

Penny Puzzles

Geometric arrangements of coins can serve as the basis for many puzzles. One popular type of coin puzzle involves starting with a given configuration of pennies and then sliding one penny at a time to get a new configuration of coins in the fewest possible moves.



to



or

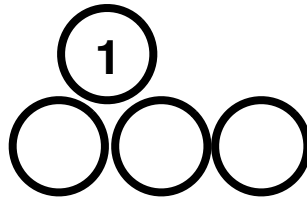


to

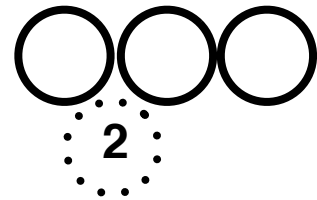
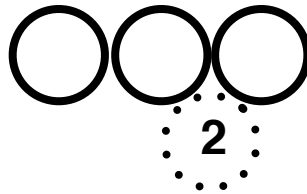
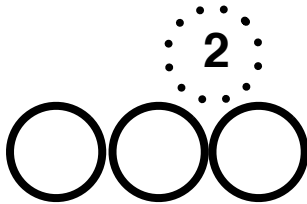


The rule for moving each penny is that each move consists of sliding a single penny to a new location. When you move a penny to the new location the penny you move must **end up touching at least two other pennies**.

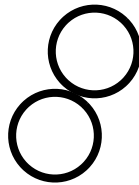
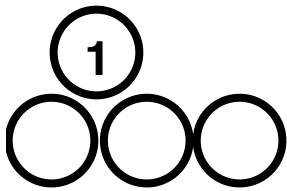
The following diagrams show **moves that ARE ALLOWED** and moves that are **NOT allowed**



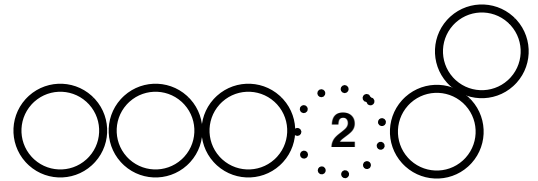
You can move penny numbered 1 to any of the locations numbered 2 because the penny you move will **touch 2 pennies at the new location** it is moved to.



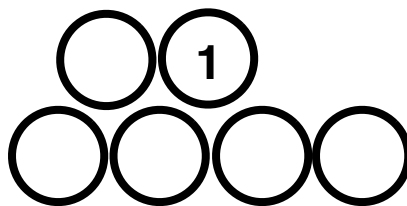
You can move a penny to “fill in a hole” because the penny you move **will touch 2 pennies at the new location** it is moved to.



OK Move--->



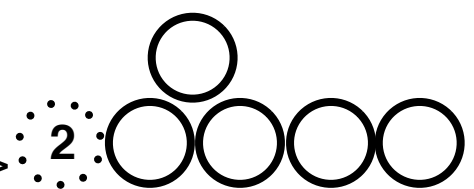
The following diagrams show moves that are **NOT ALLOWED**



You **CANNOT** move penny number 1 to the end of the bottom row because the penny you move **will NOT touch 2 pennies at the new location** it is moved to.



