Thomas Boyland	100.25
73	692 (A) Hopkinson Ave.	110
74	692 (B) Hopkinson Ave.	109
75	692 (C) Hopkinson Ave.	105
76	692 (D) Hopkinson Ave.	105
77	692 (E) Hopkinson Ave.	93.5
78	692 (F) Hopkinson Ave.	100
79	695 (A) Dumont Ave.	94
80	695 (B) Dumont Ave.	81
81	224 Dumont Ave.	39.5
82	Public School 327	65
83	Starting on Sutter side but in park - Chester Playground tre	8
84	Starting on Sutter side but in park - Chester Playground tre	66
85	Starting on Sutter side but in park - Chester Playground tre	12
86	Starting on Sutter side but in park - Chester Playground tre	61
87	Starting on Sutter side but in park - Chester Playground tre	15
88	Starting on Sutter side but in park - Chester Playground tre	51.8
89	Starting on Sutter side but in park - Chester Playground tre	54.5
90	Starting on Sutter side but in park - Chester Playground tre	46.6
91	Starting on Sutter side but in park - Chester Playground tre	13.5
92	Starting on Sutter side but in park - Chester Playground tre	55.5
93	Starting on Sutter side but in park - Chester Playground tre	54
94	Starting on Sutter side but in park - Chester Playground tre	58.6
95	Starting on Sutter side but in park - Chester Playground tre	15
96	Starting on Sutter side but in park - Chester Playground tre	12
97	Starting on Sutter side but in park - Chester Playground tre	159

98 Starting on Sutter side but in park - Chester Playground tree	70
99 Starting on Sutter side but in park - Chester Playground tree	5
100 154 Bristol	90
101 152 Bristol	44
102 148 Bristol	98
103 124 Bristol	84
104 1650 Pitkin	8
105 1658 Pitkin	42
106 1668 Pitkin	38
107 1668 Pitkin	38.5
108 125 Chester (park)	63
109 Park	33
110 Park	43
111 613 Thomas Boyland	42.5
112 601 Thomas Boyland	35
113 593 Thomas Boyland	46.5
114 Sutter tree 1 (starting on corner with Thomas Boyland)	23
115 Sutter tree 2 (starting on corner with Thomas Boyland)	43.5
116 Sutter tree 1 (starting on corner with Bristol)	38
117 Sutter tree 2 (starting on corner with Bristol)	42.5
118 Sutter tree 3 (starting on corner with Bristol)	39.5
119 220 Bristol Street	38
120 218 Bristol Street	37
121 210 Bristol Street	39
122 206 Bristol Street	40
123 200 Bristol Street	10
124 194 Bristol Street	39
125 184 Sutter Avenue	35
126 638 Tree 1	85.5
127 642 Tree 2	122
128 646 Tree 3	106
129 261 Rockaway and Dumont	26.5
130 263 Rockaway and Dumont	30.5
131 267 Dumont and Rockaway	10.3
132 Bristol and Blake (no address tree next to house on corner)	13.9
133 2nd tree on Blake and Chester	37.2
134 across from Moft School entrance	36.1
135 only 1 tree on Chester b/w Blake and Dumont	68.5
136 1st tree on Chester and Dumont	21.8
137 2nd tree on Chester and Dumont	22.4

