



# Basket Game

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Questions 1–7

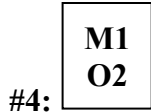
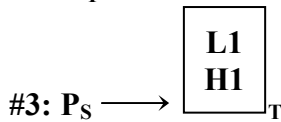
Setup:

- three gift baskets: S T W
- six foods: H1 K1 L1 M1 O2 P2

Conditions:

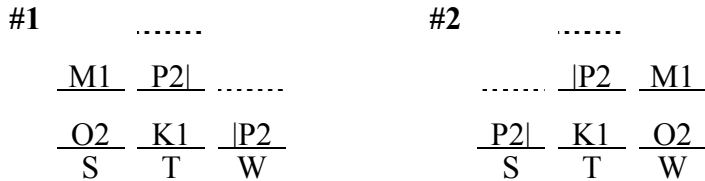
#1: each basket  $\leq 3$  lbs.

#2:  $K_T$

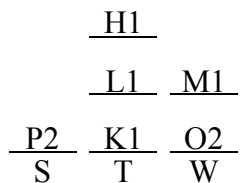


Overview:

Combining the first and fourth conditions, we can infer that whomever the M1O2 basket is for cannot have any other items in his or her basket. As a result, due to the second condition, Tara cannot have M1 or O2 in her basket. Since one basket (M1O2) will be three pounds, and there are five pounds of items remaining, there must be another three-pound basket and one two-pound basket. This is the only way to satisfy both the condition that each basket must be at least two pounds and the first condition. The allocation of pounds to baskets is 3, 3, 2. We can create two molds based on which of Stan and Wendy receives the M1O2 basket.



We can break the second mold up into two solutions. If P2 is placed in Stan’s basket, the third condition is triggered, and we have:





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If P2 is placed in Tara's basket, H1 and L1 must be placed in Stan's basket to satisfy the condition that each basket must be at least two pounds.

$$\begin{array}{ccc} \underline{H1} & \underline{P2} & \underline{M1} \\ \underline{L1} & \underline{K1} & \underline{O2} \\ S & T & W \end{array}$$

- (C) This triggers the two solutions under the mold #2. In both cases, H1 and L1 are part of the same basket.
- (A) This could only happen under mold #1. Therefore, we know that M1O2 comprises Stan's basket. This allows us to eliminate choices B and C. Since his basket is full (per the first condition), we can also eliminate choices D and E. Choice A is left as the correct answer:

$$\begin{array}{ccc} & \underline{L1} & \\ \underline{M1} & \underline{H1} & \\ \underline{O2} & \underline{K1} & \underline{P2} \\ S & T & W \end{array}$$

- (E) This can happen under either mold. Under the first, H1 and L1 must be distributed to Wendy to ensure that her basket is at least two pounds. Under the second mold, H1 and L1 are distributed to Stan. In either case, every basket contains exactly two gifts.

$$\begin{array}{ccc} \underline{M1} & \underline{P2} & \underline{H1} & & \underline{H1} & \underline{P2} & \underline{M1} \\ \underline{O2} & \underline{K1} & \underline{L1} & & \underline{L1} & \underline{K1} & \underline{O2} \\ S & T & W & & S & T & W \end{array}$$

- (A) As stipulated by the allocation of pounds to baskets (3, 3, 2), exactly one gift basket weighs two pounds. Thus, choice A is correct.
- (D) Looking through the choices, D stands out because if Stan's basket didn't contain any two-pound items, it would have to contain the floating H1 and L1. K1 is locked to Tara and M1 is tied to O2. As seen in the second solution for question three, this fully determines which items comprise each person's basket.
- (A) Due to the weight constraints, and the fact that K1 is in Tara's basket, Tara's is the only basket that can contain three items. Whichever of Stan and Wendy does not receive the M1O2 basket must either receive P2 (either by itself, or with one of H1/L1), or both H1 and L1.



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7. (E) This condition change means that whichever of Stan and Wendy does not receive the M1O2 basket must receive P2. P2 cannot be in Tara's basket, since that would violate the first condition. However, P2 also can't be in Stan's basket, since that would trigger the third condition, and in turn, violate the first. Two possible solutions exist:

M1   H/L   L/H

O2   K2   P2  
S       T       W