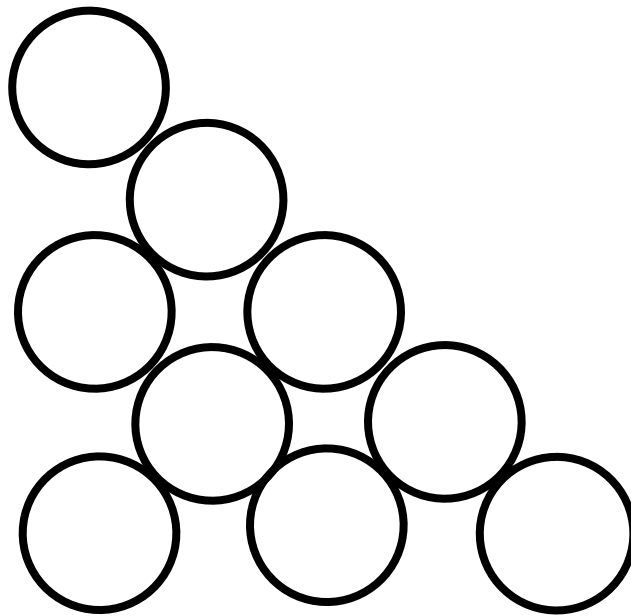
<---- BAD MOVES---->



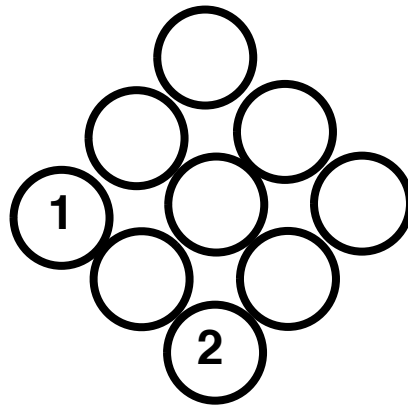
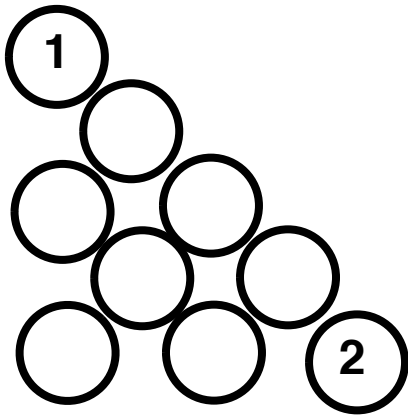
Make a Square



Place a penny inside each circle below. Move 1 penny at a time to rearrange the pennies to form a square in two moves. Each move consists of sliding a single penny to a new location. When you move a penny to the new location the penny you move must **end up touching at least two other pennies**.

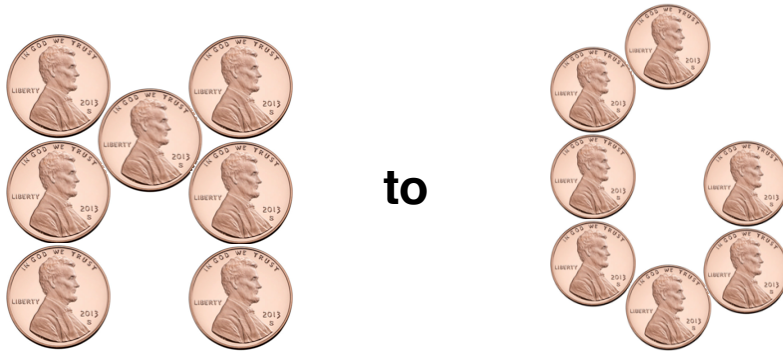


Make a Square Solution



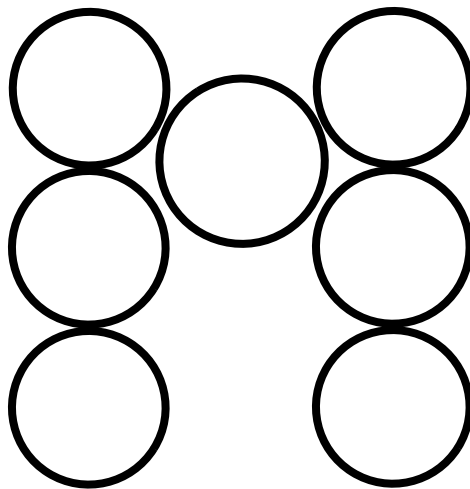
The answer is shown with the coins at a 45 degree angle. That is the correct position after 2 moves based on the starting position given. Some students will not see that this formation as a square until they rotate the paper to have the orientation shown on the right. If the coins had been placed in a pyramid format the moves would have been easy to see.



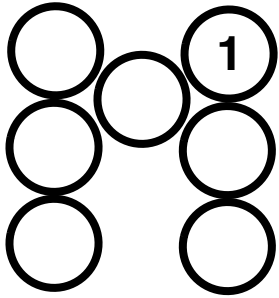


M to G

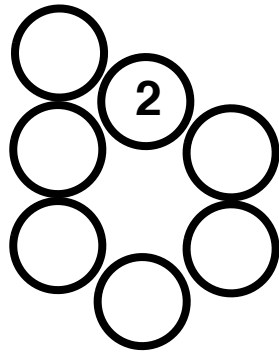
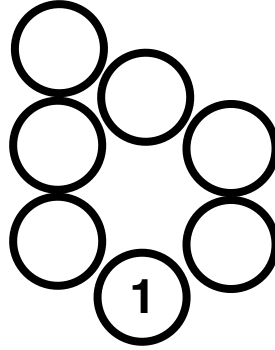
Place a penny in each circle below. Move one penny at a time to rearrange the H into the letter G in **2 moves**. Each move consists of sliding a **single** penny to a new location. When you move a penny to the new location the penny you move must **end up touching at least two other pennies**.



