NOAA Commissioned Officer Corps

Practical Knowledge Book

Second Edition

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Section 1:

Morning Knowledge

Oath of Office

"I do solemnly swear that I will support and defend the Constitution of the United States against all enemies, foreign and domestic; that I will bear true faith and allegiance to the same; that I take this obligation freely, without any mental reservation or purpose of evasion; and that I will well and faithfully discharge the duties of the office upon which I am about to enter. So help me God."

NOAA Corps Ethos (modified for Morning Knowledge recital)

"We are NOAA Commissioned Officers.
We are Operational Specialists at Sea, on Land, or in the Air.
We are Stewards of our Oceans & Atmosphere.
Above all though, we are Leaders, dedicated to Safety,
Operational Excellence, Scientific Integrity, Professionalism,
and the Citizens whom we serve.
We serve with Honor, Respect and Commitment
to our Country and our Corps.
We are Semper Illic, from line office to the front line of scientific discovery!
We are the NOAA Commissioned Corps!"

"Forward with NOAA" – NOAA Corps' Service Song

"Forward with NOAA
With the Corps that's got it all"

"Science and Service
We are always there to meet the call"

"We survey the oceans
And we track storms in the air"

"Forward with NOAA
We're the NOAA Corps, we're always there"

Section 2:

Chain of Command

The Chain of Command is the path through which orders and directives are issued. This is the essential path through which lawful orders are handed down from higher levels to lower levels and how information is passed from lower levels to higher levels in the chain. All orders must be lawful and within the bounds of the supreme law of the land, the Constitution.

BOTC / "A" School Chain of Command

President of the United States
The Honorable Barack H. Obama

Vice-President of the United States
The Honorable Joseph R. Biden Jr.

Secretary of Commerce
The Honorable Gary F. Locke

Deputy Secretary of Commerce
The Honorable Dennis F. Hightower

Undersecretary of Commerce for Oceans & Atmosphere & NOAA Administrator
The Honorable Jane Lubchenco, Ph.D.

Director, NOAA Corps and Office of Marine & Aviation Operations
Rear Admiral (Upper Half) Jonathan W. Bailey, NOAA

Director, Commissioned Personnel Center
Captain Raymond C. Slagle, NOAA

Deputy Director, Commissioned Personnel Center
Mrs. Monica M.P. Matthews

Chief, Officer Career Management Division
Commander Jon D. Swallow, NOAA

Officer-in-Charge, NOAA Officer Training Center
Commander Stephen F. Beckwith, NOAA

Junior Officer-in-Charge, NOAA Officer Training Center
Lieutenant (junior grade) Jonathan R. Heesch, NOAA

YOU!!!

When you depart from BOTC / "A" School and move on to your first ship in the Fleet, your Chain of Command will change; below is an example. While it does not have the person's name in place for your future ship, there is a blank in which you can fill in upon arrival to your ship for your reference.

Fleet Chain of Command

President of the United States
The Honorable Barack H. Obama

Vice-President of the United States
The Honorable Joseph R. Biden Jr.

Secretary of Commerce
The Honorable Gary F. Locke

Assistant Secretary of Commerce
The Honorable Dennis F. Hightower

Undersecretary of Commerce for Oceans & Atmosphere
And NOAA Administrator
The Honorable Jane Lubchenco, Ph.D.

Director, Office of Marine & Aviation Operations and NOAA Corps
Rear Admiral (Upper Half) Jonathan W. Bailey, NOAA

Director, Marine & Aviation Operation Centers
Rear Admiral (Lower Half) Philip M. Kenul, NOAA

Commanding Officer, Marine Operations Center – Atlantic / Pacific
Captain Michael S. Devany, NOAA / Captain Michele G. Bullock, NOAA

Commanding Officer, NOAA Ship _____

Executive Officer, NOAA Ship _____

YOU!!!

Please note that when you arrive there may well be other Officers senior to you not only in rank but also time in service. Regardless of rank, you should

always show respect to those that are more familiar with the ship and have been there for a reasonable amount of time. There may well be a Lieutenant (junior grade) or what is referred to as a “Bull Ensign” upon your arrival who will be your primary interaction with the Wardroom. Again, show respect; by showing respect you can never go wrong! There will also be a Lieutenant on the ship in the position of Operations Officer. While they do not “write your OER” be assured that the Executive Officer may well reference their thoughts on your professional development and competency, especially if you working closely with each other. Again, by virtue alone of being a senior Commissioned Officer; you should always defer to a respectful tone and demeanor when dealing with those senior to you.

Section 3:

Verbatim Responses

Are you committed to our NOAA Corps Ethos?

"Sir/Ma'am,
"I am a NOAA Commissioned Officer.
I am an Operational Specialist at Sea, on Land, or in the Air.
I am a Steward of our Oceans & Atmosphere.
Above all though, I am a Leader, dedicated to Safety, Operational Excellence,
Scientific Integrity, Professionalism, and the Citizens whom I serve.
I serve with Honor, Respect and Commitment to my Country and my Corps.
I am Semper Illic, from line office to the front line of scientific discovery!
We are the NOAA Commissioned Corps!"

Who is the Undersecretary of Commerce for Oceans & Atmosphere and the NOAA Administrator?

"Sir/Ma'am, the Undersecretary of Commerce for Oceans & Atmosphere and the NOAA Administrator is the Honorable Jane Lubchenco, Ph.D."

Who is the Director of the NOAA Corps?

"Sir/Ma'am, the Director of the NOAA Corps is Rear Admiral (Upper Half) Jonathan W. Bailey, National Oceanic & Atmospheric Administration Commissioned Officer Corps."

Who is the Director of the Marine & Aviation Operations Centers?

"Sir/Ma'am, the Director of the Marine & Aviation Operations Centers is Rear Admiral (Lower Half) Philip M. Kenul, National Oceanic & Atmospheric Administration Commissioned Officer Corps."

Who is the Director of the Commissioned Personnel Center?

"Sir/Ma'am, the Director of the Commissioned Personnel Center is Captain Raymond C. Slagle, National Oceanic & Atmospheric Administration Commissioned Officer Corps."

Who is the Commanding Officer of the Marine Operations Center - Atlantic?

"Sir/Ma'am, the Commanding Officer of the Marine Operations Center - Atlantic is Captain Michael S. Devany, National Oceanic & Atmospheric Administration Commissioned Officer Corps."

Who is the Commanding Officer of the Marine Operations Center - Pacific?
"Sir/Ma'am, the Commanding Officer of the Marine Operations Center - Pacific is Captain Michele G. Bullock, National Oceanic & Atmospheric Administration Commissioned Officer Corps."

Who is the Commanding Officer of the Aircraft Operations Center?
"Sir/Ma'am, the Commanding Officer of the Aircraft Operations Center is Captain William B. Kearse, National Oceanic & Atmospheric Administration Commissioned Officer Corps."

What is the proper Position of Attention (POA)?
"Sir/Ma'am, the proper Position of Attention is:

1. Left heel is against the right.
2. Feet are out equally to form an angle of 45 degrees. Keep your heels on the same line and touching.
3. Legs are straight, but not stiff at the knees.
4. Hips and shoulders level and your chest lifted.
5. Arms are straight, but not stiff at the elbows; thumbs along the trouser seams, palms facing inward toward your legs, and fingers joined in their natural curl.
6. Head and body erect. Look straight ahead. Keep mouth closed and chin pulled in slightly.
7. Stand still and do not talk."

What is the mission of the NOAA Officer Training Center?
"Sir/Ma'am, the mission of the NOAA Officer Training Center is to prepare officer candidates to serve effectively as officers of the National Oceanic & Atmospheric Administration."

What is the purpose of the NOAA Corps?
"Sir/Ma'am, to provide a highly trained, mobile and cost effective Corps of professional leaders to be on the forefront of NOAA Operations around the world!"

What are the six NOAA Line Offices?
"Sir/Ma'am, the six NOAA Line Offices are:

- National Environmental Satellite, Data, and Information Service
- National Marine Fisheries Service
- National Ocean Service
- National Weather Service
- Office of Oceanic and Atmospheric Research
- Office of Program Planning and Integration

What is the Meaning of the NOAA Corp Insignia?
"Sir/Ma'am, the NOAA Corps Insignia is a representation of all that we are as Commissioned Officers!

- The Eagle: Represents the Nation whom we serve.

- The Shield: Represents our responsibility as stewards of the oceans and atmosphere.

- The Globe: Represents the Earth's resources of which we are stewards and the domain in which we operate: sea, land and air.

- The Latitude and Longitude Lines: Represent our dedication to accuracy, precision and scientific integrity; as well as our heritage, the Coast & Geodetic Survey.

- The Anchors: Represent the bond that all NOAA Corps Officers share with the sea. Regardless of discipline, we are all Mariners."

How are Officers verbally addressed in the NOAA Corps?
"Sir/Ma'am: by Rank and Last Name, By Rank Alone, Sir or Ma'am; and for peers as Mister, Miss, or rank and last name.

What are the NOAA Corps' Core Values?
"Sir/Ma'am, the NOAA Corps' Core Values are Honor, Respect, Commitment!"

What is Honor?
"Sir/Ma'am, integrity is our standard. We demonstrate uncompromising ethical conduct and moral behavior in all of our personal actions. We are loyal and accountable to the public trust."

What is Respect?
"Sir/Ma'am, we value our diverse workforce. We treat each other with fairness, dignity and compassion. We encourage individual opportunity and growth. We encourage creativity through empowerment. We work as a team."

What is Commitment?
"Sir/Ma'am, we are professionals, who seek responsibility, accept accountability and are committed to the successful achievement of our organizational goals. We exist to serve. We serve with pride!"

When is the NOAA Corps Birthday?
"Sir/Ma'am, the NOAA Corps Birthday is May 22nd, 1917."

Who is the Father of NOAA?
"Sir/Ma'am, the Father of NOAA is President Thomas Jefferson who in 1807 led the effort to establish of the Coast Survey which is the predecessor to our current organization."

Who is the Father of the NOAA Corps?
"Sir/Ma'am, the father of the NOAA Corps is Colonel Ernest Lester Jones, Eleventh Superintendent of the Coast and Geodetic Survey. Colonel Jones fought in Congress to ensure the establishment of the Commissioned Corps."

Who is Ferdinand Hassler?

"Sir/Ma'am, Ferdinand Hassler was the first Superintendent of the Coast Survey. He established the nucleus from which our Corps today now exists."

Who is Alexander Dallas Bache?
"Sir/Ma'am, Alexander Dallas Bache was the Second Superintendent of the Coast Survey. Grandson of Benjamin Franklin, he greatly expanded the size and scope of the Coast Survey through equipment and personnel management innovations.

What is important about the name *Pathfinder*?
"Sir/Ma'am, *Pathfinder* is the name of two separate vessels of the Coast & Geodetic Survey that served their country in the Spanish-American and Second World War."

What was the "Road to Tokyo" paved with?
"*Pathfinder* Charts, Sir/Ma'am!"

What is special about USC&GSS Pathfinder OSS-30/USS Pathfinder AGS-1?
"Sir/Ma'am, *Pathfinder* had the ability to print charts on board to provide them as the Pacific Fleet went on the offensive. During World War II she survived 50 bombing raids, including a Kamikaze attack where one crewmember was killed. Pathfinder Seamount and Pathfinder Reef have been named in her honor."

Explain the importance of USCSS *Bibb*.
"Sir/Ma'am, *Bibb* was the first steam powered paddle propelled ship in the Coast Survey. She freed the Hydrographer from the vagaries of wind and current and served honorably in the South Atlantic Blockading Squadron during the Civil War.

Explain the importance of USS *Albatross*?
"Sir/Ma'am, the USS *Albatross* was the first ship built and dedicated specifically to Marine Research. She sailed from George's Bank to the Philippine Sea. She was the first in a long line of "Albatrosses" culminating in the recently decommissioned NOAA Ship *Albatross IV*."

Tell me about NOAA Ship *Ronald H. Brown*.
"Sir/Ma'am, NOAA Ship *Ronald H. Brown*'s specifications are as follows"
Hull Number: R104
Length Overall (LOA): 274 feet
Commissioned: 19 July, 1997
Homeport: Charleston, South Carolina
Mission: Oceanic & Atmospheric Research
Named For: The late Secretary of Commerce Ronald H. Brown, who died while on a mission to Croatia in 1993.

Tell me about NOAA Ship *Fairweather*.
"Sir/Ma'am, NOAA Ship *Fairweather*'s specifications are as follows"

Hull Number: S220
Length Overall (LOA): 231 feet
Commissioned: 2 October, 1968
Homeport: Ketchikan, Alaska
Mission: Hydrographic Survey
Named For: Mt. Fairweather in southeast Alaska, which is the highest peak in the Fairweather Range.

Tell me about NOAA Ship *Rainier*.
"Sir/Ma'am, NOAA Ship *Rainier*'s specifications are as follows"
Hull Number: S221
Length Overall (LOA): 231 feet
Commissioned: 2 October, 1968
Homeport: Seattle, Washington
Mission: Hydrographic Survey
Named For: Mt. Rainier in Washington state where she is home-ported.

Tell me about NOAA Ship *Thomas Jefferson*.
"Sir/Ma'am, NOAA Ship *Thomas Jefferson*'s specifications are as follows"
Hull Number: S222
Length Overall (LOA): 208 feet
Commissioned: 8 July, 2003
Homeport: Norfolk, Virginia
Mission: Hydrographic Survey
Named For: President Thomas Jefferson, who established the Coast Survey.

