# How Many Ghosts Do You See?

Instructions:

- This lesson builds upon the Pascal's Pumpkins or Pascal's Triangle experience.
- Explain to students that the question asks how many different ways they can spell GHOSTS using the letter arrangement on the handout.
- Use an overhead to model the process. It is important that students understand that they can only move to one of the two pumpkins directly below any pumpkin. This follows Pascal Pumpkin rules. There are, however, many different ways of spelling GHOSTS.
- Model two DIFFERENT ways to spell GHOSTS following these rules.
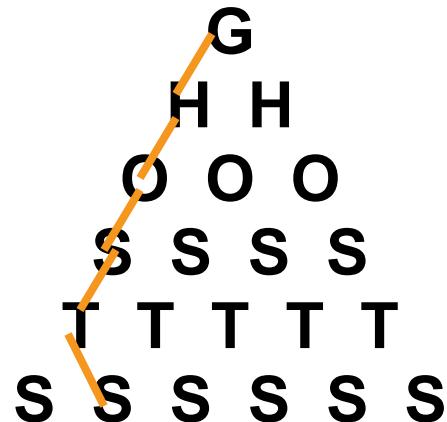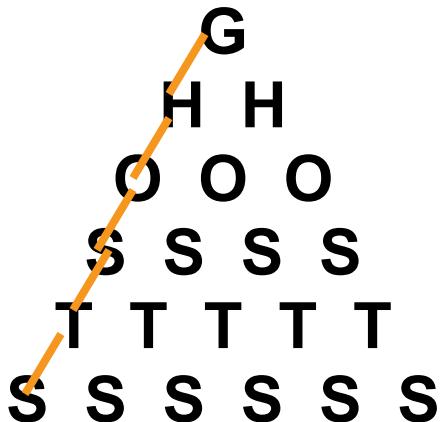
- Encourage students to find all of the others. They will need to use a very orderly approach (systematic counting) to actually come up with the correct answer.   Supply students with 2 copies of the Ghosts recording sheet and ask them to mark one path in each box.
- ANSWER: Since GHOSTS has 6 letters, there will be 32 different ways of spelling GHOSTS since 32 is the sum of the numbers in the 6th row of Pascal's triangle.
- CHALLENGE: Superimpose Pascal's Triangle on the GHOSTS triangle and challenge students to find one way to get to each end pumpkin, 5 ways to get to the next pumpkin and 10 ways to get to each inner pumpkin.

How many GHOSTS do you see?

G

H H

O O O
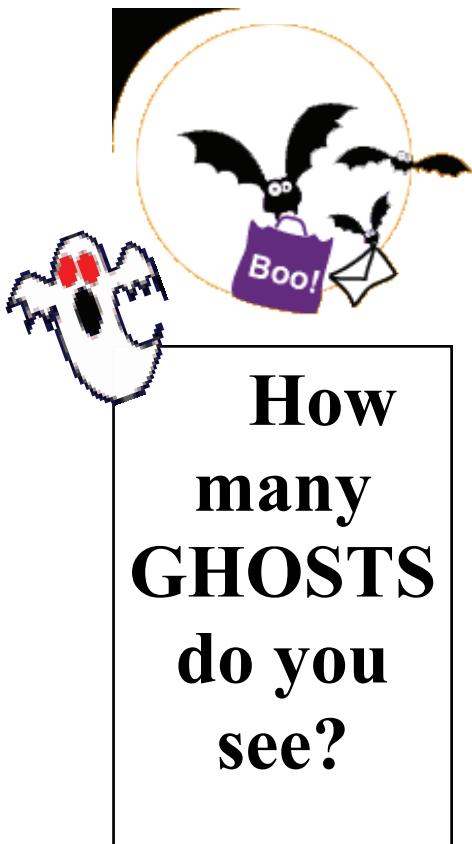
S S S S

T T T T T

S S S S S S

How many GHOSTS do you see?
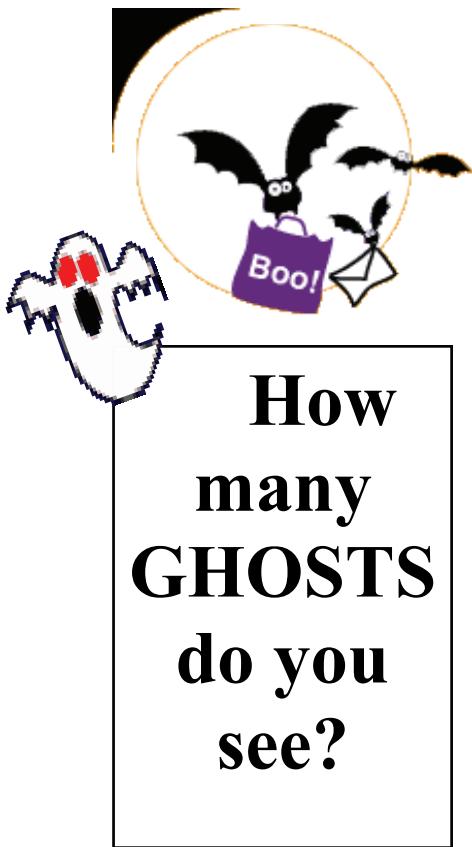
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              1
            1   1
          1   2   1
        1   3   3   1
      1   4   6   4   1
    1   5  10  10   5   1
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How Many Ghosts Do You See?
Recording Sheet

Name:

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      G            G            G            G
     H H          H H          H H          H H
    O O O        O O O        O O O        O O O
   S S S S      S S S S      S S S S      S S S S
  T T T T T    T T T T T    T T T T T    T T T T T
 S S S S S S  S S S S S S  S S S S S S  S S S S S S
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      G            G            G            G
     H H          H H          H H          H H
    O O O        O O O        O O O        O O O
   S S S S      S S S S      S S S S      S S S S
  T T T T T    T T T T T    T T T T T    T T T T T
 S S S S S S  S S S S S S  S S S S S S  S S S S S S
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      G            G            G            G
     H H          H H          H H          H H
    O O O        O O O        O O O        O O O
   S S S S      S S S S      S S S S      S S S S
  T T T T T    T T T T T    T T T T T    T T T T T
 S S S S S S  S S S S S S  S S S S S S  S S S S S S
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      G            G            G            G
     H H          H H          H H          H H
    O O O        O O O        O O O        O O O
   S S S S      S S S S      S S S S      S S S S
  T T T T T    T T T T T    T T T T T    T T T T T
 S S S S S S  S S S S S S  S S S S S S  S S S S S S
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