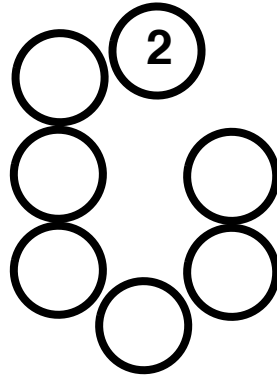
M to G solution



move 1



move 2



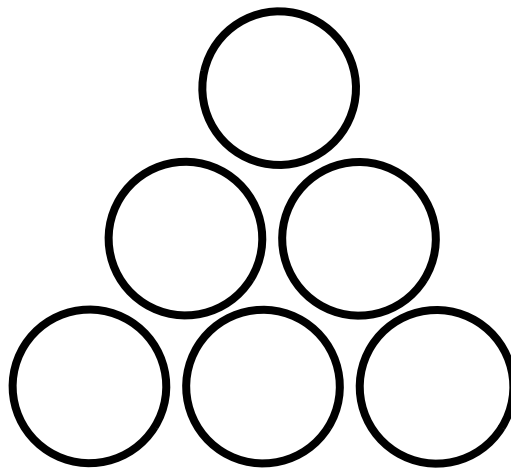


to

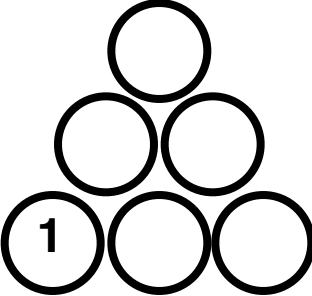


Penny Pyramid 1

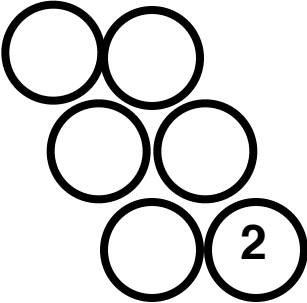
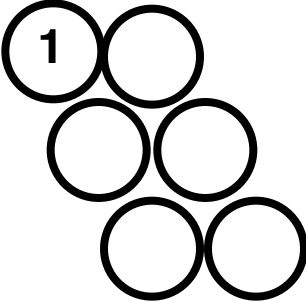
Place a penny in each circle below. This forms a pyramid that faces up. Move 1 penny at a time to rearrange the pennies to form a pyramid that faces down in **two moves**. Each move consists of sliding a **single** penny to a new location. When you move a penny to the new location the penny you move must **end up touching at least two other pennies**.



