

Squirreling It Away

Level C

Three squirrels are storing acorns for the winter. There is a pile of 24 acorns for them to store, and they are taking trips back and forth from the pile of acorns to their nests. Each squirrel can carry different amounts of acorns.

- Brown squirrels can carry 2 acorns at a time.
- Gray squirrels can carry 3 acorns at a time.
- Black squirrels can carry 5 acorns at a time.

Depending on how motivated each squirrel was, they would end up with different amounts. For instance, suppose the brown squirrel took 4 trips, the gray squirrel took 2 trips, and the black squirrel took 2 trips. The brown squirrel would end up with 8 acorns, the gray squirrel would have 6 acorns, and the black squirrel would have 10. Between them, they took every one of the 24 acorns.

How many different ways could the three squirrels divide up the 24 acorns without having any left over? Each squirrel must carry his maximum load each trip.

How do you know that you have found all the ways?

