

## SLED DOGS SOLUTION – LEAGUE DOCTOR

### 1. First, establish how many dogs there are of what ages.

By either (5) or (8), at least three different ages are represented. By (5), there are dogs with the set of ages 1-2-4, 2-4-8, 4-8-16, or similar. By (8), there are dogs with the set of ages 1-2-5, 2-3-6, 3-4-7, or similar. There is no threesome that covers both of these, so there must be at least four different ages represented.

By (3), there are a different number of dogs for each age represented. If there were five different ages, that would total a minimum of fifteen ( $1+2+3+4+5$ ) dogs, which is too many. Therefore, there are exactly four different ages represented.

The sets of three ages required by (5) and (8) as described above must overlap by two ages to satisfy both with only four distinct ages. The only way to cover both is if the ages represented are 1, 2, 4 and 5.

The four different age-group sizes must add up to 12, the total number of dogs. Therefore, the age-group sizes are either  $1+2+3+6$  or  $1+2+4+5$ . By analysis, only two assignments of the available ages to the available age-group sizes total exactly 30 (mandated by clue 9). These are [1] age2 + [2] age5 + [3] age4 + [6] age1 or [1] age5 + [2] age2 + [4] age4 + [5] age1. By (8), Alice and Dunce must be five years old, Martin two, and Tambo one. The latter set of ages only accounts for one five-year-old, so must be incorrect. Therefore, there are two five-year-olds (Alice and Dunce, who must be respectively female and male, by (1) and deduction), three four-year-olds, one two-year-old (Martin, a male), and six one-year-olds, including Tambo, a male (“brother”) per (8).

### 2. Next, ages can be assigned into six pairs.

Suppose that each of the six one-year-olds was in a different pair of the six available pairs. In that case, three of the six pairs would also include one of the three four-year-olds. This would make three pairs with a total age of five, but (7) allows only two pairs the same total age, so that can't be. Therefore, there must be one pair consisting of two one-year-olds, and this is the only pair of same-age dogs (2).

Because the single same-age pair is accounted for, the remaining four one-year-olds must all be in different pairs, with the final pair some combination of two other distinct ages. One of these two must be a four-year-old, or the same problem as in the last paragraph arises. The two remaining four-year-olds must therefore pair with a one-year-old, accounting for the two matched-age pairs in (7). To avoid additional matching, the two five-year-olds must pair one each with a one-year-old and a four-year-old, with the sole two-year-old paired with the remaining one-year-old. In sum, the pairs are ages 1/1, 1/4, 1/4, 1/5, 1/2, 4/5, in some order and L/R orientation.

### 3. Start placing pairs and individual dogs.

For convenience, we'll label the pairs A-F, with A being the lead dogs and F being the wheelers.

Dunce's position matches his age (2) and we've established that he's five, so he's in pair E. Larry is a wheeler (5) so must be in pair F. The trio referred to in (5) must be respectively 4, 2 and 1 years old, so

Larry is a four-year-old. Martin is the only two-year-old (and so, per the last section, paired with a one-year-old), so must be a teamer in either pair C or D. By (5), each of pair A and B contain exactly one one-year-old. The lone one-year-old in pair A (i.e., position one) must be Gal (2), and so Nitro must be the one-year-old swing in B.

The pair consisting of two one-year-olds can't be A or B, but it must be further from the sled than a pair of dogs with the same initials (2). The same-initial pair isn't F (no initial match for Larry) or E (Dunce is excluded as an "other" dog in the clue). Therefore, D must be the same-initial pair, which must also be Martin's pair, so D is Martin and one-year-old Madge, and C is the pair of one-year-olds.

Deneb is paired with an older dog (7). This can not be pairs A, B, or C (other dogs are one-year-olds), D (full), or E (this would make a second matched-initial pair). Therefore, Deneb must be paired with Larry in F, must be female (1), and must be a one-year-old.