Units	Circumference (m)	Measured Height	Units	Height (m)	Area (m ²)
in.	1.0795	90 in.		2.286	0.092
in.	0.6096	60 in.		1.524	0.029
in.	0.763778	120 in.		3.048	0.046
in.	0.889	150 in.		3.81	0.063
in.	1.00838	120 in.		3.048	0.081
in.	0.381	120 in.		3.048	0.012
in.	0.6096	170 in.		4.318	0.029
in.	0.381	90 in.		2.286	0.012
in.	1.3589	80 in.		2.032	0.147
in.	0.4826	170 in.		4.318	0.018
in.	1.2954	180 in.		4.572	0.133
in.	1.651	120 in.		3.048	0.216
in.	0.1651	170 in.		4.318	0.002
in.	1.778	180 in.		4.572	0.251
in.	0.1905	180 in.		4.572	0.003
in.	1.524	130 in.		3.302	0.184
in.	0.1651	180 in.		4.572	0.002
in.	0.2667	67 in.		1.7018	0.006
in.	0.2794	60 in.		1.524	0.006
in.	0.4064	97 in.		2.4638	0.013
in.	0.2667	79 in.		2.0066	0.006
in.	0.254	74 in.		1.8796	0.005
in.	0.5334	74.5 in.		1.8923	0.023
in.	0.635	89 in.		2.2606	0.032
in.	0.6477	92 in.		2.3368	0.033
in.	1.1938	118 in.		2.9972	0.113
in.	0.7366	83 in.		2.1082	0.043
in.	0.5461	55 in.		1.397	0.024
in.	1.3081	105 in.		2.667	0.136
in.	0.381	52 in.		1.3208	0.012
in.	0.4064	60 in.		1.524	0.013
in.	0.4318	62 in.		1.5748	0.015
in.	0.5207	86 in.		2.1844	0.022
in.	2.2225	290 in.		7.366	0.392
in.	2.2479	290 in.		7.366	0.401
in.	2.4003	288 in.		7.3152	0.457
in.	2.0701	15.75 ft.		4.8006	0.340
in.	1.3716	122 in.		3.0988	0.149
in.	1.8415	200 in.		5.08	0.269
in.	1.9558	192 in.		4.8768	0.304
in.	1.41224	9.42 ft.		2.871216	0.158
in.	1.9812	230 in.		5.842	0.312
in.	1.7145	15.75 ft.		4.8006	0.233
in.	1.8542	12.5 ft.		3.81	0.273
in.	1.7145	74 in.		1.8796	0.233
in.	1.7145	180 in.		4.572	0.233
in.	2.5146	290 in.		7.366	0.502

in.	0.2413	174 in.	4.4196	0.005
in.	0.56642	200 in.	5.08	0.025
in.	2.19456	348 in.	8.8392	0.382
in.	2.4511	315 in.	8.001	0.477
in.	2.3368	290 in.	7.366	0.433
in.	2.5019	350 in.	8.89	0.497
in.	2.3114	406 in.	10.3124	0.424
in.	2.286	406 in.	10.3124	0.415
in.	2.6416	406 in.	10.3124	0.554
in.	2.54	260 in.	6.604	0.512
in.	1.27	250 in.	6.35	0.128
in.	0.4445	174 in.	4.4196	0.016
in.	0.24384	174 in.	4.4196	0.005
in.	0.22606	174 in.	4.4196	0.004
in.	0.2159	145 in.	3.683	0.004
in.	0.2159	120 in.	3.048	0.004
in.	1.1684	260 in.	6.604	0.108
in.	1.05156	240 in.	6.096	0.088
in.	1.1557	260 in.	6.604	0.106
in.	0.3429	120 in.	3.048	0.009
in.	2.7051	240 in.	6.096	0.581
in.	2.7305	210 in.	5.334	0.592
in.	2.7559	180 in.	4.572	0.603
in.	2.54635	180 in.	4.572	0.515
in.	2.794	210 in.	5.334	0.620
in.	2.7686	188 in.	4.7752	0.608
in.	2.667	245 in.	6.223	0.565
in.	2.667	188 in.	4.7752	0.565
in.	2.3749	220.5 in.	5.6007	0.448
in.	2.54	260.6 in.	6.61924	0.512
in.	2.3876	235 in.	5.969	0.452
in.	2.0574	188 in.	4.7752	0.336
in.	1.0033	94 in.	2.3876	0.080
in.	1.651	30 ft.	9.144	0.216
in.	0.2032	9 ft.	2.7432	0.003
in.	1.6764	40 ft.	12.192	0.223
in.	0.3048	15 ft.	4.572	0.007
in.	1.5494	40.5 ft.	12.3444	0.191
in.	0.381	13 ft.	3.9624	0.012
in.	1.31572	30 ft.	9.144	0.137
in.	1.3843	50 ft.	15.24	0.152
in.	1.18364	8 ft.	2.4384	0.111
in.	0.3429	70 ft.	21.336	0.009
in.	1.4097	50 ft.	15.24	0.158
in.	1.3716	19.5 ft.	5.9436	0.149
in.	1.48844	35 ft.	10.668	0.176
in.	0.381	14 ft.	4.2672	0.012
in.	0.3048	8 ft.	2.4384	0.007
in.	4.0386	20 ft.	6.096	1.294

