

## How to Calculate Results using Portsmouth Numbers

Use Portsmouth Handicap Numbers to calculate finish positions as corrected time for boats that are not alike and compete together on a common course for an unspecified distance. The Portsmouth Handicap Number of a boat assumes that each boat is sailed to its true potential by a perfect crew using flawless strategy, and that all boats and sails conform to class specifications and rules. Courses sailed may be triangular, modified Gold Cup, Olympic, or windward-leeward.

### The Race Committee records:

- wind speed at the beginning, middle, and end of the race
- exact start time of the race
- exact finish time for every boat

### To score the race the Race Committee:

- averages the 3 recorded wind velocities and selects the corresponding Beaufort Number range to use as the wind handicap number in the formula for GSBYRA, or instead uses the basic Portsmouth Number D-PN - see Beaufort Scale of Wind Velocity table below
- determines elapsed time for every boat
- converts elapsed time into decimal minutes for use in the formula - refer to conversion table below
- uses the formula  $CT = (ET \times 100) / HC$  to calculate corrected times - use the Portsmouth Handicap Worksheet and refer to handicap tables below

CT is corrected time

ET is elapsed time

HC is either the recommended Wind Handicap Number or the basic D-PN

- converts decimal time into hour, minutes, and seconds - refer to conversion table below
- arranges finish order with the lowest corrected time in first place

## Beaufort Scale of Wind Velocity:

Beaufort Numbers characterize weather conditions. Use a meter to determine wind velocities and note that subjective annotations of sea conditions over force 5 do not apply on Great South Bay.

Beaufort Number	Wind Velocity: (Knots)	(MPH)	Seamans Term	Wave Height	Sea Conditions
0	0-1	0-1.7	Calm	Smooth	Glassy, mirrorlike
1	2-3	1.8-4.0	Light air	Ripples	Scale-like ripple
2	4-6	4.1-7.4	Light breeze	1/3 ft.	Small wavelets
3	7-10	7.5-12.0	Gentle breeze	1-2 ft.	Large wavelets, crest begins to break
4	11-16	12.1-18.9	Moderate breeze	2-3 ft.	Small waves, some whitecaps
5	17-21	19.0-24.7	Fresh breeze	3-4 ft.	Longer waves, many whitecaps
6	22-27	24.8-31.6	Strong breeze	4-5 ft.	Large waves, many whitecaps, foam & spray everywhere
7	28-33	31.7-38.5	Moderate gale	5-6 ft.	Sea heaps up, streaks of foam
8	34-40	38.6-46.6	Fresh gale	6-7 ft.	High long waves, spindrift
9	41-47	46.7-53.3	Strong gale	7-9 ft.	Rolling seas

## Seconds to Decimal Minute conversion:

Sec.	Dec. Min.	Sec.	Dec. Min.	Sec.	Dec. Min.	Sec.	Dec. Min.	Sec.	Dec. Min.	Sec.	Dec. Min.
1	.02	11	.18	21	.35	31	.52	41	.68	51	.85
2	.03	12	.20	22	.37	32	.53	42	.70	52	.87
3	.05	13	.22	23	.38	33	.55	43	.72	53	.88
4	.07	14	.23	24	.40	34	.57	44	.73	54	.90
5	.08	15	.25	25	.42	35	.58	45	.75	55	.92
6	.10	16	.27	26	.43	36	.60	46	.77	56	.93
7	.12	17	.28	27	.45	37	.62	47	.78	57	.95
8	.13	18	.30	28	.47	38	.63	48	.80	58	.97
9	.15	19	.32	29	.48	39	.65	49	.82	59	.98
10	.17	20	.33	30	.50	40	.67	50	.83		