There are two four-year-olds and one one-year-old still unnamed. Roxie and Arvid are littermates (4) and so are, definitionally, the same age, and must be the four-year-olds. Therefore, Popsicle is the last one-year-old.

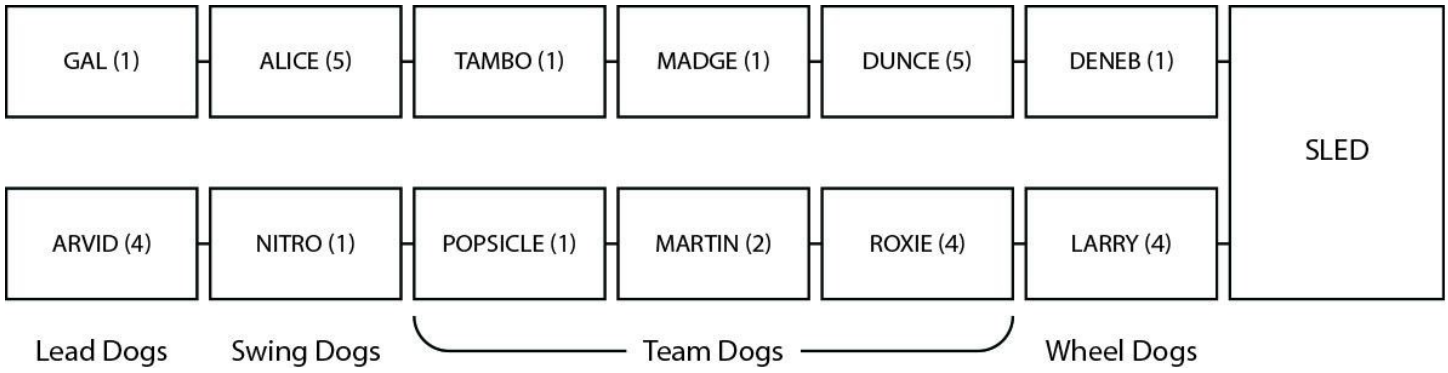
#### 4. Place and align the remaining pairs.

The unplaced pairs are 1/4, 1/5, and 4/5 in some order and orientation. Both A and B contain a one-year-old, so the 4/5 must be pair E. The four-year-old must be female, so it's Roxie. That leaves four-year-old Arvid and five-year-old Alice to pair with Gal and Nitro in some order. Gal's partner in A must be male, so it's Arvid, making Alice Nitro's partner in B. Nitro must therefore be male, and, by process of elimination, Popsicle is female.

Call whichever towline Madge is on side X, and her partner Martin's towline side Y. Both dogs in pair C are one-year-olds, and so whichever of them is on side X will, with Madge, account for one of the three twosomes in (6). Because these three twosomes are six different dogs (6), one-year-old Nitro in pair B cannot align with this twosome, and so must be on side Y, putting Alice on X. Similarly, because Nitro now forms a twosome with the other pair C dog, Gal cannot align with Nitro and so she is on side X, and Arvid is on Y. Roxie is therefore on Y (4) with Dunce on X. The last twosome from (6) can only be Roxie and Larry, so Larry is Y with Deneb on X.

Pair C must be the two remaining dogs, Tambo and Popsicle, in some order. Popsicle isn't with Madge on X (4) so must be on Y, with Tambo on X. Madge is closer to the sled than Popsicle, so line X is the righthand (top) towline, and Y is the lefthand towline.

The final layout of dogs, with their ages, is below.



Indexing into each dog name by its age spells the message GET MED / IN PAIR. The letters comprising each pair of dogs' names can be arranged to form a brand-name medicine (using the enumerations at the bottom of the page, in order) with a leftover letter for each dog. In order, VIAGRA + L/D, CLARATIN + E/O, PEPTO-BISMOL + A/C, DRAMAMINE + G/T, EXCEDRIN + U/O, BENADRYL + E/R. Leftover letters spell the answer, LEAGUE / DOCTOR.