

c: calculation u: units s: significant digits

| | | | | | | | | |
|-------------------------------|---------------------|---------|--|------|------|--------|--------------------|--|
| | 1 point | 1 point | | | | | G:Grammar | |
| | 230 cm ³ | 1 | 9.6 | 3.9 | 6.1 | 228.38 | 230 V: Vocabulary | |
| velocity or speed | | 2a | | | | | See lab for scale. | |
| centimeters per second | | 2b | | | | | | |
| | 59.5 cm | 2c | 5.47 | 10 | 4.75 | 59.45 | | |
| | 8.27 seconds | 2d | 50 | 4.75 | 5.47 | 8.27 | | |
| | 2 marbles | 3a | | | | | | |
| | | 3b | | | | | | |
| | | 3 | reasonable, well thought out, well reasoned, clear, logical | | | | | |
| | | 2 | Not well thought out, not well reasoned, unclear, confusing, or a mystery, or circular – a restatement of the question | | | | | |
| | | 1 | Too brief, so brief has to hinder comprehension | | | | | |
| | | 3c | | | | | | |
| | | 2 | Slow ejects slow, fast ejects fast, numbers hold the same | | | | | |
| | | 1 point | | | | | | |
| | 50 cm/s | 3d | 30 | 0.6 | 50 | | | |
| | 260 g cm/s | 3e | 5.2 | 260 | | | | |
| copper/metals | | 4a | | | | | | |
| | | 4b | | | | | | |
| | | 3 | reasonable, well thought out, well reasoned, clear, logical | | | | | |
| | | 2 | Not well thought out, not well reasoned, unclear, confusing, or a mystery or circular – a restatement of the question | | | | | |
| | | 1 | Too brief, so brief has to hinder comprehension | | | | | |
| | | 4c | | | | | | |
| | | 3 | reasonable, well thought out, well reasoned, clear, logical | | | | | |
| | | 2 | Not well thought out, not well reasoned, unclear, confusing, or a mystery | | | | | |
| | | 1 | Too brief, so brief has to hinder comprehension | | | | | |
| | 6° 54.576' | 5a | 3 points for full 6° 54.5xx, 2 for 6° 54', 1 for 6° N | | | | | |
| | 158° 09.707' | 5a | 3 points for full 158° 09.7xx, 2 for 158° 09', 1 for 158° E | | | | | |
| | | | E/N, S/W: -1 point | | | | | |
| Variable with 5a | | 5b | "No" appeared to be the most "defensible" answer | | | | | |
| Variable based on 5b | | 5e | GPS/Google Earth are solid answers. Telecom is TIME | | | | | |
| GPS or Google Earth | | 5f | GPS/Google Earth are solid answers. Telecom is TIME | | | | | |
| | | 6 | | | | | | |
| | | 4 | Exceptionally thoughtful and insightful answer | | | | | |
| | | 3 | reasonable, well thought out, well reasoned, clear, logical | | | | | |
| | | 2 | Not well thought out, not well reasoned, unclear, confusing, or a mystery | | | | | |
| | | 1 | Too brief, so brief has to hinder comprehension | | | | | |

The word "relative speed" should not be confused with "the marbles are related" A relative is a cousin, uncle, aunt, or even a member of your immediate family. The word "relative" is being used as a noun. In the phrase "relative speed" the word is being used as an adjective that means "as compared to." Some students appear to have confused the noun and the adjective.

The question, "Why is nature mathematical?" could also be phrased "Why is mathematics natural?" All cultures agree that one plus one is two, there is no cultural or religious difference of opinion on this point. The question is ultimately philosophical and therefore, at some level, a matter of personal choice. Some students even noted that nature is not mathematical, only humankind. Humans choose to apply mathematics to nature and in the process find mathematical patterns.