

NASA Exercise: Survival on the Moon

Scenario:

You are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. However, due to mechanical difficulties, your ship was forced to land at a spot some 200 miles from the rendezvous point. During reentry and landing, much of the equipment aboard was damaged and, since survival depends on reaching the mother ship, the most critical items available must be chosen for the 200-mile trip. Below are listed the 15 items left intact and undamaged after landing. Your task is to rank order them in terms of their importance for your crew in allowing them to reach the rendezvous point. Place the number **1** by the most important item, the number **2** by the second most important, and so on through number **15** for the least important.

Your Ranking

NASA Ranking

- | | | |
|-------|---|-------|
| _____ | Box of matches | _____ |
| _____ | Food concentrate | _____ |
| _____ | 50 feet of nylon rope | _____ |
| _____ | Parachute silk | _____ |
| _____ | Portable heating unit | _____ |
| _____ | Two .45 caliber pistols | _____ |
| _____ | One case of dehydrated milk | _____ |
| _____ | Two 100 lb. tanks of oxygen | _____ |
| _____ | Stellar map | _____ |
| _____ | Self-inflating life raft | _____ |
| _____ | Magnetic compass | _____ |
| _____ | 20 liters of water | _____ |
| _____ | Signal flares | _____ |
| _____ | First aid kit, including injection needle | _____ |
| _____ | Solar-powered FM receiver-transmitter | _____ |

Answers

Item	Ranking	NASA's Reasoning
Box of matches	15	Virtually worthless -- there's no oxygen on the moon to sustain combustion
Food concentrate	4	Efficient means of supplying energy requirements
50 feet of nylon rope	6	Useful in scaling cliffs and tying injured together
Parachute silk	8	Protection from the sun's rays
Portable heating unit	13	Not needed unless on the dark side
Two .45 calibre pistols	11	Possible means of self-propulsion
One case of dehydrated milk	12	Bulkier duplication of food concentrate
Two 100 lb. tanks of oxygen	1	Most pressing survival need (weight is not a factor since gravity is one-sixth of the Earth's -- each tank would weigh only about 17 lbs. on the moon)
Stellar map	3	Primary means of navigation - star patterns appear essentially identical on the moon as on Earth
Self-inflating life raft	9	CO ₂ bottle in military raft may be used for propulsion
Magnetic compass	14	The magnetic field on the moon is not polarized, so it's worthless for navigation
20 litres of water	2	Needed for replacement of tremendous liquid loss on the light side
Signal flares	10	Use as distress signal when the mother ship is sighted
First aid kit, including injection needle	7	Needles connected to vials of vitamins, medicines, etc. will fit special aperture in NASA space suit
Solar-powered FM receiver-transmitter	5	For communication with mother ship (but FM requires line-of-sight transmission and can only be used over short ranges)

Scoring:

For each item, mark the number of points that your score differs from the NASA ranking, then add up all the points. Disregard plus or minus differences. The lower the total, the better your score.

0 - 25 excellent

26 - 32 good

33 - 45 average

46 - 55 fair

56 - 70 poor -- suggests use of Earth-bound logic

71 - 112 very poor – you're one of the casualties of the space program!

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