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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | 3 item display | | | | | | | | | | | | | | |  | 6 item display | | | | | | | | | | | | | | | |
| Necessary | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| Color | | 1 |  | 1 |  |  |  |  | 1 |  |  |  |  |  |  |  | 1 |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |
| Noun | |  |  |  | 1 |  | 1 |  |  | 1 | 1 |  |  |  |  |  |  |  | 1 | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Color | noun | |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Gender + color | |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 | 1 | 1 |
| Gender + color | noun | |  |  |  |  |  |  |  |  |  |  | 1 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Gender |  Gender + Color |  noun | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  | 1 | 1 | 1 |  |  |  |  |
| Gender + color | color | noun | |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |
| Gender | color | noun | |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |
| Color + noun | |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 | 1 | 1 |  |  |  |  |  |  |  |  |
|  | Redundant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Noun | | 1 |  | 1 |  |  |  | 1 | 1 |  |  |  |  |  |  |  | 1 |  |  |  |  | 1 |  |  |  |  |  |  |  | 1 | 1 | 1 | 1 |
| color | |  |  |  | 1 |  | 1 |  |  | 1 | 1 |  |  |  |  |  |  |  | 1 | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Full utt | |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Full utt + gender | |  |  |  |  |  |  |  |  |  |  | 1 | 1 | 1 | 1 | 1 |  |  |  |  |  |  |  |  |  | 1 | 1 | 1 | 1 |  |  |  |  |

Naming convention: {attributes} sufficient {attributes} redundant

Sufficient: all utterances that will sufficiently pick out the target

Redundant: all utterances on top of that which can be used to describe the target, but are not strictly necessary

Base attributes:

Color: color adjective

Noun: the noun

Gender + color: the gender and color alone do not pick out the target but together they do (e.g. there are other masculine objects and other blue objects, but only one blue\_masc object)

Gender: this is the only object of this gender in the scene

Combinations:

Color | noun: either the color or the noun suffice (i.e. target is unique in color and type)

Gender + color | noun: either the gender+color pick out the object, or the noun (e.g. there are other masculine objects, there are other blue objects, but only one blue\_masc object which is also the only plate)

Gender | gender + color | noun: same as case above, but the object is ALSO the only object of that gender in the scenario (e.g. target is the only masculine object, the only blue\_masc object, and the only plate)

Gender + color | color | noun: the only blue\_masc object, the only blue object, and the only plate 🡪 therefore describing either of any of these three attributes suffices

Gender | color | noun: the only mascunline object, the only blue object, and the only plate 🡪 this is just like the gender + color | color | noun case, except that there are no other masculine objects (whereas in the gender+color | color | noun case, there could be other masculine objects that are just not blue)

Color + noun: this the only blue plate, there are other plates and other blue things, so you have to use both the color and noun term

Redundant:

Same as above except for:

**Make note about how with full utterances we don’t know which one is redundant, where as with “color” or “noun” we do end up saying the full utterance 🡪 but we don’t know which one is redundant!**

Full utt: the full utterances is redundant. Because either color or noun can be used sufficiently, by uttering the color + noun it is ambiguous as to whether it is the noun or the color that is being used redundantly.

Full utt + gender: same as above but includes gender on the color (so gender could be being used redundantly). I don’t split this case up further since I don’t see a need for it.

|  |  |  |
| --- | --- | --- |
| **sufficient** | **redundant** | **tally** |
| color | noun | 5 |
| Color + noun | ø | 4 |
| noun | color | 7 |
| Color | noun | Full utt | 2 |
| Gender | color | noun | Full utt + gender | 2 |
| Gender | gender + color | noun | Full utt + gender | 4 |
| Gender + color | noun | 4 |
| Gender + color | noun | Full utt + gender | 2 |
| Gender + color |  Color |  noun | Full utt + gender | 2 |