in.	1.778	6 ft.	1.8288	0.251
in.	0.127	5 ft.	1.524	0.001
in.	2.286	142 m. ? Used cm	1.42	0.415
in.	1.1176	170 m. ? Used cm	1.7	0.099
in.	2.4892	272 m. ? Used cm	2.72	0.492
in.	2.1336	170 m. ? Used cm	1.7	0.361
in.	0.2032	102 m. ? Used cm	1.02	0.003
in.	1.0668	102 m. ? Used cm	1.02	0.090
in.	0.9652	85 m. ? Used cm	0.85	0.074
in.	0.9779	89 m. ? Used cm	0.89	0.076
in.	1.6002	160.5 m. ? Used cm	1.605	0.203
in.	0.8382	170 m. ? Used cm	1.7	0.056
in.	1.0922	153 m. ? Used cm	1.53	0.095
in.	1.0795	79 cm.	0.79	0.092
in.	0.889	27.5 ft.	8.382	0.063
in.	1.1811	84 in.	2.1336	0.111
in.	0.5842	73 ft.	22.2504	0.027
in.	1.1049	18 ft.	5.4864	0.097
in.	0.9652	22 ft.	6.7056	0.074
in.	1.0795	35 ft.	10.668	0.092
in.	1.0033	30 ft.	9.144	0.080
in.	0.9652	93 in.	2.3622	0.074
in.	0.9398	94 in.	2.3876	0.070
in.	0.9906	75 in.	1.905	0.078
in.	1.016	112 in.	2.8448	0.082
in.	0.254	60 in.	1.524	0.005
in.	0.9906	92 in.	2.3368	0.078
in.	0.889	140 in.	3.556	0.063
in.	2.1717	217 in.	5.5118	0.374
in.	3.0988	248 in.	6.2992	0.762
in.	2.6924	279 in.	7.0866	0.575
cm.	0.265	256.5 cm.	2.565	0.006
cm.	0.305	294 cm.	2.94	0.007
cm.	0.103	294 cm.	2.94	0.001
cm.	0.139	114.25 cm.	1.1425	0.002
cm.	0.372	304 cm.	3.04	0.011
cm.	0.361	181.21 cm.	1.8121	0.010
cm.	0.685	441.5 cm.	4.415	0.037
cm.	0.218	54.5 cm.	0.545	0.004
cm.	0.224	67.2 cm.	0.672	0.004

Volume (m ³)	Weight (kg)	Carbon Footprint
0.211	147.996	221.9935076
0.045	31.463	47.19474432
0.141	98.782	148.1726357
0.239	167.285	250.9269175
0.246	172.183	258.274877
0.035	24.581	36.870894
0.127	89.146	133.7184422
0.026	18.435	27.6531705
0.298	208.462	312.6924929
0.080	55.871	83.80617647
0.609	426.228	639.341302
0.659	461.569	692.353454
0.009	6.539	9.808340598
1.147	802.966	1204.449204
0.013	9.218	13.82658525
0.609	426.064	639.095496
0.010	6.924	10.38530181
0.010	6.725	10.08726208
0.009	6.609	9.91417372
0.032	22.607	33.91029777
0.011	7.929	11.89393589
0.010	6.737	10.10535613
0.043	29.910	44.86573285
0.072	50.641	75.96086958
0.078	54.462	81.69361081
0.339	237.305	355.957073
0.091	63.548	95.3221857
0.033	23.146	34.71838486
0.362	253.532	380.2976668
0.015	10.652	15.9773874
0.020	13.984	20.97544192
0.023	16.312	24.46861773
0.047	32.903	49.3544228
2.888	2021.356	3032.033586
2.954	2067.822	3101.733232
3.345	2341.449	3512.173879
1.633	1142.893	1714.33987
0.463	323.874	485.8108993
1.367	957.050	1435.575086
1.481	1036.362	1554.542439
0.454	318.134	477.2013195
1.820	1273.930	1910.895533
1.120	783.967	1175.951076
1.040	727.722	1091.583301
0.439	306.950	460.4252888
1.067	746.636	1119.953405
3.697	2587.599	3881.399011

