Squirreling It Away

Level A

Austin had a bag of 17 acorns. Eight squirrels came up to him. He gave each squirrel an acorn. Then five more squirrels came up to him and he gave away one acorn to each of them. How many more squirrels can he still feed?

Show how you figured it out.

How do you know you have the right answer?

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Level B

Austin likes to watch squirrels find and store acorns for the winter. Brown squirrels can carry two acorns at a time. Gray squirrels can carry three acorns at a time, and black squirrels can carry five acorns at a time. There is a pile of 24 acorns.

How many trips would a brown squirrel need to make to store all of the acorns in the pile?

How many trips would a gray squirrel need to make to store all of the acorns in the pile?

How many trips would a black squirrel need to make to store all of the acorns in the pile?

If all three squirrels worked together to store the acorns, how many trips would the squirrels need to make to store all of the acorns?

Explain your solution.

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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?

Squirreling It Away

Level D

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.

The squirrels are rather smart. They realize that they can carry less than their maximum loads. How many different ways could the squirrels divide up 24 acorns?

Explain your solution.

Squirreling It Away

Level E

Three squirrels are storing acorns for the winter. There is a pile of 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.

Determine a generalization for finding how 3 squirrels can divide up any given number of acorns.

Explain your solutions.

