1.1-1: they received a telegram informing them that Amandsun was making a bid for the south pole. The initial response of captain Scott was to not inform the crew instead making it a secret. The shock the felt was expressed through trying to cover up the incident from those around whether that be the crew or press.

1.1-2: Initially bought in Harbin the ponies had to be transported to Vladivostok where they could then be loaded on boat to New zealand meeting up with the rest of the expedition.

1.2-1: while closer to the south pole than Ross Island, The Bay of Whales sat on much more unstable terrain, that being thinner ice. This made it possible and a major concern that they could have an ice sheet break under them endangering the entire mission and their lives.

1.2-2: development of a new tent variant where they stitched two 2 man tents together forming a 4 man tent more suitable for the winds of the antarctica.

1.2-3: they designed their depots to plan for navigational error. By arranging the flags for the depot in a straight line perpendicular to the direction of expected travel the depots were easier to find and harder to miss. They also included cents in the form of dried fish which the sled dogs would be drawn to.

1.3-1: they set themselves up on ross island with the assumption that the ice sheet connecting it to the mainland would hold. When this proved to not be the case and that the path would hold they began packing up to move to a more suitable location.

1.3-2: strict chains of command tend to suit themselves well for situations where decisions need to be made fast and precisely. They guarantee that a solution will be found quickly but not necessarily the best solution and almost always done the way the top of command wants it. The Norwegians did not place such a strict hierarchy on their expedition allowing the whole crew to sit on much more equal footing with ideas.

1.4-1: a signal point of failure is any sub system that in its failure causes the whole system to fail. These exist anywhere in the case of the Norwegian and British expeditions it is seen in the pump system of the Norwegian vessel as well as the the nautical almanac, for the british this was the layout of the supply depots, as well as the assumption that the ponies would make it to the supply depot to become the supply.

1.4-2:(a)by spending considerable time in preparing food that not only nourished but was pleasant with the resources available the crew’s morale was kept up. (b) by not only having activities and luxuries such as a Sauna but also having the ability for the crew to be isolated the collective morale of the crew remained good as well as their attitudes to each other.

1.5-1: motorized vehicle/sled, ponies, and humans. Ultimately the expedition solely relied on people hauling supplies as all others failed.

1.5-2: exactly like a military vessel with a clear hierarchy and very distinct separation from the officer and the rest of the crew. The need for a breakdown of the rigid separation of hierarchy could have been achieved via allowing more interactions with the officers and the rest of the crew allowing for feedback to make its way through the chain of command in a more informal manner. There was concern at Framheim over the urgency to reach the south pole before Scott's expedition could.

1.6-1: they made a false start in poor conditions starting too early while still in winter leading to a retreat back to safety. Because of this Prestrud and Johansen had to be dropped from the team. Prestrud from injury sustained and his own decision, while Johansen left due to Amundsen decision over his poor temper.

1.7-1: denial of one's own mistakes is a clear sign of a leadership failure. This shows an unwillingness not only to admit one's own failure but an admittance that nothing will be done to truly fix it. These are difficult to resolve because it involves those in charge to admit they can be wrong and correct that. As seen in Scott's expedition where situations such as sled dogs being seen by the team to be a better option yet through stubbornness insist on using other methods seen to be inferior.

1.8-1: they faced deep crevices, steep mountains and soft snow. They scouted out for a path through taking it while facing it’s challenges.

1.8-2: the closer to the poles the less parallel the magnetic field becomes to the surface. This means traditional compasses have difficulty and at a certain point cease working. The lack of visual ques such as stars or horizons makes navigation by those means difficult. Keeping track of longitude is still important as it can indicate unwanted drifts in movement.

1.9-1: they were gravely concerned with the task, considering that something went terribly wrong for man hauling to become reality. They did not bring this up directly with the captain however instead letting it fester.

1.9-2: the path was mapped unlike Amundsen’s.

1.10-1: several sextant readings from several locations at various times of day across multiple days. This also involved finding a general location by having multiple people take readings at different places to get a general area at which the pole is located.

1.11-1: 34 days.

1.11-2: they suffered from vitamin b deficiencies leading to increased mental fatigue, as well as vitamin c deficiencies which resulted in physical strain, specifically inability to heal wounds and decreased physical ability.

2.1-1: they are climbing when a lightning storm occurs which causes one of them to become injured. They assumed that it was fine up until that point because it was easier to assume everything would be fine then to think about the possibility of accidents occuring.

2.1-2:(a)due to moisture and how cotton does not dry it becomes a death trap in cold weathers when sweating.(b)refers to divine judgment / act

2.2-1: a proportional relation between the relative change of values. As sand is added it approaches a critical point where it will collapse. This is due to a singular sand particle causing a cascading failure on the whole structure causing it to collapse.
2.2-2: as things happen and time marches forward possibilities of an accident increase. Whether that be poor judgment or something else, the inevitability of an accident occurring is always certain despite preventative measures. Eventually, like a sand pile, mistakes and poor decisions accumulate cascading into an accident.

2.3-1: in the case of Scott's expedition the inability for those around the Scott to question his judgement led to an increasing amount of poor decisions that ultimately cost all of their lives.

2.4-1:knowledge of the waves, the form and shape, things that are learned from years of surfing and observing. Along with the knowledge of how to surf and how to safely fail the procedures and motions.

2.4-2: by having something that motivated him to survive that being his son. He could have avoided the whole incident by not going skiing in what was predicted to be dangerous weather.

3.1-1:it exists as an environment that receives very little outside nutrients and is in general a very inhospitable place.this life was found through the use of underwater rovs which were inserted via drilling down to the bottom of the shelf.

3.1-2:group based hunting techniques such as swimming in formation to create waves that knock prey into the water.

3.1-3:ARIANNA and IceCube are looking for neutrinos passing through our planet. Antarctica and Greenland are suited for this due to having deep ice sheets that neutrinos make light if colliding with a water molecule making detection easy with photosensors.

3.1-4:first detection of high energy extragalactic cosmic rays.

3.1-5: they take an ice core sample observing the gas pockets contained within. Based on the depth that these bubbles of gas exist in, the age can be determined. The concentration of

various gasses including methane and CO2 can indicate the atmospheric conditions as well as temperature at the time. The results can be matched with recent temperature data from the 1850s and onwards by looking at the upper portion of the core.

4.1-1:(a) exams only measure what someone knows at that given instant in time, it does not care how they think about it before or even after just at the moment. It also becomes an exercise in saying the right thing and studying the “right way” as in what the professor is going to put on the exam. This does not necessarily correlate with thinking independently and often results in a machine-like attitude towards learning. (b) Gen. David Patreus discusses the crisis occurring with people only doing what is necessary to achieve a certain status described as “excellent sheep”. This is what I see with Test’s that they train us not to think deeply about what the subject is about but instead what can be done to pass the test, usually consisting of cramming problems and hoping to God that they were the right ones. Promptly forgetting everything the moment you walk out of the test room door. (c ) by filtering out unimportant information a more clear picture can be gained. Instead of looking at things through very narrow bands instead looking at it from a more broad yet less precise perspective can lead to a much more clear whole image. For information that is important at least in my perspective is failures. In the example of a test while acing a test is good it doesn't say much. There will always be flaws in how I do things, how I study or how I allocate time acing a test tells me those problems were not severe enough to warrant anything but I don't know what those problems are. While I wouldn't want to fail a test, the failures I have accumulated do tell me what I did wrong and become warnings against my studying flaws.