Tell me about NOAA Ship *Miller Freeman*.
"Sir/Ma'am, NOAA Ship *Miller Freeman*'s specifications are as follows"
Hull Number: R223
Length Overall (LOA): 215 feet
Commissioned: June, 1967
Homeport: Seattle, Washington
Mission: Fisheries Research
Named For: Miller Freeman, a publisher who was actively involved in the international management of fish harvests.

Tell me about NOAA Ship *Oscar Dyson*.
"Sir/Ma'am, NOAA Ship *Oscar Dyson*'s specifications are as follows"
Hull Number: R224
Length Overall (LOA): 209 feet
Commissioned: 28 May, 2005
Homeport: Kodiak, Alaska
Mission: Fisheries Research
Named For: Oscar Dyson an Alaskan fisheries industry leader.

Tell me about NOAA Ship *Henry B. Bigelow*.
"Sir/Ma'am, NOAA Ship *Henry B. Bigelow*'s specifications are as follows"
Hull Number: R225
Length Overall (LOA): 209 feet
Commissioned: 16 July, 2007
Homeport: Woods Hole, Massachusetts
Mission: Fisheries Research
Named For: Henry Bigelow who was a preeminent fisheries scientist in New England.

Tell me about NOAA Ship *Pisces*.
"Sir/Ma'am, NOAA Ship *Pisces*'s specifications are as follows"
Hull Number: R226
Length Overall (LOA): 209 feet
Commissioned: 6 November, 2009
Homeport: Pascagoula, Mississippi
Mission: Fisheries Research
Named For: The constellation Pisces, which is Latin for "fishes".

Tell me about NOAA Ship *Bell M. Shimada*.
"Sir/Ma'am, NOAA Ship *Bell M. Shimada*'s specifications are as follows"
Hull Number: R227
Length Overall (LOA): 209 feet
Commissioned: 25 August, 2010
Homeport: Seattle, Washington
Mission: Fisheries Research
Named For: Dr. Bell M. Shimada, a NOAA Fisheries Scientist of West Coast fame.

Tell me about NOAA Ship *McArthur II*.
"Sir/Ma'am, NOAA Ship *McArthur II*'s specifications are as follows"
Hull Number: R330
Length Overall (LOA): 224 feet
Commissioned: 20 May, 2003
Homeport: Seattle, Washington
Mission: Ecosystems Research
Named For: LT William Pope McArthur a hydrographer with the Coast Survey in the mid 19th Century.

Tell me about NOAA Ship *Oregon II*.
"Sir/Ma'am, NOAA Ship *Oregon II*'s specifications are as follows"
Hull Number: R332
Length Overall (LOA): 170 feet
Commissioned: 17 March, 1977
Homeport: Pascagoula, Mississippi
Mission: Fisheries Research

Named For: Her predecessor, Bureau of Commercial Fisheries Ship *Oregon*.

Tell me about NOAA Ship *Ka'imimoana*.
"Sir/Ma'am, NOAA Ship *Ka'imimoana*'s specifications are as follows"
Hull Number: R333
Length Overall (LOA): 224 feet
Commissioned: 25 April, 2006
Homeport: Honolulu, Hawaii
Mission: Oceanic & Atmospheric Research (TAO Buoy Maintenance)
Named For: Ka'imimoana is Hawaiian for "Ocean Seeker".

Tell me about NOAA Ship *Hi'ialakai*.
"Sir/Ma'am, NOAA Ship *Hi'ialakai*'s specifications are as follows"
Hull Number: R334
Length Overall (LOA): 224 feet
Commissioned: 3 September, 2004
Homeport: Honolulu, Hawaii
Mission: Ecosystems Research (Diving Platform)
Named For: Ka'imimoana is Hawaiian for "Embracing Pathways to the Sea".

Tell me about NOAA Ship *Oscar Elton Sette*.
"Sir/Ma'am, NOAA Ship *Oscar Elton Sette*'s specifications are as follows"
Hull Number: R335
Length Overall (LOA): 224 feet
Commissioned: 23 January, 2003
Homeport: Honolulu, Hawaii
Mission: Fisheries Research
Named For: Dr. Oscar Elton Sette; he was a pioneer in the development of fisheries oceanography and is considered the father of modern fisheries oceanography in the US.

Tell me about NOAA Ship *Gordon Gunter*.
"Sir/Ma'am, NOAA Ship *Gordon Gunter*'s specifications are as follows"
Hull Number: R336
Length Overall (LOA): 224 feet
Commissioned: 28 August, 1998
Homeport: Pascagoula, Mississppi
Mission: Fisheries Research
Named For: Dr. Gordon Gunter, a pioneer in the development of marine science in the Gulf of Mexico.

Tell me about NOAA Ship *Okeanos Explorer*.
"Sir/Ma'am, NOAA Ship *Okeanos Explorer*'s specifications are as follows"
Hull Number: R337
Length Overall (LOA): 224 feet
Commissioned: 13 August, 2008

Homeport: Newport, Rhode Island
Mission: Ocean Exploration
Named For: Okeanos is the Titan that represented the "Ocean Sea" beyond the Mediterranean.

Tell me about NOAA Ship *Nancy Foster*.
"Sir/Ma'am, NOAA Ship *Nancy Foster*'s specifications are as follows"
Hull Number: R352
Length Overall (LOA): 187 feet
Commissioned: 10 May, 2004
Homeport: Charleston, South Carolina
Mission: Ecosystems Research
Named For: Dr. Nancy Foster, in tribute to her outstanding leadership within the NMFS and NOS.

Tell me about NOAA Ship *David Starr Jordan*
"Sir/Ma'am, NOAA Ship *Davis Starr Jordan*'s specifications are as follows"
Hull Number: R444
Length Overall (LOA): 171 feet
Commissioned: 8 January, 1966
Homeport: San Diego, California
Mission: Fisheries Research
Named For: Dr. David Starr Jordan who was one of the best known naturalists and educators of his time. He wrote more than 50 books and published over 600 scientific papers.

Tell me about NOAA Ship *Delaware II*.
"Sir/Ma'am, NOAA Ship *Delaware II*'s specifications are as follows"
Hull Number: R445
Length Overall (LOA): 155 feet
Commissioned: 12 March, 1975
Homeport: Woods Hole, Massachusetts
Mission: Fisheries Research
Named For: Her predecessor the Bureau of Commercial Fisheries Ship *Delaware*.

Tell me about the P-3 Orion.
"Sir/Ma'am, the P-3 Orion's specifications are as follows"
Manufacturer: Lockheed
Engines: 4 turboprop
Max Take Off Weight: 135,000 LBS
Missions: Hurricane reconnaissance; Hurricane research; Atmospheric research

Tell me about the Gulfstream IV.
"Sir/Ma'am, the Gulfstream IV's specifications are as follows"
Manufacturer: Gulfstream Aerospace
Engines: 2 turbojet
Max Take Off Weight: 74,600 LBS

Missions: Hurricane surveillance; Hurricane radar reconnaissance, Winter storm reconnaissance

Tell me about the King Air.
"Sir/Ma'am, the King Air 350ER's specifications are as follows"
Manufacturer: Hawker Beechcraft
Engines: 2 turboprop
Max Take Off Weight: 16,500 LBS
Missions: Remote sensing; Emergency response

Tell me about the Twin Otter.
"Sir/Ma'am, the Twin Otter's specifications are as follows"
Manufacturer: deHavilland
Engines: 2 turboprop
Max Take Off Weight: 12,500 LBS
Missions: Aerial fisheries survey; Remote sensing; Emergency response; Atmospheric research

Tell me about the Jet Prop Commander.
"Sir/Ma'am, the Jet Prop Commander's specifications are as follows"
Manufacturer: Gulfstream Aerospace
Engines: 2 turboprop
Max Take Off Weight: 11,250 LBS
Missions: Snow survey; Remote sensing; Emergency response

Explain Accountability.
"Sir/Ma'am, on the sea there is a tradition older even than the traditions of the country itself. It is the tradition that with responsibility goes authority and with them both goes accountability."

What do you see?
"Sir/Ma'am, I see lights! Red over green sailing machine; green over white trawling at night; red over white fishing boat in sight; white over red pilot ahead; and red over red captain is dead!"

What do you hear?
"Sir/Ma'am, I hear whistles! International and in sight: One short blast, I am altering my course to starboard. Two short blasts, I am altering my course to port. Three short blasts, I am operating astern propulsion. - Restricted visibility, both International and Inland. One prolonged blast, power-driven vessel making way. Two prolonged blasts, power-driven vessel underway but not making way. One prolonged and three short blasts, the last vessel of a tow, if manned."

What is a head-on situation?
"Sir/Ma'am, when two power-driven vessels are meeting on reciprocal or nearly reciprocal courses so as to involve the risk of collision, each shall alter her course to starboard so that each shall pass on the port side of the other."

What is a crossing situation?
"Sir/Ma'am, when two power-driven vessels are crossing so as to involve the risk of collision, the vessel which has the other on her own starboard side shall keep out of the way, and shall, if the circumstances of the case admit, avoid crossing ahead of the other vessel."

What are your responsibilities when overtaking?
"Sir/Ma'am, at sea any vessel overtaking any other shall keep out of the way of the vessel being overtaken. Ashore any junior should salute, ask leave, and pass to the left of the senior's shirt sleeve."

What are your actions to avoid collision?
"Sir/Ma'am, any action taken to avoid collision shall, if the circumstances for the case admit, be large enough to be readily apparent, be positive, made in ample time and with due regard to the observance of good seamanship."

How long have you been a Mariner?
"Sir/Ma'am, all me bloomin' life! Me father was King Neptune and me mother was a mermaid. I was born on the crest of a wave and rocked in the cradle of the deep! Me eyes r'stars, me teeth r'spars, me hair is hemp n' seaweed; and when I spits, I spits tar! I's tough, I is, I am, I arrrrr!

Section 4:

Leadership

The Leadership Competencies are the points that we as Officers must embrace in all that we do in order to effectively lead others and NOAA into the future. There are four broad categories; Leading Self, Leading Others, Leading Performance and Change, Leading NOAA. As a new Ensign and Junior Officer in the NOAA Corps you will initially be concerned with the first two and as such we will cover those competencies below.

Leading Self

Accountability and Responsibility
NOAA Corps leaders know ours is a uniformed service and recognize the organizational structure and the chain of command. Each individual is sensitive to the impact of his or her behavior on others and the organization. Leaders take ownership for their areas of responsibility, are accountable to effectively organize and prioritize tasks, and efficiently use resources. Regulations and guidelines that govern accountability and responsibility allow leaders to use appropriate formal tools to hold others accountable when situations warrant.

Followership
All NOAA Corps members are followers. The followership role encompasses initiative, commitment, responsibility, accountability, critical thinking, and effective communications. Followers look to leaders for guidance and feedback; they expect challenging tasks to both learn and develop competence. Actively

involved, they seek to understand through listening, responsible questioning and feedback. Followers have the responsibility to work with leaders to ensure successful mission accomplishment.

Self Awareness and Learning
NOAA Corps leaders are self-objective. They continually work to assess self and personal behavior, seek and are open to feedback to confirm strengths and identify areas for improvement, and are sensitive to the impact of their behavior on others. Successful leaders use various evaluation tools and indicators to assist in this process of understanding themselves. NOAA Corps leaders understand that leadership and professional development is a life-long journey and always work to improve knowledge, skills, and expertise. To that end, they seek feedback from others and opportunities for self-learning and development, always learning from their experiences. Leaders guide and challenge subordinates and peers, encouraging individuals to ask questions and be involved. Leaders are open to and seek new information and adapt their behavior and work methods in response to changing conditions.

Aligning Values
NOAA Corps leaders develop and maintain an understanding of the NOAA Corps Core Values of Honor, Respect and Commitment. Leaders align personal values with organizational values, reconciling any differences that exist. Leaders embody the highest standards of NOAA Corps Core Values, can communicate their meaning, hold peers and subordinates accountable to these organizational merits, and use them to guide performance, conduct, and decisions-every day.

Health and Well-Being
Leaders consider the environment in which they and their people work, attending to safety and well-being. They effectively identify and manage stress. They set a personal health example with emphasis on a program of physical fitness and emotional strength. Leaders encourage others to develop personal programs including physical, mental, and spiritual well-being.

Personal Conduct
Leaders demonstrate belief in their own abilities and ideas; are self-motivated, results-oriented, and accountable for their performance; recognize personal strengths and weaknesses; emphasize personal character development; and use position and personal power appropriately. They understand the relevance and importance of NOAA Corps Core Values and strive for personal conduct that exemplifies these values.

Technical Proficiency
NOAA Corps leaders' technical knowledge, skills, and expertise allow them to effectively organize and prioritize tasks and use resources efficiently. Always aware of how their actions contribute to overall organizational success, leaders demonstrate technical and functional proficiency. They maintain credibility with

others on technical matters and keep current on technological advances in professional areas. Successful leaders work to initiate actions and competently maintain systems in their area of responsibility.

Leading Others

Effective Communications
NOAA Corps leaders communicate effectively in both formal and informal settings. Good listeners, they reinforce the message they convey with supportive mannerisms. Leaders express facts and ideas succinctly and logically, facilitate an open exchange of ideas, ask for feedback routinely, and communicate face-to-face whenever possible. They write clear, concise, and organized correspondence and reports. Successful leaders prepare and deliver effective presentations. In situations requiring public speaking they deliver organized statements, field audience questions, confidently communicate with the media and other external entities, and distinguish between personal communication situations and those as a NOAA Corps representative. Competent coaches, supervisors, followers, performance counselors, interviewers, and negotiators, leaders know how to approach many situations to achieve organizational goals.