## Centerboard Boats:

Class	D-PN	BN 0-1	BN 2-3	BN 4	BN 5
29er	84.5	85.8	84.7	83.9	78.9

420 Club	97.6	103.4	100.0	95.0	90.8
470 International	96.3	91.4	88.4	85.0	82.1
Blue Jay	108.6	110.1	109.5	107.2	106.7
Bucaneer 18	86.9	89.2	87.0	86.3	85.4
Byte	97.4	97.7	97.4	96.3	95.3
Cape Cod Mercury CB	107.0	-	-	-	-
Contender	90.1	95.9	91.0	82.0	-
Day Sailor O'Day 17	98.5	101.3	98.5	96.9	96.3
Fireball	85.6	87.9	87.1	85.4	82.4
Flying Junior	97.9	100.9	99.3	98.2	95.8
Flying Scot	89.6	92.1	90.4	89.1	87.5
Force 5	95.4	98.1	96.6	95.3	93.4
Herreshoff America 18	116.9	-	117.0	115.6	-
Holder 14	111.0	113.3	111.7	108.4	-
JY 15	91.9	92.5	92.4	91.9	-
Laser	91.1	93.7	92.3	91.0	88.2
Laser 4.7	95.4	96.1	95.2	94.9	-
Laser Radial	96.7	99.4	97.3	93.6	-
Laser Pico Uno	104.6	-	104.5	-	-
Lightning	87.0	92.6	87.6	85.4	83.9
Mariner 19 CB	102.1	105.0	103.1	100.3	99.0
Marshall 15 Sandpiper	112.7	116.6	114.3	109.1	-
Marshall 18 Sanderling	104.5	107.5	105.0	102.2	-
Marshall 22	96.6	-	-	-	-
Mobjack	91.3	96.5	92.4	88.0	86.5
Narrasketuck	89.7	89.0	89.0	89.0	85.0
Optimist	123.6	-	124.0	-	-
Orion 19 Sailstar	111.5	-	111.9	-	-
Raven	83.0	85.2	83.0	81.5	81.0
P Boat	76.3	80.1	78.4	74.6	72.6
Rhodes 19 CB	95.8	100.0	97.0	92.2	90.7
Sunfish	99.6	103.0	100.4	97.8	95.8
Tanzer 22 CB	96.0	99.0	97.2	95.3	93.1
Thistle	83.0	83.0	83.0	83.0	83.0
Vanguard 15	90.5	92.6	91.2	86.1	-
Windmill	89.5	92.9	91.4	88.3	86.2
Wood Pussy	103.0	-	104.9	99.3	-

[All centerboard classes](#)

[Inactive cb classes](#)

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### ***Keelboat and Offshore Boats:***

For GSBYRA events, a PHRF Class boat is defined as a boat with length overall of twenty feet or greater, and designed with sleeping accommodations. Boats that meet these specifications shall race in the PHRF Class. Boats that do not meet the specifications for the PHRF Class shall race in the Monohull Handicap Class and be scored with Portsmouth Number ratings.

<b>Class</b>	<b>D-PN</b>	<b>BN 0-1</b>	<b>BN 2-3</b>	<b>BN 4</b>	<b>BN 5</b>
Bristol 35	89.3	-	88.0	97.4	-
Cape Dory 27	93.8	94.5	93.9	90.6	-
Catalina 27	87.4	90.5	88.1	96.1	85.0

Catalina Capri 22	90.8	92.6	91.5	90.1	89.0
C & C 25	91.5	95.0	91.8	90.6	88.1
Herreshoff 12 1/2	110.9	114.7	112.2	109.7	109.7
Hobie Magic	65.4	-	63.4	-	-
Holder 20	85.8	88.2	87.8	85.7	81.7
J 22 Class Jib	82.7	84.2	82.7	82.2	82.0
J 22 Open	81.7	82.6	81.6	81.5	81.0
J 24	80.8	83.3	81.9	80.4	78.0
J 27	77.1	79.7	78.1	75.4	74.6
J 30	76.9	78.7	78.3	76.2	73.9
Mercury CC (Keel)	105.0	-	-	-	-
Morgan 30	86.8	92.0	87.5	83.7	80.5
O' Day 222	98.3	99.9	99.1	97.3	-
O' Day 23 Deckstep	98.6	99.3	98.9	98.7	98.3
O' Day 23 Keel Step	99.1	99.3	99.0	98.1	97.5
O' Day 25 spin	95.2	97.4	95.7	95.0	93.6
O' Day 25 CB spin	95.4	97.8	95.4	94.3	94.2
O' Day 25 T mast FK spin	92.8	93.6	93.0	-	-
O' Day 272 WK	93.6	94.2	93.6	91.4	-
O' Day 322 WK	82.9	-	83.0	87.6	-
Rhodes 19 (Keel)	96.9	100.9	99.0	94.2	92.9
Sabre 28	90.1	92.0	90.6	89.2	-
Star	83.1	83.9	86.3	82.4	81.5
Tartan 27	95.3	97.5	95.3	94.6	94.0
Tartan 34	84.3	86.2	84.9	82.8	81.0