EQUATIONS:
AREA (A) = (c ²)/12.6
VOLUME = h * A
WEIGHT = V * density in kg
(density = 700 kg/m ³
= 0.7 gm/cm ³)

The Carbon Footprints of the tree (in kg) =

Average person eats around 2000 Food Cal

Assuming that he gets all of his needed ene

The person will produce his needed energy

He will need 0.52kg/day to produce the ene

TOTAL CARBON FOOTPRINT

0.020	14.296	21.44452163
0.129	90.546	135.8187176
3.379	2365.023	3547.534541
3.815	2670.508	4005.761464
3.192	2234.613	3351.919318
4.416	3091.499	4637.248924
4.373	3060.818	4591.226538
4.277	2993.917	4490.874889
5.711	3997.803	5996.70405
3.381	2367.020	3550.530533
0.813	568.995	853.4929167
0.069	48.513	72.76880608
0.021	14.599	21.89836136
0.018	12.548	18.82128042
0.014	9.537	14.30624827
0.011	7.893	11.83965374
0.716	500.862	751.2922609
0.535	374.490	561.7354443
0.700	490.032	735.0485837
0.028	19.910	29.86542414
3.540	2478.216	3717.323533
3.156	2209.352	3314.027646
2.756	1929.126	2893.689213
2.353	1646.910	2470.365261
3.305	2313.307	3469.960802
2.905	2033.478	3050.217082
3.513	2459.084	3688.625687
2.696	1886.970	2830.455629
2.507	1754.933	2632.399013
3.389	2372.483	3558.724065
2.701	1890.393	2835.590243
1.604	1122.940	1684.409921
0.191	133.521	200.2820134
1.978	1384.707	2077.060362
0.009	6.293	9.438948864
2.719	1903.521	2855.282031
0.034	23.597	35.39605824
2.352	1646.359	2469.538738
0.046	31.955	47.9321622
1.256	879.409	1319.112768
2.318	1622.456	2433.683842
0.271	189.789	284.6839416
0.199	139.372	209.057969
2.404	1682.542	2523.812694
0.887	621.201	931.8012332
1.876	1313.026	1969.53828
0.049	34.413	51.6192516
0.018	12.585	18.87789773
7.891	5523.752	8285.6273

0.459	321.186	481.7796816
0.002	1.366	2.048383
0.589	412.257	618.38586
0.169	117.964	176.9458827
1.338	936.302	1404.453105
0.614	429.935	644.901936
0.003	2.340	3.5096704
0.092	64.490	96.7352904
0.063	43.993	65.98911533
0.068	47.283	70.92472374
0.326	228.324	342.4856054
0.095	66.355	99.532059
0.145	101.397	152.0948571
0.073	51.145	76.71691646
0.526	368.026	552.0392185
0.236	165.354	248.0305039
0.603	421.880	632.8192505
0.532	372.101	558.1515934
0.496	347.056	520.5842492
0.987	690.646	1035.969702
0.731	511.358	767.0374982
0.175	122.258	183.3876332
0.167	117.155	175.7321432
0.148	103.853	155.7795272
0.233	163.142	244.7134891
0.008	5.462	8.193532
0.182	127.393	191.0895533
0.223	156.132	234.1984563
2.063	1444.178	2166.266417
4.801	3360.470	5040.704585
4.077	2853.938	4280.907438
0.014	10.007	15.01059375
0.022	15.194	22.791125
0.002	1.733	2.599205
0.002	1.226	1.839520208
0.033	23.372	35.05728
0.019	13.120	19.67955701
0.164	115.090	172.6356979
0.002	1.439	2.158381667
0.003	1.873	2.809856

$$0.264 \times \text{weight} / 0.18 = 1.5 \times \text{weight}.$$

ories/ Day.

rgy from eating sugar (glucose).

through the respiration reaction.

rgy that he needs and in the process he will release 0.7kg of CO₂/day.

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