Influencing Others
NOAA Corps leaders possess the ability to persuade and motivate others to achieve the desired outcome: to create change. They influence and persuade by communicating, directing, coaching, and delegating, as the situation requires. Successful leaders understand the importance and relevance of professional relationships, develop networks, gain cooperation and commitment from others, build consensus, empower others by sharing power and responsibility, and establish and maintain rapport with key players.

Respect for Others and Diversity Management
Through trust, empowerment, and teamwork, NOAA Corps leaders create an environment that supports diverse perspectives, approaches and thinking, fairness, dignity, compassion, and creativity. They demonstrate sensitivity to cultural diversity, race, gender, background, experience, and other individual differences in the workplace. Leaders guide and persuade others to see the value of diversity, building and maintaining a healthy working environment.

Team Building
Leaders recognize and contribute to group processes; encourage and facilitate cooperation, pride, trust, and group identity; and build commitment, team spirit, and strong relationships. NOAA Corps leaders inspire, guide, and create an environment that motivates others toward goal accomplishment; consider and respond to others' needs, feelings, and capabilities; and adjust their approach to suit various individuals and situations. NOAA Corps leaders have a historical perspective of leadership theory that they continually develop through personal experience and study of contemporary leadership issues. They work with

subordinates to develop their leadership knowledge and skills. NOAA Corps leaders adapt leadership styles to a variety of situations and personify high standards of honesty, integrity, trust, openness, and respect for others by applying these values and styles to daily behavior.

Taking Care of People
Successful leaders identify others' needs and abilities in the NOAA Corps, particularly subordinates'. They ensure fair, equitable treatment; project high expectations for subordinates and/or their teams; express confidence in abilities; recognize efforts; and use reward systems effectively and fairly. Leaders appropriately support and assist in professional and personal situations and use formal programs to resolve situations positively.

Mentoring
Drawing on their experience and knowledge, leaders deliberately assist others in developing themselves, provide objective feedback about leadership and career development, and help identify professional potential, strengths, and areas for improvement. Successful leaders identify with the role of mentor to their staff. They have the skill to advise and develop others in the competencies needed to accomplish current and future goals. Leaders seek out mentors for themselves and may be engaged in the formal NOAA Corps mentoring program both as mentors and mentees.

Leadership Traits and Principles

These have been included because the author feels that they are a great straight-forward and easy summation of what is expected of a leader.

Leadership Principles
- Know yourself and seek self-improvement.
- Be technically and operationally proficient.
- Develop a sense of responsibility among your subordinates.
- Make sound and timely decisions.
- Set the example.
- Know your subordinates and look out for their welfare.
- Keep your subordinates informed.
- Seek responsibility and take responsibility for your actions.
- Ensure assigned tasks are understood, supervised, and accomplished.
- Train your subordinates as a team.
- Employ your team in accordance with its capabilities.

Leadership Traits
- Dependability - The certainty of proper performance of duty.

- Bearing - Creating a favorable impression in carriage, appearance and personal conduct at all times.

- Courage - The mental quality that recognizes fear of danger or criticism, but enables a person to proceed in the face of it with calmness and firmness.

- Decisiveness - Ability to make decisions promptly and to announce them in clear, forceful manner.

- Endurance - The mental and physical stamina measured by the ability to withstand pain, fatigue, stress and hardship.

- Enthusiasm - The display of sincere interest and exuberance in the performance of duty.

- Initiative - Taking action in the absence of orders.

- Integrity - Uprightness of character and soundness of moral principles; includes the qualities of truthfulness and honesty.

- Judgment - The ability to weigh facts and possible solutions on which to base sound decisions.

- Justice - Giving reward and punishment according to merits of the case in question. The ability to administer a system of rewards and punishments impartially and consistently.

- Knowledge - Understanding of a science or an art. The range of one's information, including professional knowledge and an understanding of your subordinates.

- Tact - The ability to deal with others without creating offense.

- Unselfishness - Avoidance of providing for one's own comfort and personal advancement at the expense of others.

- Loyalty - The quality of faithfulness to country, the Corps, the unit, to one's seniors, subordinates and peers.

Naval Officer Code Of Ethics

1. We will put our country, organization, seniors, and subordinates before ourselves.

2. We will never forget that all of our efforts are directed at making us successful in both peace and war and reflecting positively on the military and the United States.

3. We will work for efficiency, timeliness, and economy in performing our duties.

4. We will treat all equipment and material entrusted to us as if it were our own most prized possession.

5. We will set the example and require its meeting by our juniors; and take action against those who do not meet our profession's standards.

6. We will relentlessly pursue the welfare of our subordinates.

7. We will encourage both seniors and subordinates to provide us with inputs that will improve unit performance.

8. We will constantly strive for professional and personal improvement, on both the part of ourselves and our subordinates.

9. Seniors will ensure that all hands recognize the senior's commitment to ethical behavior.

10. Subordinates will make sure they advise their seniors when the senior is contemplating acting on an unethical recommendation.

11. We will not allow others to be misled by incorrect or unspoken information.

12. We will ensure our seniors know our faults as well as our accomplishments.

13. We will only take action which we're prepared to have reported to our seniors and those whose opinion of us we respect.

14. We will remember, while performing our military duties, that our families depend on us and deserve special consideration.

15. In case of doubt about whether an action is ethical or not, we will seek counsel with our chain of command, a Legal Officer, and/or the Command Chaplain.
- *Naval Leadership, Voices of Experience; 2nd Edition*

Section 5:

Cadences

My Grandaddy

My Grandaddy was in the Coast Survey.
Took his theodolite and surveyed all day.
Surveyed in the morning and surveyed at noon.
Hell, he'd even survey under the moon.
Level the ground is what he'd do.
In order to make sure the charts were true.
He kept commerce movin' along the shore.
Which gave our nation even more.
Did that for 50 years or so
in order to ensure that commerce could flow.
Ships moving in and out of port

Led to the creation of the NOAA Corps.
Back in 1917 the NOAA Corps came into being!

P-3 Orion

P-3 Orion rollin' down the strip.
NOAA Corps Daddies gonna take a little trip.
Mission not so secret, destination is known.
Fly through the hurricane and then we're going home.

My NOAA Colors

My NOAA Colors are Blue and White.
We're really smart so we don't have to fight.
Sailin' and a' flyin' and a' leadin' all day.
We serve our country in a different way.
Operational Specialists on the front lines.
Makin' science happen one station at a time.

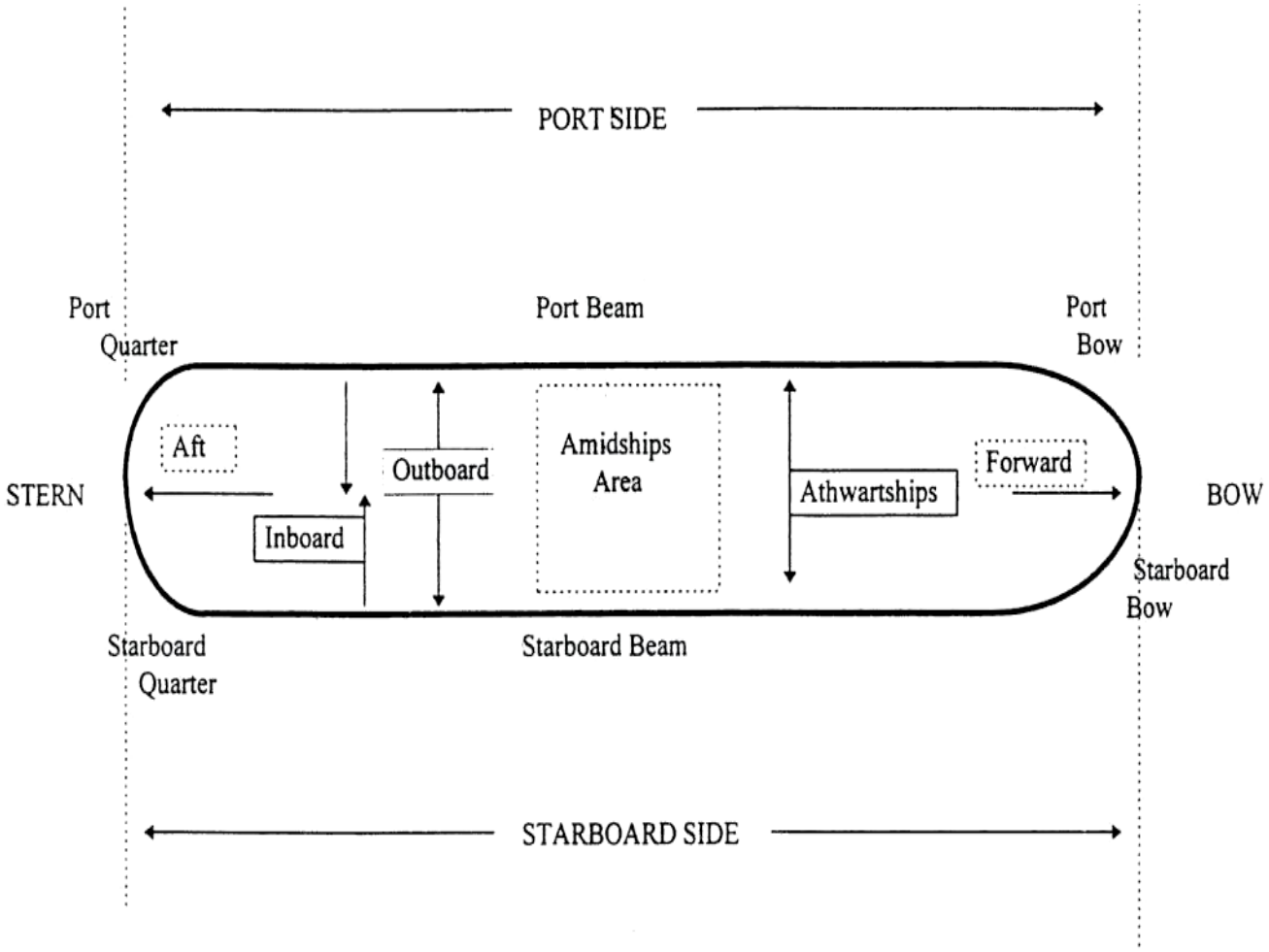
1917

Back in 1917.
The NOAA Corps came into being.
Colonel Lester Jones was the man of the hour.
Went before Congress, the men with the power.
He said, equal danger should equal pay.
Captured as a spy doesn't make our day.
Give a Commission and they'll serve you well.
Dedicated Officers that'll give 'em hell.
90 years later the mission has changed.
But our resolve remains the same.
Best in class across the board.
We strive for excellence, we're never underscored.

Section 6:

Vessel Terminology

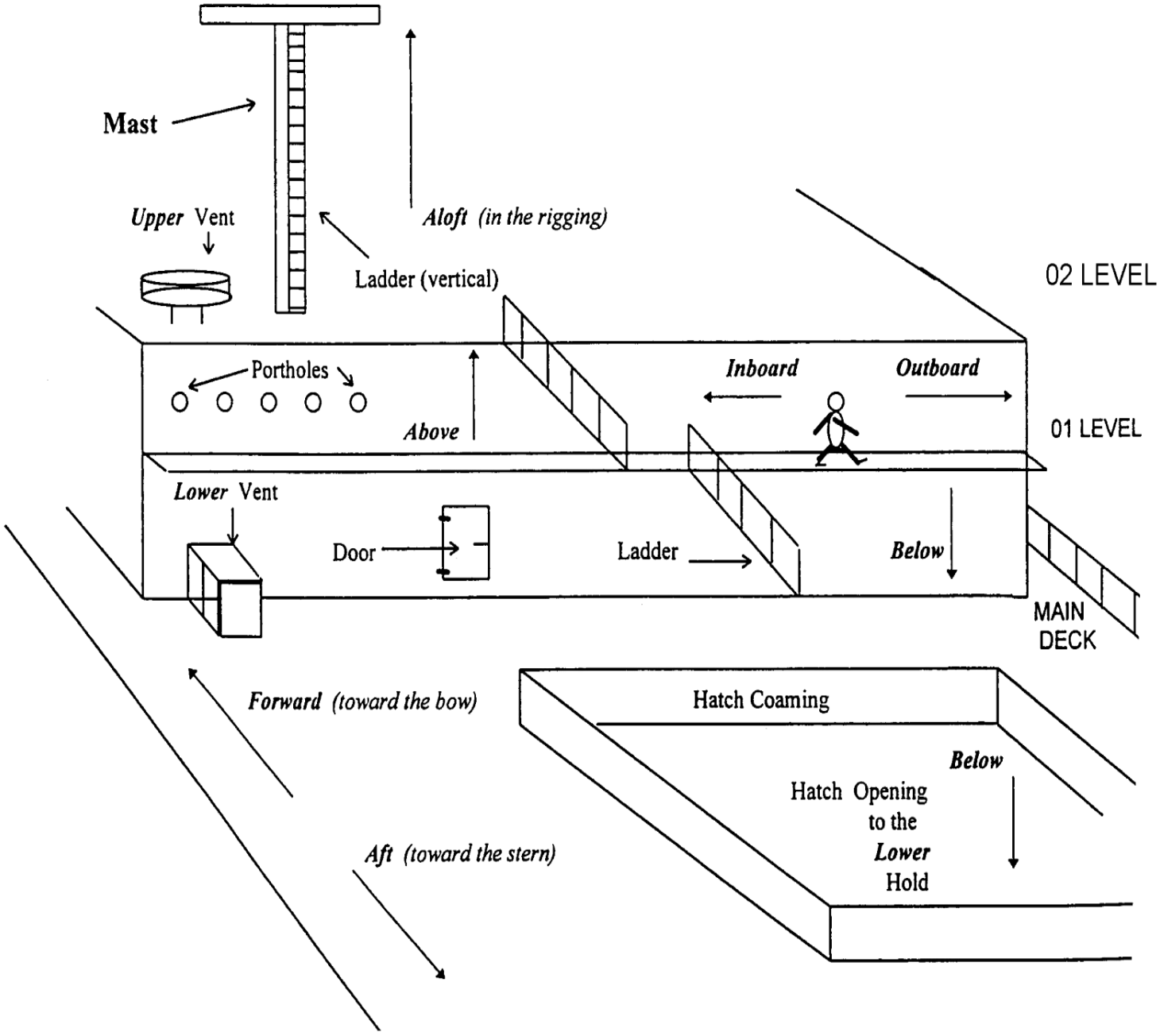
Directions aboard ship:



Forward: towards the bow. Both an adjective (the forward life raft) and an adverb (i.e. *lead those mooring lines forward*)
After: At or near the stern. An adjective (i.e., *the after gun mount, the aftermost cargo hatch)*
Aft: Towards or near the stern. An adverb (i.e. *The Bosun walked aft to the paint locker.* Or, *The cargo hose leads aft.*)
Amidships: in the vicinity if the middle or "midship" portion of the vessel.
Ahead: Lying in the direction of the ships' course; also the ship's motion in the direction of the course (i.e., *The buoy lay five miles dead ahead.* Or, *The current caused the ship to surge ahead.*) Opposite of astern.
Astern: Lying in the direction away from the vessel and opposite her course. Also, motion of the ship in this direction. The opposite of ahead. (i.e., *The cutter passed five miles astern of us.* Or, *the ship moved astern alongside the pier.)*

***Note on Ship's Direction:** Ships do NOT move forward or aft; instead they move AHEAD or ASTERN.
Inboard: refers to anything that is closer to the centerline of the vessel.

Outboard: suspended or projecting outside of a ship, also more toward the outside of a ship than your current position.
Athwartship: refers to an item that leads or runs from side to side (port and starboard) What the naval architects call “transverse”
Fore and Aft: refers to an item that leads or runs from bow to stern. What the naval architects call “longitudinal”
Port: the left side of the vessel when facing the bow
Starboard: the right side of the vessel when facing the bow



Abeam: at right angles to the ships keel
Abaft: toward the ships stern
Aloft: This refers to any place or movement in the ship's rigging, masts, or yards (above the deck)
Topside: upper part of the ships sides above the waterline to the rail
Below: Downwards from your present position on the ship. Usually an adverb. (i.e. *The First Engineer went below to the lower AC platform.*)
Lower: Adjective, referring to positions located low in the ship. (*The heaviest cargo is stowed in the lower hold.*)
Above: Upward from your present position on the ship. Usually an adverb. (i.e., *The cadet was sent above to the flying bridge.*)
Upper: An adjective, referring to positions higher up on the ship. (*The passengers all gathered on the upper observation deck.*)
Inshore: Any component of the ship or object attached to, or leading from the ship which is on the side of the ship to which she is moored. (on the side closest to the pier)
Offshore: Any component of the ship or object attached to, or leading from the ship which is on the opposite side of the ship to which she is moored. (on the side of the ship opposite the pier)

Locations (exterior):

Bow: forward part of the ship. The "front" of the ship.
Stern: after part of the ship. The "back" of the ship.
Stem: the upright post or bar of the bow
Deck: floor
Bulkhead: wall
Overhead: ceiling
Passageway: hallway
Foredeck: forward part of the ship's main deck
Forecastle (foc's'le) Deck: a deck at the bow extending from the stem over a forecastle, on which the anchor windlass and other ground tackle is located
Fantail: the overhanging stern section of a vessel.
Afterdeck: the part of a ships main deck abaft midships
Midship: situated in or near the middle line-transversely or longitudinally
Main Deck: Uppermost continuous deck
Quarterdeck: after portion of weather deck, or deck on which gangway is rigged
Flying Bridge: deck above wheelhouse
Bridge Wing: extensions of wheelhouse to sides of vessel
Boat Deck: deck on which lifeboats and other lifesaving appliances are stowed
Quarter: portion of vessel between midships and stern

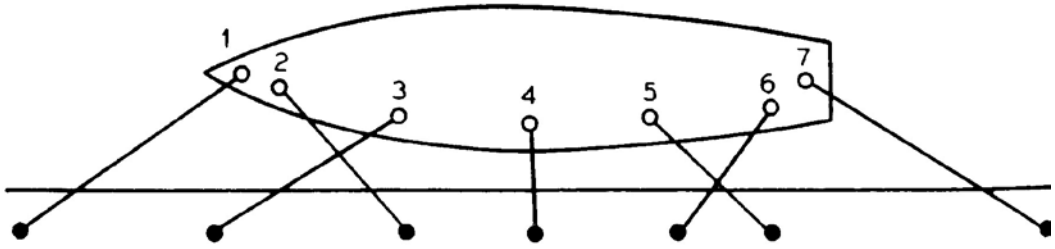
Compartments:

Bridge: Superstructure on upper deck, having a clear view forward and to either side, and from which a ship is conned and navigated
Wheelhouse: place from where the helmsman steers the ship, also Pilothouse

Chart Room: location of the vessel's navigational charts
Radio Room (ET shack): location of the vessels communications equipment
Plotting Room: location where data plotting/processing computers or other mission related operations are conducted.
Cabin: CO's stateroom.
Stateroom: Berthing compartment
Galley: Kitchen aboard ship
Mess Deck: deck on which the feeding places and tables of a ships company are located
Wardroom: General mess room and meeting place for officers
Head: bathroom aboard ship
D.C. Locker: damage control locker- locker where the damage control gear is stowed
CO2 room: room where the vessels firefighting CO2 containers are stowed
Engine room: compartment containing the engine
Gyro room: compartment containing the gyrocompass
Sick Bay: shipboard hospital clinic
Reefer: shipboard refrigerator
Oceano Lab: Oceanographic lab
Bilge: rounded part of ships underbody where sides curve towards keel
Shaft Alley: watertight tube extending from engine room to stern tube
Bosun's Locker: Locker where deck stores and tools are kept
Chain Locker: locker where anchor chain lies below windlass

Miscellaneous Terms:

Line: Natural or synthetic fiber rope (wire is called rope)
Hawser: any large line 5 or more inches in circumference
Heaving line: Small messenger line attached to hawser for throwing
Monkey's Fist: weighted knot at the end of a heaving line
Messenger: a line that is used to haul heavier lines
Bow Line: a line led forward from the bow to the pier. Reduces fore and aft motion
Stern Line: a line led aft from the stern to the pier. Reduces fore and aft motion
Breast line: a line led perpendicular to the keel to shore. Restricts athwartships motion
Spring line: line that leads away from the ship at an angle
Aft bow spring- leads from the ships bow aft to the pier
Forward quarter spring- leads forward from the ships quarter to the pier
Both lines reduce fore and aft motion.

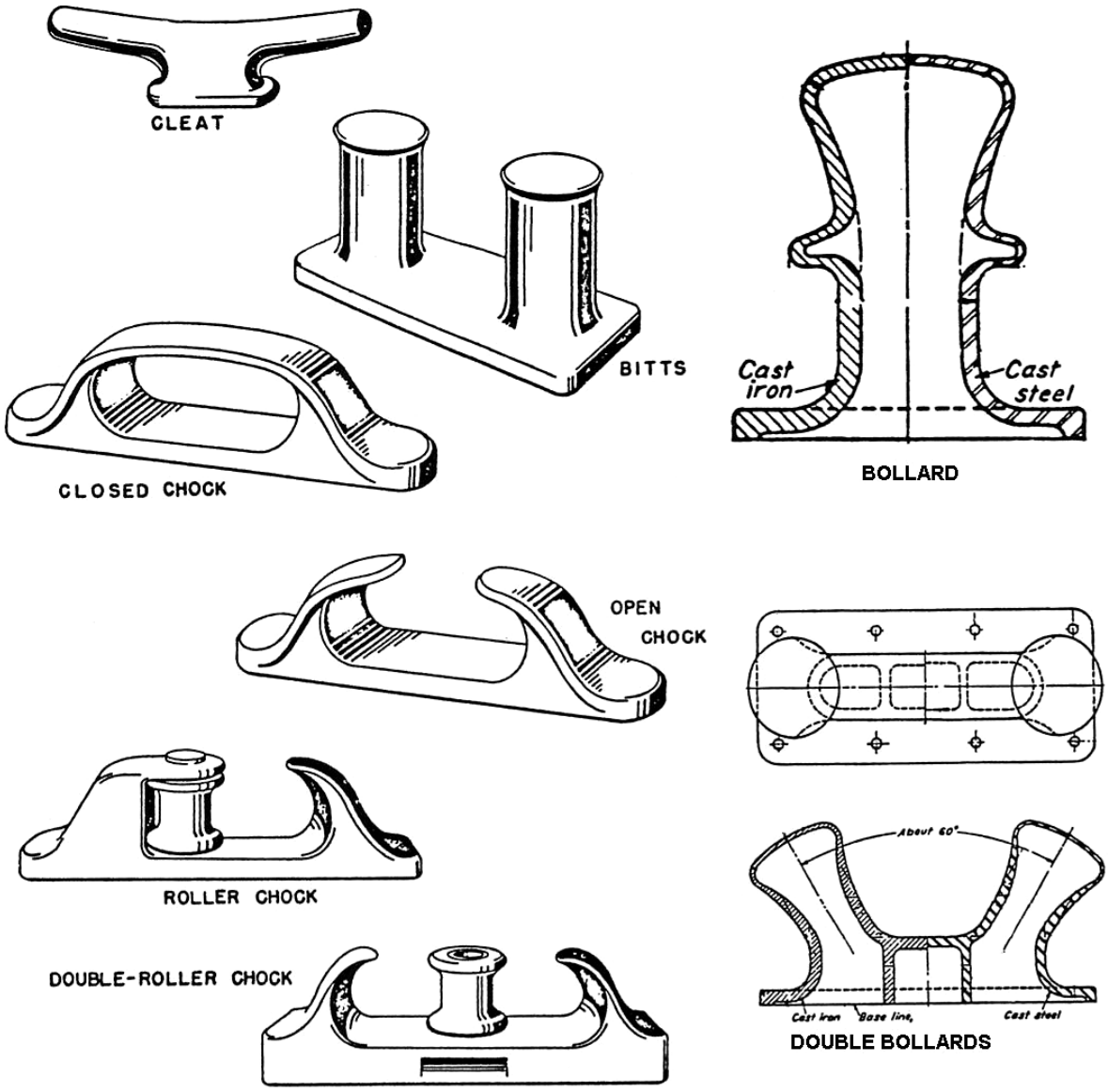


Types of line: (1) Bow line, (2) after bow spring, (3) forward bow spring, (4) waist breast, (5) after quarter spring, (6) forward quarter spring, and (7) stern line.

Block: a frame of wood or metal used to hold sheaves (pulleys)
Snatch Block: a block that is hinged to allow a line to be passed through without reaving or unreaving
Coil: to lay down a line in circular turns
Flemish: to coil a line in tight concentric circles
Faking: to lay down a length of line so that it will run out without kinking. (coils are laid with ends over the ends of the proceeding ones)
Bosun's Chair: similar to a stage, but made for one person
Stow: to place gear in its proper place for sea
Dog: handle on watertight doors and hatches
Secure: to make something fast (tie off a line, etc.)
Anchor: device used to hold chain fast to bottom
Shot: 15 fathoms or 90 feet (deals with anchor chain)
Fathom: 6 feet
Shackle: a U-shaped steel fitting with a pin threaded across the opening
Whipping: winding of twine around the end of a line to prevent it from unraveling

Section 7:

Deck Fittings & Equipment



FITTINGS

Bitt: cast steel posts to which mooring lines are secured on a ship
Bollard: cast steel heads secured to a wharf or pier, used for securing the mooring lines from a ship
Chock: a deck fitting for mooring lines to pass through

i. Open
ii. Closed
iii. Rolling

Cleat: a metal fitting having two projecting arms or horns to which a line is belayed

Padeye: an eye secured to a plate on deck, which affords a means for attaching rigging, stoppers, blocks, etc.
Fairlead: a fitting which preserves the direction of a rope, chain, line, or wire so that it may be delivered on a straight lead to a sheave or drum.