[All Keelboat Classes](#)  
[Offshore Classes A - E](#)  
[Offshore Classes F - N](#)  
[Offshore Classes O - Z](#)

South Bay Cruising Club is a recognized handicapping authority of US SAILING. PHRF Handicap forms are available on the Forms page. For GSBYRA each PHRF skipper is obligated to obtain a Handicap form in advance and submit the form to the SBCC Handicap Chairperson Bill Danilczyk at [wjdanilczyk@aol.com](mailto:wjdanilczyk@aol.com) at least 7 days prior to the yacht's first race in order to be scored. US SAILING determined a difference of 1 D-PN equals a difference of 6 seconds PHRF. Use the formula  $D-PN = PHRF / 6 + 55$ .

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### Multihull Boats:

Class	D-PN	BN 0-1	BN 2-3	BN 4	BN 5
Condor 40	61.2	-	-	-	-
Dragonfly 800	71.8	75.2	72.0	71.5	70.6
Dragonfly 920	68.2	-	-	-	-
F-24 Tri Mk I	76.1	79.9	76.9	75.6	74.5
F-27 Tri	70.5	72.4	73.0	71.4	65.1
Hobie 14	86.4	95.0	90.1	85.6	80.9
Hobie 14 Turbo	83.1	86.3	85.1	81.1	79.4
Hobie 16	76.0	81.5	78.7	74.1	71.3
Hobie 17	74.0	78.3	76.2	73.7	69.7
Hobie 18 & 18 Magnum	71.4	76.8	73.5	69.5	66.8
Hobie 20 Miracle (orig)	65.0	69.1	66.4	64.4	61.4
Hobie 20 (mod) no spin	63.7	67.0	64.7	63.1	60.5
Hobie 20 (mod) with spin	61.4	65.3	62.7	60.8	58.0
Hobie 21 no spinnaker	67.0	71.9	69.2	66.3	61.7

Inter 20 with spinnaker	59.3	61.9	60.2	58.5	57.6
NACRA 5.0 2-trapeze	77.0	80.5	78.5	76.2	73.0
NACRA 5.2 sloop-2 trap	72.1	78.0	74.8	71.6	67.4
NACRA 5.5 sloop	67.0	73.5	69.5	65.7	61.2
NACRA 5.5 uni 8.5	69.7	74.4	71.9	69.0	64.5
NACRA 5.7 2-trapeze	72.6	75.5	74.8	72.2	68.6
NACRA 5.8 original 2-tra	66.6	72.1	69.3	65.7	62.2
NACRA 5.8 N.A.	65.5	70.4	68.5	65.4	62.0
NACRA 6.0 N.A.	62.6	65.4	64.3	61.9	59.5
Pacific Cat	73.7	80.6	76.0	75.0	69.5
Prindle 16	77.5	84.1	80.7	76.3	71.3
Prindle 18	74.8	81.0	77.8	74.7	70.5
Prindle 18-2	69.1	82.6	71.7	68.7	65.1
Prindle 19	66.4	71.7	68.9	64.5	62.3
Stiletto 27	74.8	79.0	76.6	75.4	69.5
Supercat 20	65.0	70.4	67.3	65.2	60.8
Tornado classic 1-trap	63.9	67.0	65.6	63.1	60.6
Tornado Internatational: 2-trap and spinnaker	59.0	62.2	60.5	57.8	55.5

[All multihull classes](#)

[Inactive multihull classes](#)

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