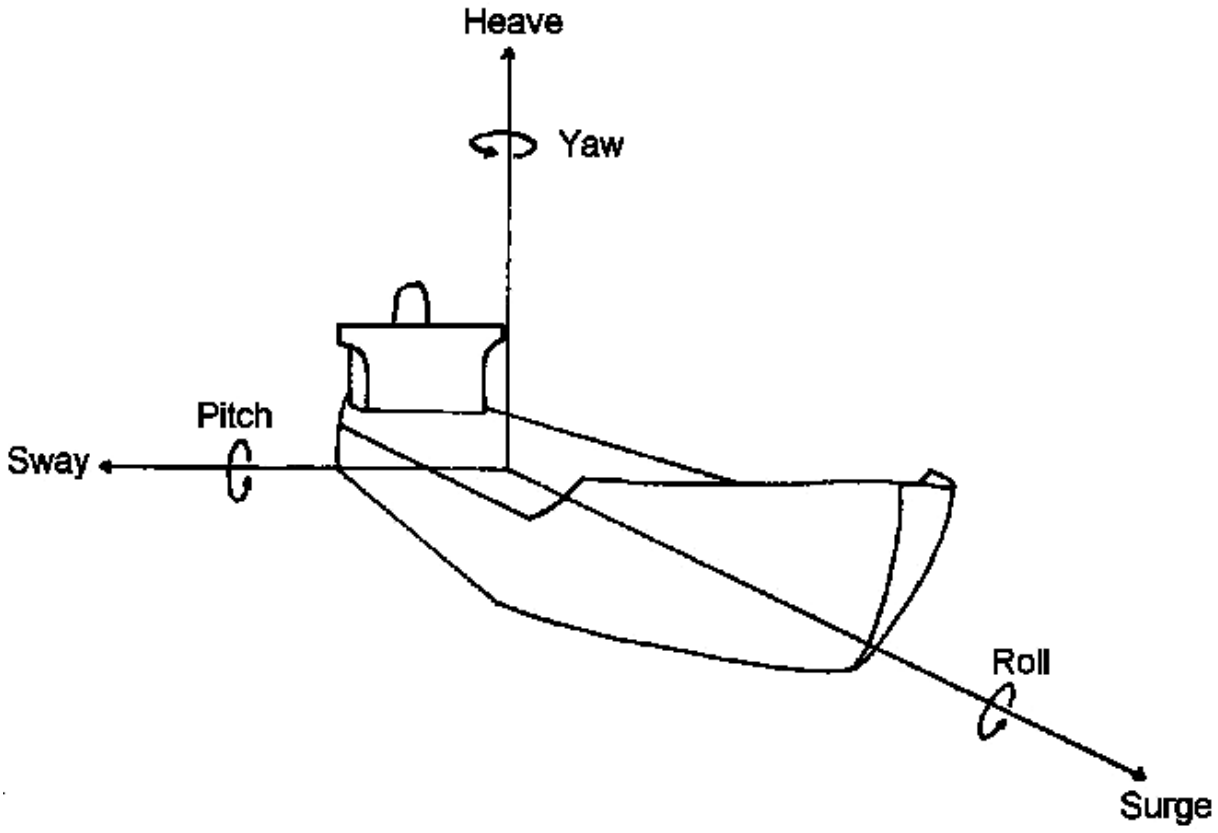
SHIP MOVEMENTS AND CONDITIONS

A. Axially

1. Pitch: to plunge with alternate fall and rise of bow and stern.
2. Roll: rotation of the vessel about a longitudinal axis causing alternate rise and fall of port and starboard sides
3. Yaw: rotary oscillation of ship about a vertical axis causing a swing of the ship's head

B. Bodily

1. Heave: vertical rise and fall of the ship
2. Surge: a variation in forward speed in the water
3. Sway: horizontal motion forcing the ship athwartships.



Section 8:

Commonly Used Acronyms

ATON - **A**ides **to N**avigation
SART - **S**earch **a**nd **R**escue **T**ransponder
EPIRB - **E**mergency **P**osition **I**ndicating **R**adio **B**eacon
SOLAS - **S**afety **O**f **L**ife **A**t **S**ea
BST - **B**asic **S**afety **T**raining
RADAR - **R**adio **D**etection **a**nd **R**anging
ARPA - **A**utomatic **R**adar **P**lotting **A**ids
GPS - **G**eographic **P**ositioning **S**ystem
ECDIS - **E**lectronic **C**hart **D**isplay **I**nformation **S**ystem
AIS - **A**utomatic **I**dentification **S**ystem
ETA - **E**stimated **T**ime of **A**rrival
GMT - **G**reenwich **M**ean **T**ime (same as **UTC**)
UTC - **U**niversal **T**ime **C**onstant (same as **GMT**)
GMDSS - **G**lobal **M**aritime **D**istress and **S**afety **S**ystem
VHF - **V**ery **H**igh **F**requency
UHF - **U**ltra **H**igh **F**requency
DSC - **D**igital **S**elective **C**alling
STCW - **S**tandards in **T**raining and **C**ertification of **W**atchkeeeping
RFPNW - **R**atings **F**orming **P**art of a **N**avigational **W**atch
OICNW - **O**fficer **i**n **C**harge of a **N**avigational **W**atch
CFR - **C**ode of **F**ederal **R**egulations

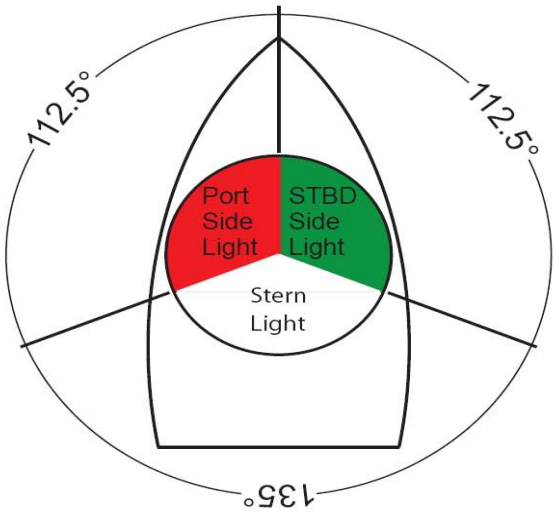
Section 9:

Running Lights

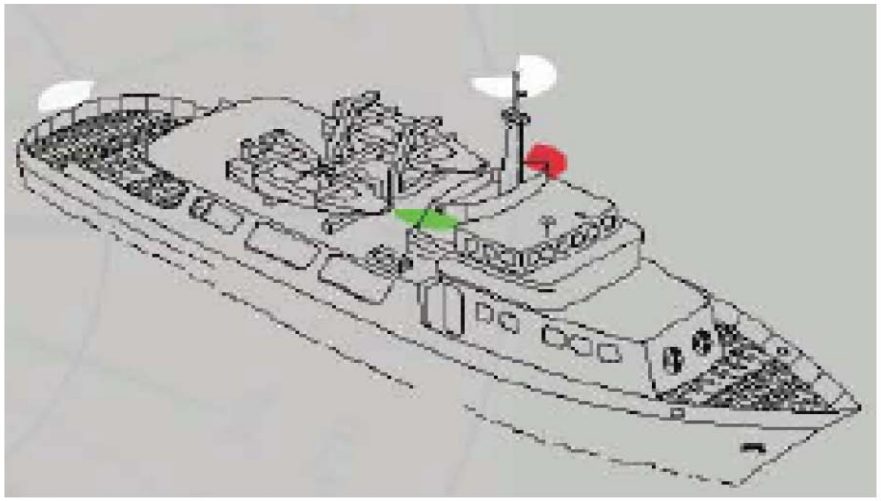
This is a diagram of the Running Lights of a vessel. Other lights are required to identify particular vessels but these are required on all.

The side lights are shown from Dead Ahead to 2 Points abaft the Beam on either side. It is a 10 point light.
The stern light is shown from 2 Points abaft the Beam on either side through Dead Astern. It is a 12 point light.

Running Lights – the two side light and the stern light.
1 Point – 11.25 degrees
Abaft – Aft of
Aft – Toward the stern
Beam – 90 Degrees from Dead Ahead



Running Lights for a Power Driven Vessel



Section 10:

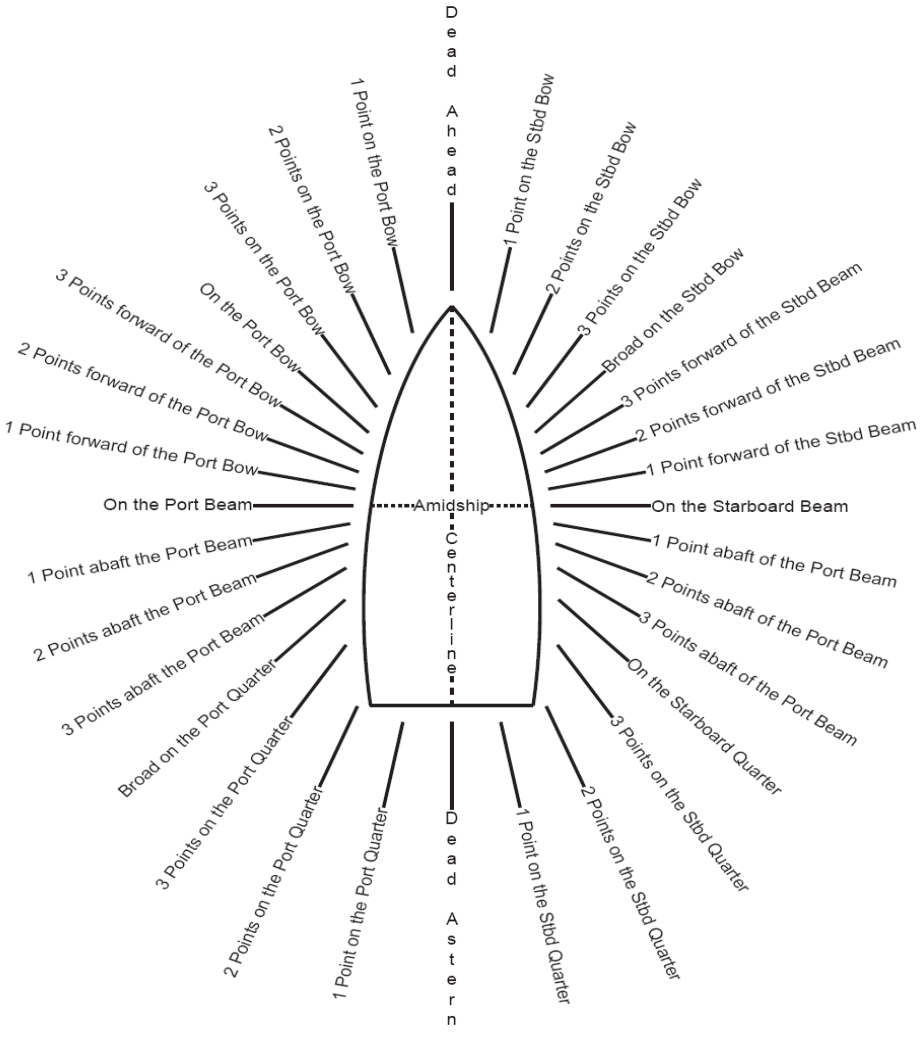
Points of the Compass & Latitude-Longitude Lines

This diagram is referred to as the Point System used by Lookouts to report objects that can be seen around the vessel.

Imagine yourself standing on the centerline of the vessel and looking at another ship or buoy.

The angle away from either Dead Ahead, Dead Astern or either Beam is used to gauge the direction toward the object.

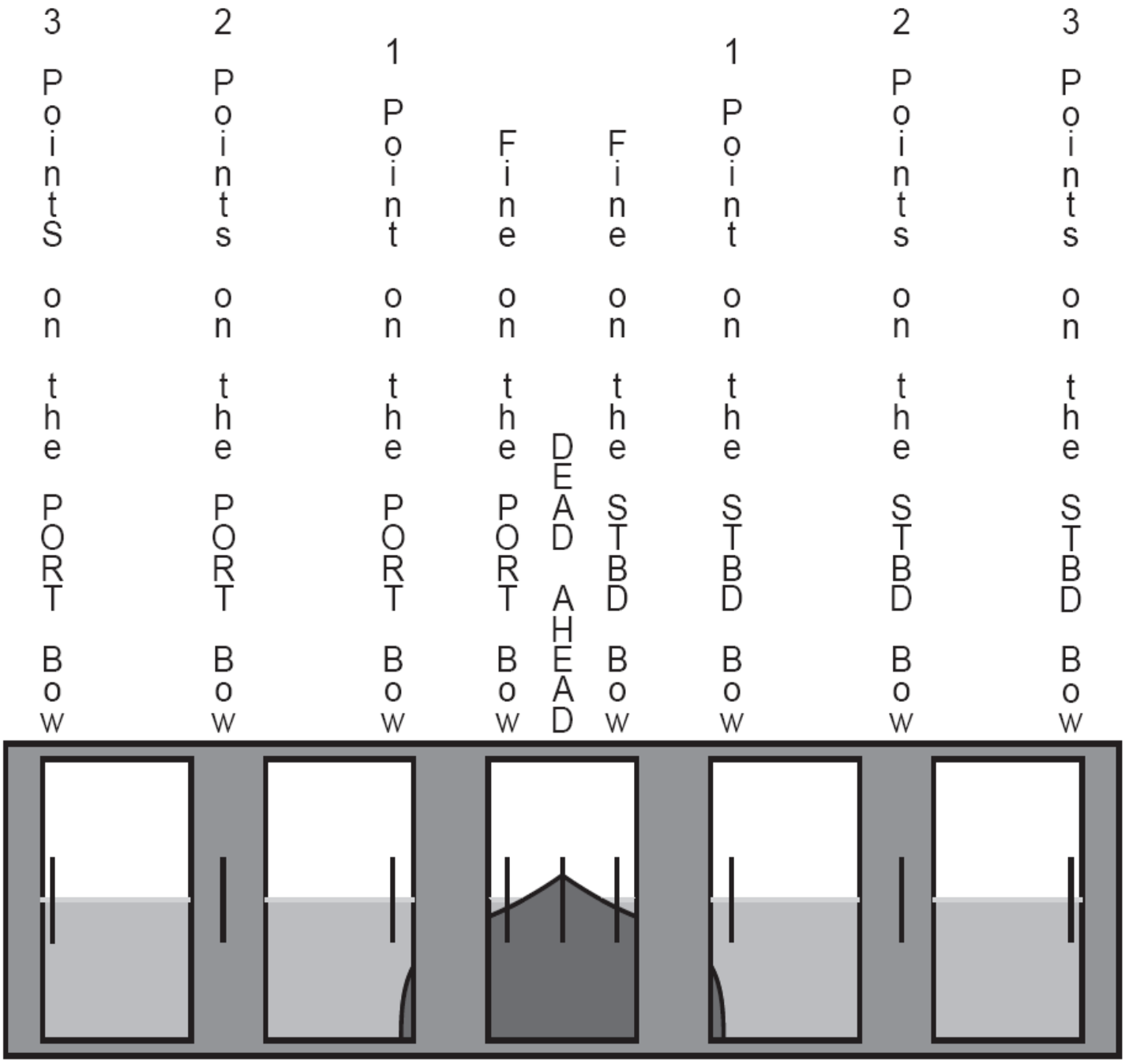
1 Point	– 11.25 degrees
Broad on the Bow	– 45 degrees from Dead Ahead
Broad on the Quarter	– 45 degrees from Dead Astern
Amidship	– halfway between the Bow and Stern



This diagram shows the aspect of being on the bridge of a ship looking forward through the bridge windows.

From Dead Ahead to 3 Points on either side is an angle of 33.75 degrees.

An object that is between Dead Ahead and 1 Point either side is referred to as Fine on the Bow. Notice from this perspective that 2 Points on the Bow is blocked by the frame of the bridge window and a person would need to move to see the object.

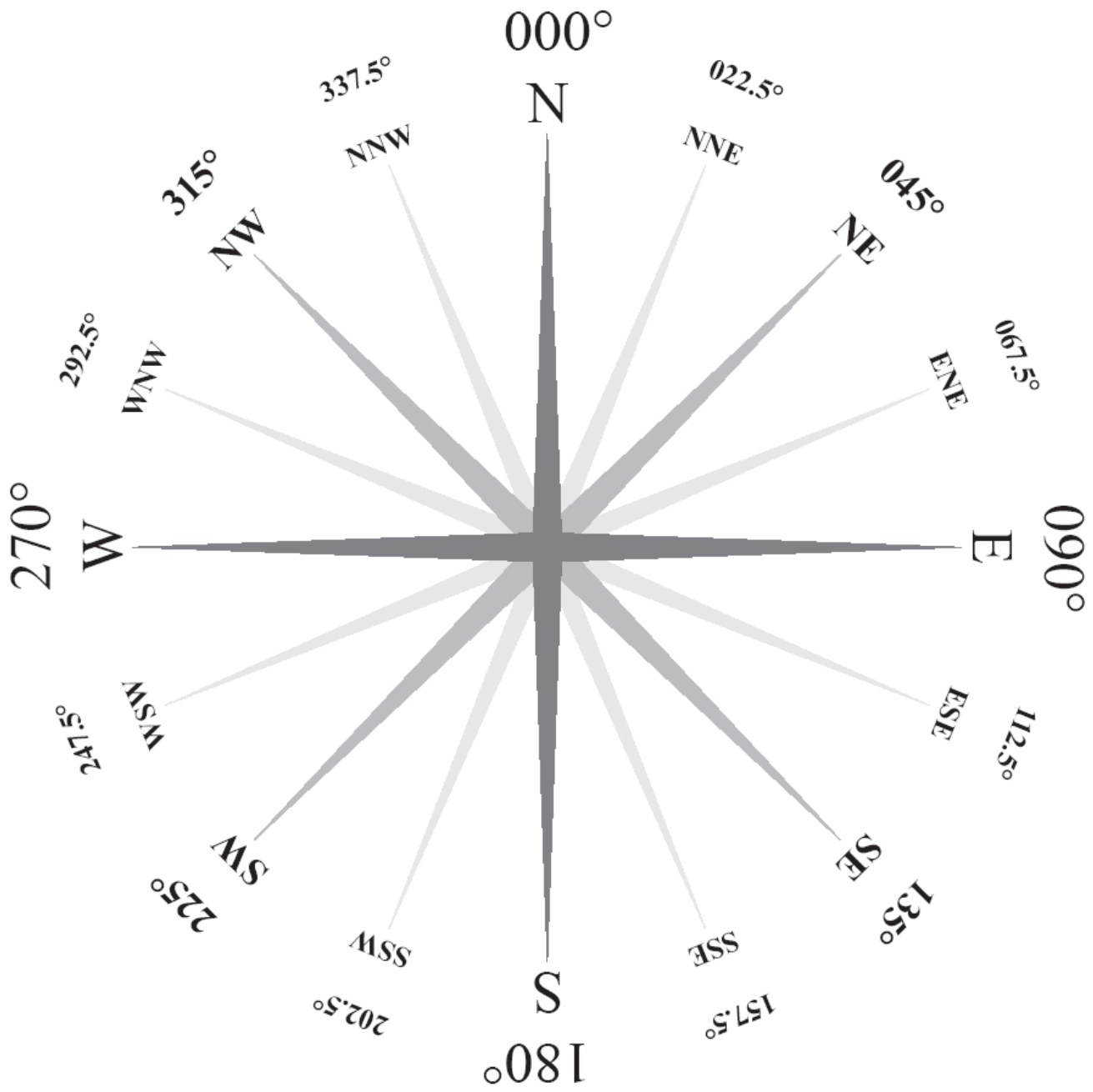


This diagram is referred to as Boxing the Compass.

The North (N), South (S), and other directions are used when referring to the direction from which the wind is coming from and for other purposes as well.

Learn the directions and their associated numeric values. More information will be added on at a later date.

NNE	North Northeast
ENE	East Northeast and so on….



This is an exercise for you to be able to recall and test yourself on the associated directions.

000.0°	N
022.5°	NNE
045.0°	NE
067.5°	ENE
090.0°	E
112.5°	ESE
135.0°	SE
157.5°	SSE
180.0°	S
202.5°	SSW
225.0°	SW
247.5°	WSW
270.0°	W
292.5°	WNW
315.0°	NW
337.5°	NNW
360.0°	N

337.5°		WNW	292.5°
270.0°		SSE	157.5°
337.5°		E	090.0°
157.5°		ENE	067.5°
337.5°		SSE	157.5°
157.5°		SE	
337.5°		SSW	
112.5°		N	
292.5°		SSE	
135.0°		WNW	
022.5°		SW	
247.5°		WSW	
045.0°		NNE	
247.5°		NNW	
270.0°		SW	

202.5°	SSW	247.5°	
157.5°	SSE	337.5°	
225.0°	SW	135.0°	
315.0°	NW	292.5°	
247.5°	WSW	202.5°	

112.5°		067.5°	
022.5°		067.5°	
225.0°		022.5°	
067.5°		067.5°	
067.5°		022.5°	

270.0°		135.0°	
202.5°		270.0°	
045.0°		045.0°	

WNW			
SE			
NNW			
W			
W			

NNW			
NNE			
WSW			
SE			
WNW			

ENE			
SE			
SW			

This is an exercise for you to be able to figure out reciprocal directions using the Boxing Compass system.

Reciprocal - In the opposite direction, 180 degrees apart

1	the reciprocal direction of	N	+/-	180°	=	S
2	the reciprocal direction of	ENE	+/-	180°	=	WSW
3	the reciprocal direction of	SSW	+/-	180°	=	NNE
4	the reciprocal direction of	NW	+/-	180°	=	SE
5	the reciprocal direction of	W	+/-	180°	=	E
6	the reciprocal direction of	NNE	+/-	180°	=	
7	the reciprocal direction of	WSW	+/-	180°	=	
8	the reciprocal direction of	NE	+/-	180°	=	
9	the reciprocal direction of	S	+/-	180°	=	
10	the reciprocal direction of	NNW	+/-	180°	=	
11	the reciprocal direction of	SW	+/-	180°	=	
12	the reciprocal direction of	WNW	+/-	180°	=	
13	the reciprocal direction of	ESE	+/-	180°	=	
14	the reciprocal direction of	SSE	+/-	180°	=	
15	the reciprocal direction of	E	+/-	180°	=	
16	the reciprocal direction of	SE	+/-	180°	=	
17	the reciprocal direction of	WNW	+/-	180°	=	
18	the reciprocal direction of	SSE	+/-	180°	=	
19	the reciprocal direction of	NNE	+/-	180°	=	
20	the reciprocal direction of	E	+/-	180°	=	
21	the reciprocal direction of	S	+/-	180°	=	
22	the reciprocal direction of	ESE	+/-	180°	=	
23	the reciprocal direction of	ENE	+/-	180°	=	
24	the reciprocal direction of	NE	+/-	180°	=	
25	the reciprocal direction of	SE	+/-	180°	=	

This is an exercise for you to be able to figure out what direction you will be facing when you are looking either N, S, E or W and turn a certain number of degrees.

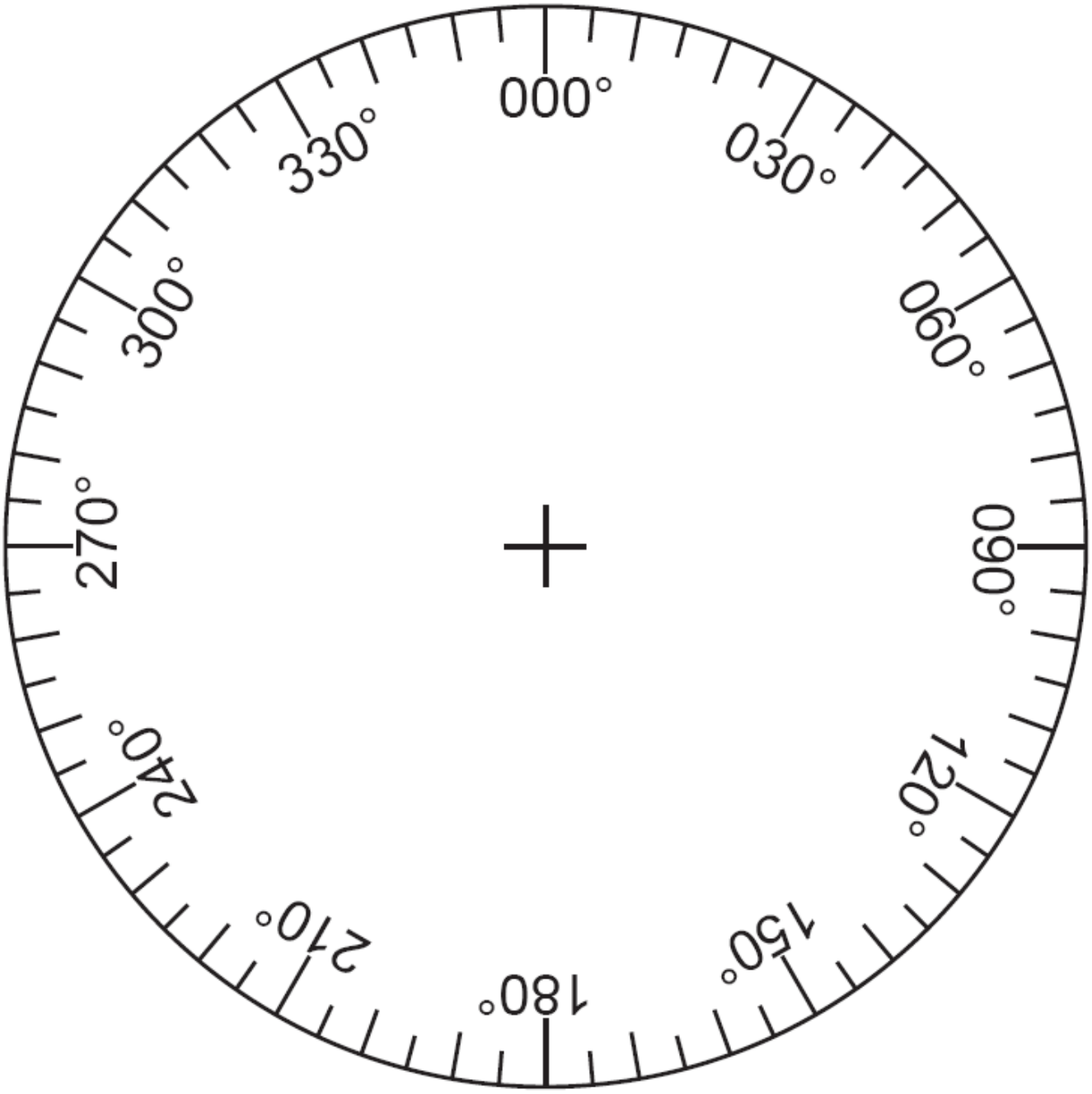
For example, when you are facing East and turn 10 degrees to the North, you start out looking in the direction of 90° and then turn 10° until you are looking in the direction of 80°

38°	to the	North	of East	90°	-	38°	=	52°
65°	to the	South	of West	270°	-	65°	=	205°
17°	to the	East	of North	0°	+	17°	=	17°
26°	to the	West	of North	360°	-	26°	=	334°
89°	to the	North	of West	270°	+	89°	=	359°
33°	to the	South	of East	90°	+	33°	=	123°
32°	to the	East	of South	180°	-	32°	=	148°
7°	to the	West	of South	180°	+	7°	=	187°
63°	to the	West	of North					
9°	to the	South	of West					
45°	to the	East	of North					
72°	to the	South	of East					
84°	to the	South	of East					
25°	to the	South	of East					
67°	to the	South	of East					
48°	to the	West	of South					
37°	to the	North	of East					
44°	to the	North	of East					
11°	to the	South	of West					
66°	to the	East	of South					
35°	to the	West	of South					
80°	to the	South	of West					
12°	to the	East	of South					
47°	to the	East	of South					
31°	to the	East	of North					
8°	to the	East	of South					

This diagram is a simple compass rose with each mark having a spacing of 5 degrees.

Notice that the 10 degree spacing marks are slightly longer than the 5 degree spacing marks.

Rose - A graduated circle used for direction



This is an exercise for you to be able to figure out reciprocal directions using the Compass Rose system using directions that are multiples of 10 degrees.

1	the reciprocal direction of	150°	+	180°	=	330°
2	the reciprocal direction of	180°	-	180°	=	000°
3	the reciprocal direction of	260°	-	180°	=	080°
4	the reciprocal direction of	310°	-	180°	=	130°
5	the reciprocal direction of	050°	+	180°	=	230°
6	the reciprocal direction of	130°	+	180°	=	310°
7	the reciprocal direction of	130°		180°	=	
8	the reciprocal direction of	240°		180°	=	
9	the reciprocal direction of	030°		180°	=	
10	the reciprocal direction of	250°		180°	=	
11	the reciprocal direction of	170°		180°	=	
12	the reciprocal direction of	300°		180°	=	
13	the reciprocal direction of	290°		180°	=	
14	the reciprocal direction of	040°		180°	=	
15	the reciprocal direction of	280°		180°	=	
16	the reciprocal direction of	310°		180°	=	
17	the reciprocal direction of	100°		180°	=	
18	the reciprocal direction of	220°		180°	=	
19	the reciprocal direction of	060°		180°	=	
20	the reciprocal direction of	030°		180°	=	
21	the reciprocal direction of	140°		180°	=	
22	the reciprocal direction of	260°		180°	=	
23	the reciprocal direction of	120°		180°	=	
24	the reciprocal direction of	290°		180°	=	
25	the reciprocal direction of	090°		180°	=	

This is an exercise for you to be able to figure out reciprocal directions using the Compass Rose system.

1	the reciprocal direction of	341°	-	180°	=	161°
2	the reciprocal direction of	124°	+	180°	=	304°
3	the reciprocal direction of	314°	-	180°	=	134°
4	the reciprocal direction of	261°	-	180°	=	081°
5	the reciprocal direction of	317°	-	180°	=	137°
6	the reciprocal direction of	200°		180°	=	
7	the reciprocal direction of	286°		180°	=	
8	the reciprocal direction of	217°		180°	=	
9	the reciprocal direction of	080°		180°	=	
10	the reciprocal direction of	216°		180°	=	
11	the reciprocal direction of	299°		180°	=	
12	the reciprocal direction of	174°		180°	=	
13	the reciprocal direction of	303°		180°	=	
14	the reciprocal direction of	291°		180°	=	
15	the reciprocal direction of	208°		180°	=	
16	the reciprocal direction of	045°		180°	=	
17	the reciprocal direction of	309°		180°	=	
18	the reciprocal direction of	076°		180°	=	
19	the reciprocal direction of	120°		180°	=	
20	the reciprocal direction of	289°		180°	=	
21	the reciprocal direction of	030°		180°	=	
22	the reciprocal direction of	151°		180°	=	
23	the reciprocal direction of	048°		180°	=	
24	the reciprocal direction of	265°		180°	=	
25	the reciprocal direction of	146°		180°	=	

This is an exercise for you to be able to figure out what direction you will be facing when you are looking in one direction and turn a certain number of degrees.

For example, when you are facing 65° and turn 10° to the right, you start out looking in the direction of 65° and then turn 10° until you are looking in the direction of 75°.

When you are facing 35° and turn 5° to the left, you start out looking in the direction of 35° and then turn 5° until you are looking in the direction of 30°.

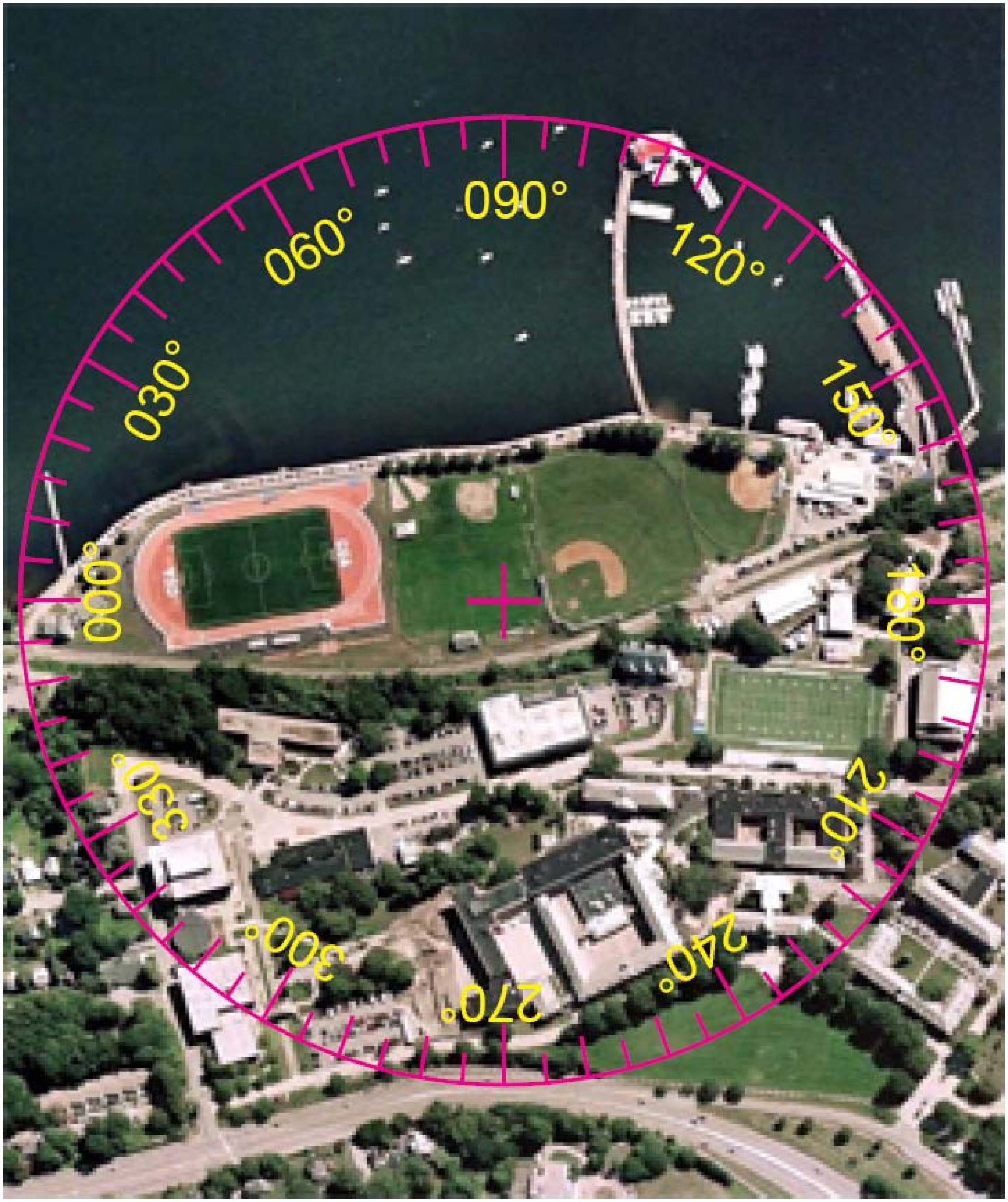
Notice what happens when you face a direction and then turn though 0 degrees.

13°	to the	left	of	078°	078°	-	13°	=	065°			
18°	to the	left	of	358°	358°	-	18°	=	340°			
21°	to the	left	of	005°	365°	-	21°	=	344°			*****
11°	to the	right	of	359°	359°	+	11°	=	370°	or	010°	
8°	to the	right	of	242°								
13°	to the	left	of	011°								
12°	to the	right	of	185°								
11°	to the	left	of	001°								*****
19°	to the	right	of	354°						or		
7°	to the	right	of	092°								
11°	to the	left	of	355°								
11°	to the	right	of	352°						or		
12°	to the	left	of	220°								
25°	to the	left	of	011°								*****
4°	to the	left	of	013°								
19°	to the	left	of	313°								
8°	to the	right	of	027°								
20°	to the	right	of	352°						or		
9°	to the	right	of	017°								
15°	to the	left	of	251°								
4°	to the	left	of	115°								
13°	to the	left	of	278°								
24°	to the	right	of	349°						or		
16°	to the	left	of	314°								
1°	to the	left	of	300°								
12°	to the	left	of	008°								*****

This is an aerial map of the **USCGA** campus grounds.

Use this to acclimate yourself to the directions that you walk, the directions that objects are facing and so on…

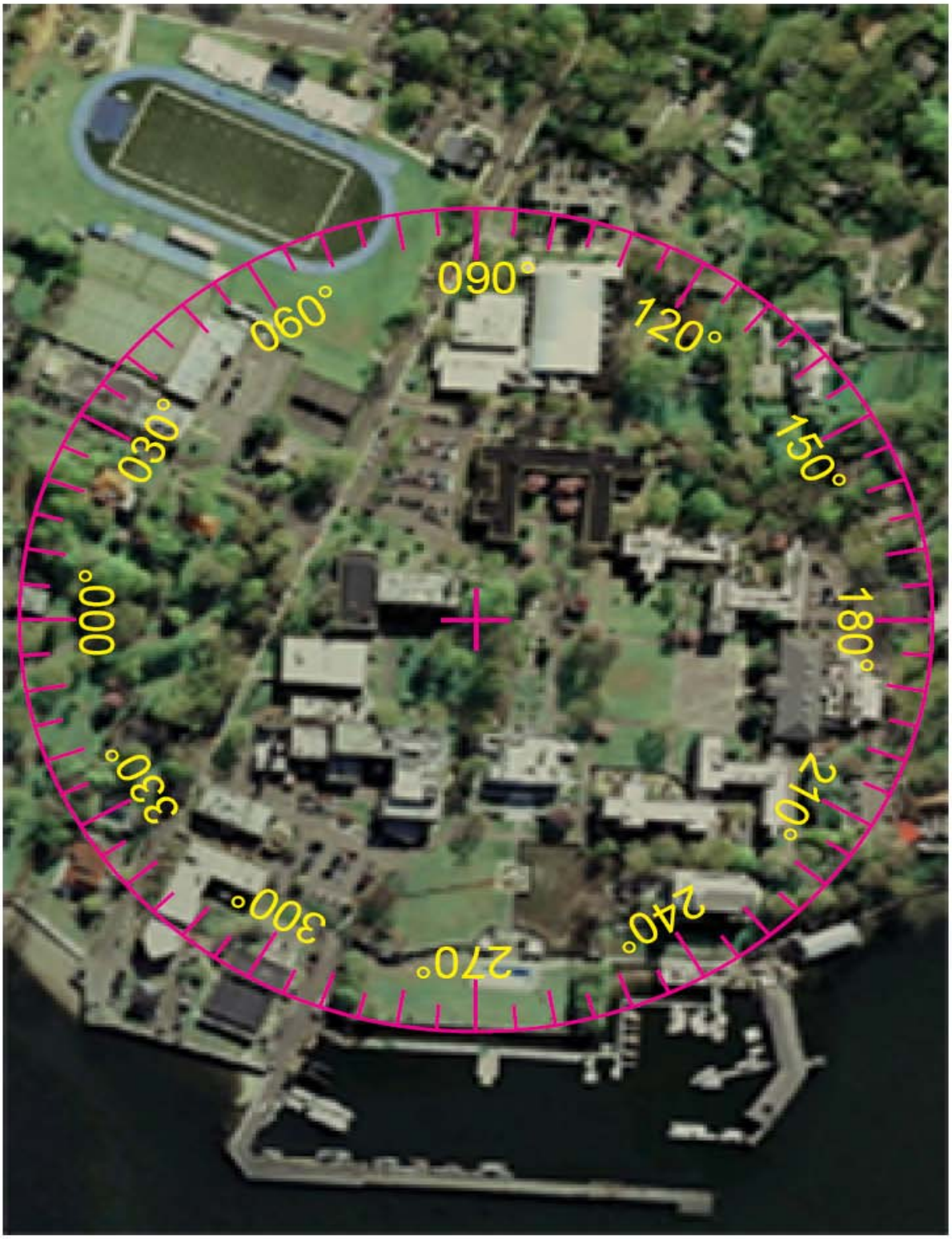
Looking at the middle baseball diamond, the direction from home plate to third base is about 70°.


000°
030°
060°
090°
120°
150°
180°
210°
240°
270°
300°
330°

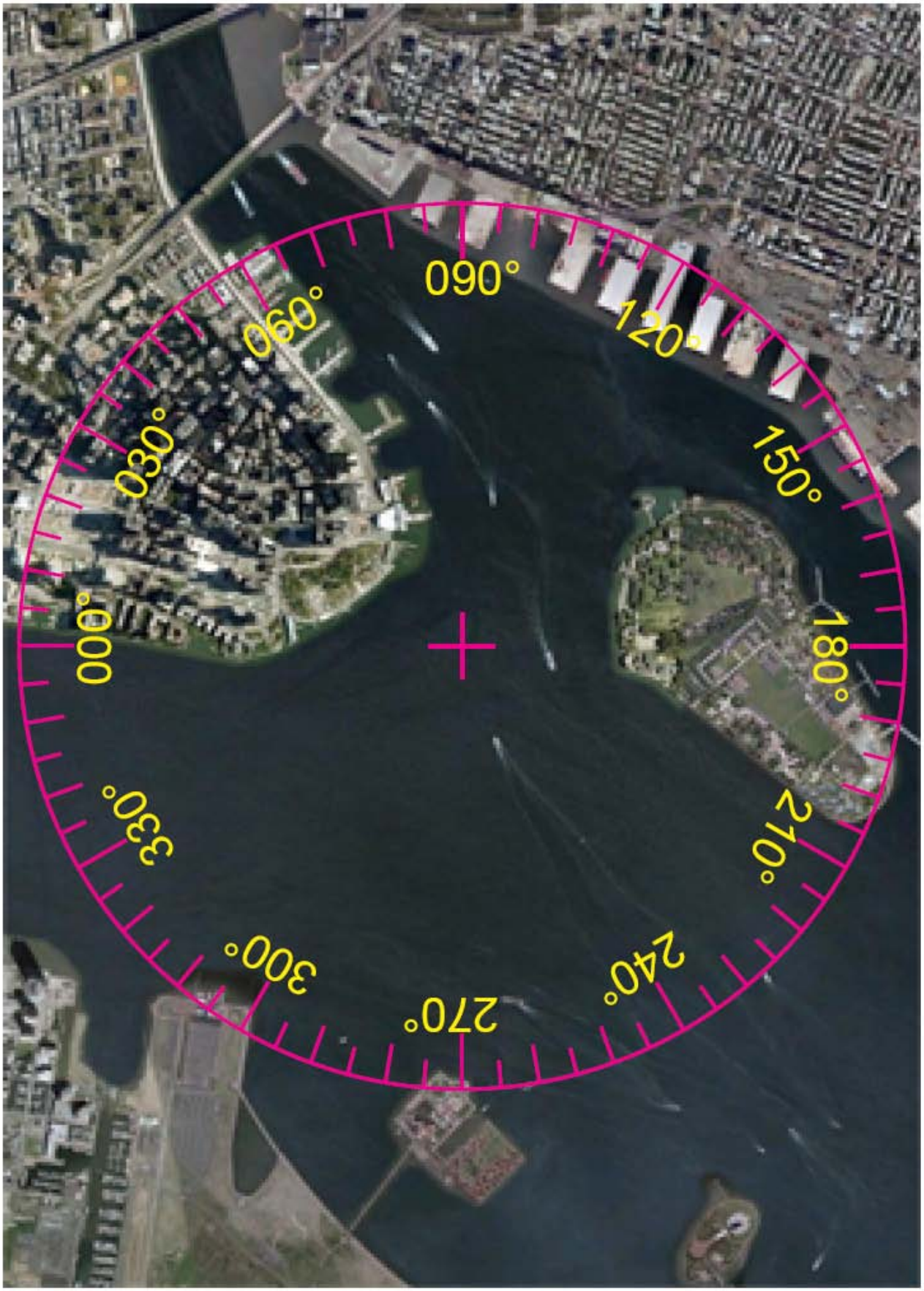
This is an aerial map of the **USMMA** campus grounds.

Use this to acclimate yourself to the directions that you walk, the directions that objects are facing and so on…

Looking at the Pier, the direction that the Kings Pointer berths (the vessel is not in the picture) is about 5°.



This is an aerial map of a portion of **NY harbor**.



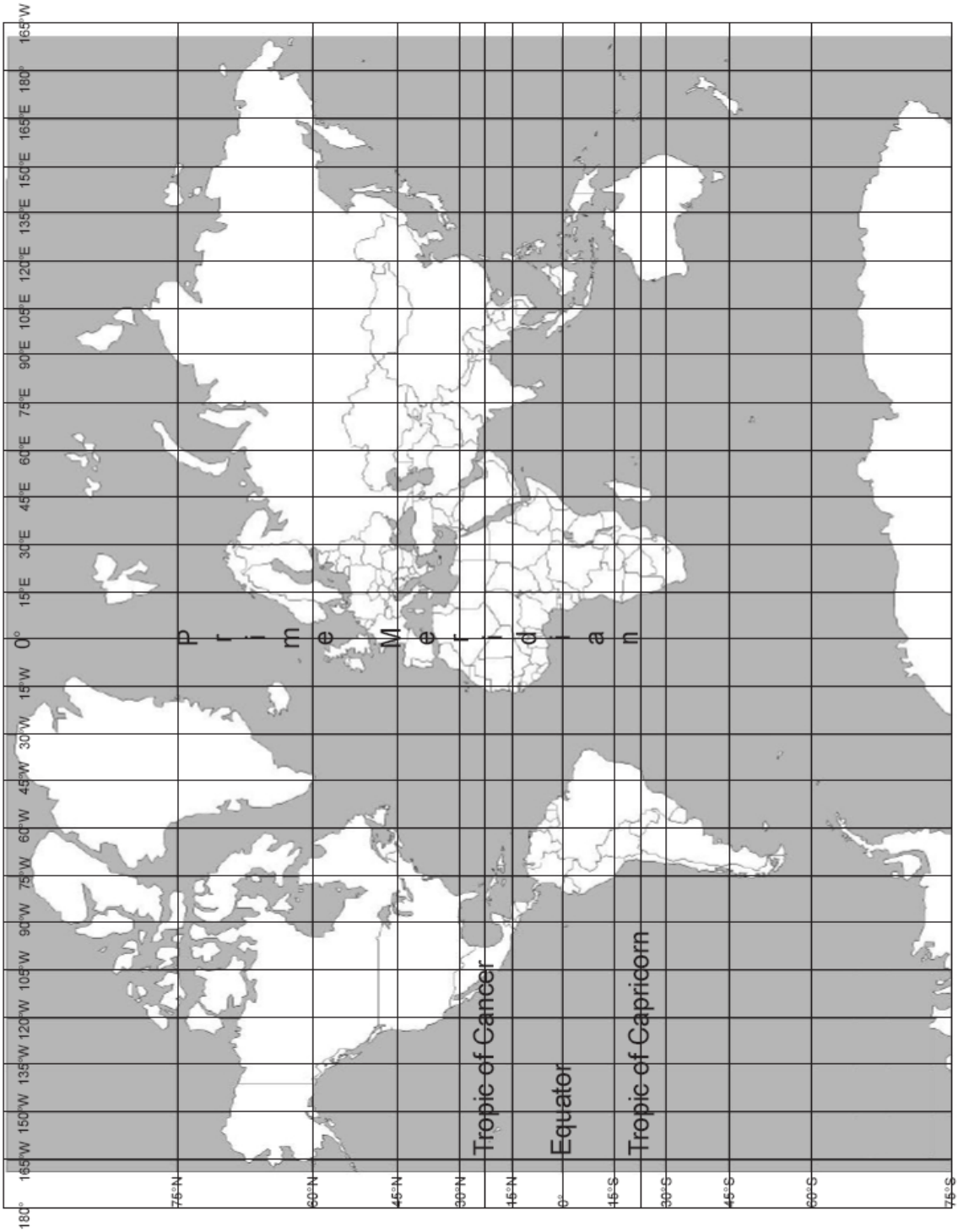
This is an atlas of the world with the Latitude and Longitude scale.

Use this to familiarize yourself with both the North and South Hemispheres and the East and West Hemispheres.

What is the Latitude and Longitude of the Amazon delta?

What is the Latitude and Longitude of the south tip of India?

What is the Latitude and Longitude of Singapore? and so on…



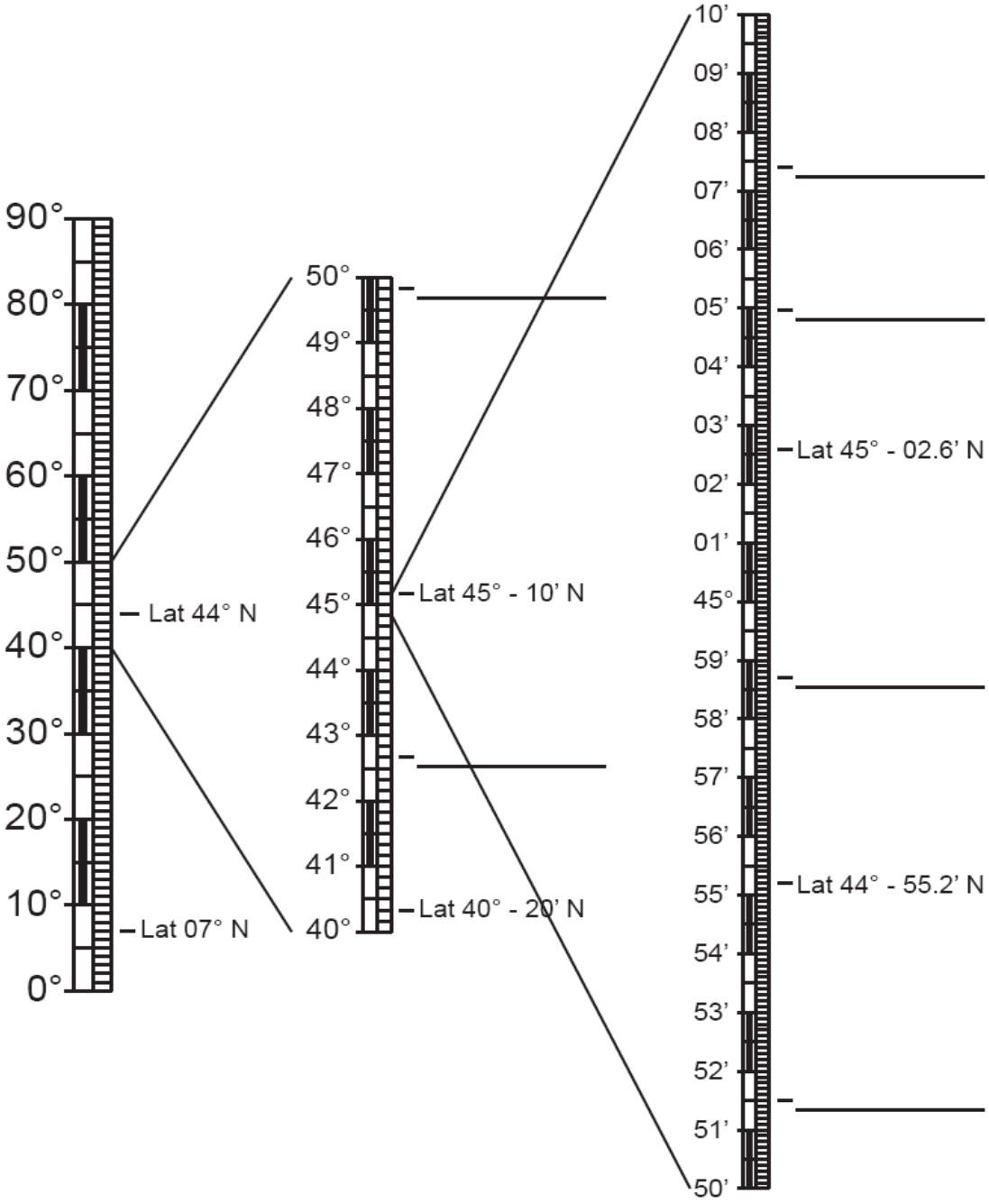
This is the Latitude scale and it shows different amounts of graduations between labels. Keep in mind, 1 degree contains 60 minutes of arc

The graduations on the left are whole degrees with larger marks every 5 degrees.

The graduations in the middle are 10 minutes of arc with larger marks every 30 Minutes.

The graduations on the right are tenths of minutes with larger marks every half of a minute.

Figure out the scales and fill in the blanks on the page.



This is an exercise to practice the relationship of 6 minutes of time being the same as one tenth of an hour.

You should not only complete this page but also start thinking of time throughout the day in six minute intervals.

tenths of hours		minutes of time
0		00
0.05		03
0.1		06
0.15		09
0.2		12
0.25		15
0.3		18
0.35		21
0.4		24
0.45		27
0.5		30
0.55		33
0.6		36
0.65		39
0.7		42
0.75		45
0.8		48
0.85		51
0.9		54
1		60

minutes of time	tenths of hours
36	0.6
33	0.55
12	0.2
24	0.4
39	
3	
9	
36	

minutes of time	tenths of hours
12	
45	
45	
24	
54	
3	
15	
6	
36	
57	
12	
33	
27	
51	
6	
45	
9	
12	
6	
24	
36	
24	
24	
21	
9	
15	
6	
18	
18	
3	
51	

tenths of hours	minutes of time
0.3	18
0.75	45
0.5	30
0.15	9
0.1	6
0.6	
0.6	
0.1	
0.1	
0.7	
0.7	
0.5	
0.5	
0.8	
0.15	
0.55	
0.15	
0.7	
0.15	
0.55	
0.9	
0.35	
0.7	
0.35	
0.3	
0.45	
0.75	
0.95	
0.7	
0.4	
0.1	

A simple multiplication table to exercise your mind.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	4		6			9		11				15
2		4			10		14		18		22		26		
3	3	6		12	15		21		27		33		39		45
4	4			16	20	24	28	32				48	52		60
5		10			25		35	40			55			70	
6		12		24	30	36		48	54						90
7		14	21		35	42	49		63					98	105
8					40			64	72	80				112	120
9		18			45	54		72	81	90		108		126	135
10	10		30		50			80					130	140	
11	11		33			66		88	99	110	121	132		154	165
12	12	24	36	48	60						132	144		168	180
13				52	65	78			117	130					
14	14		42	56	70					140	154		182		
15	15			60	75	90	105	120						210	

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