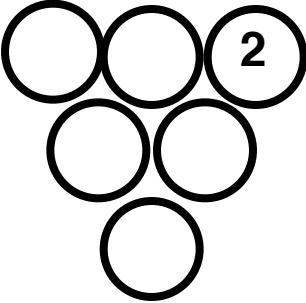
Penny Pyramid 1 solution

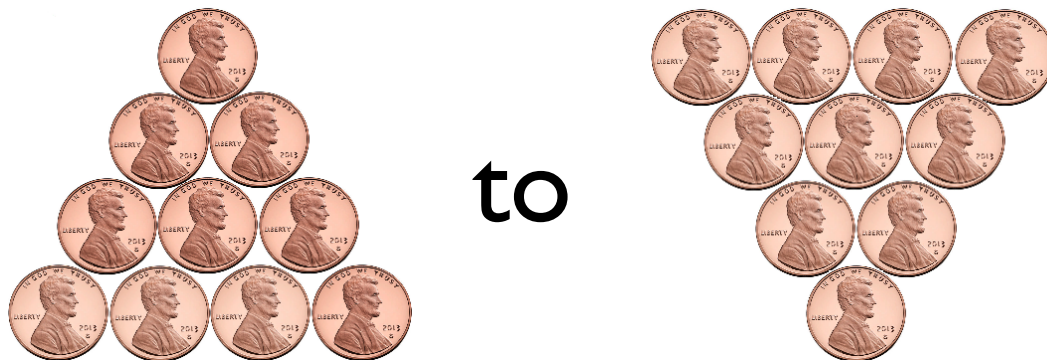


step 1--->



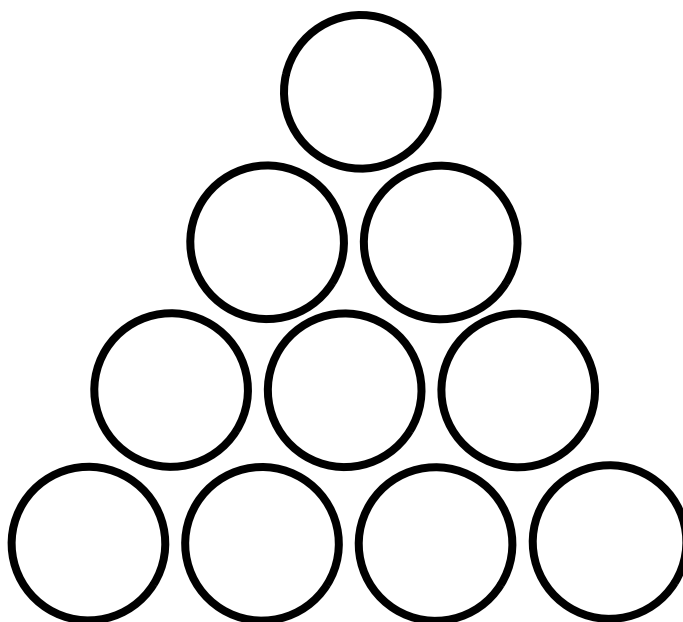
step 2--->



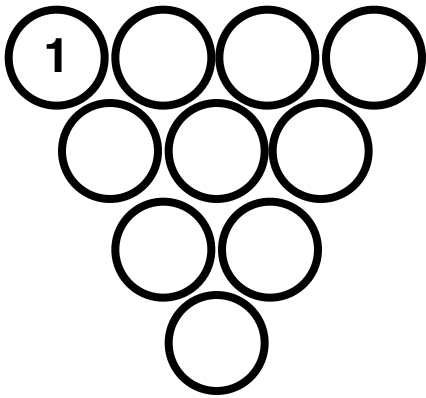


Penny Pyramid 2

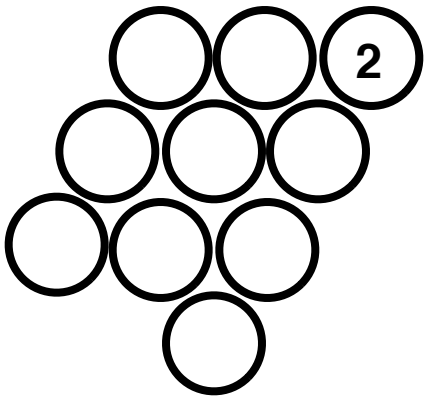
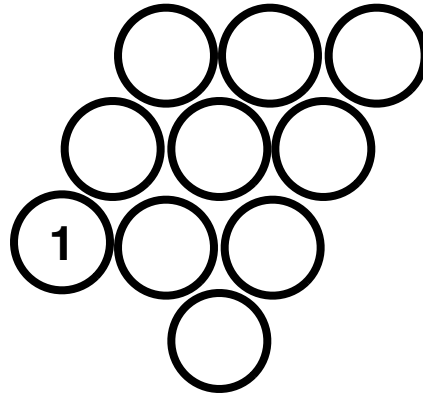
Place a penny in each circle below. This forms a pyramid that faces up. Move 1 penny at a time to rearrange the pennies to form a pyramid that faces down in **three moves**. Each move consists of sliding a **single** penny to a new location. When you move a penny to the new location the penny you move must **end up touching at least two other pennies**.



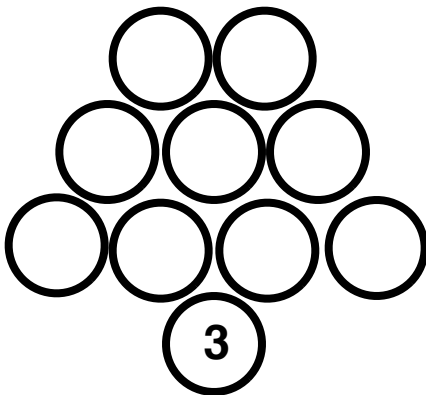
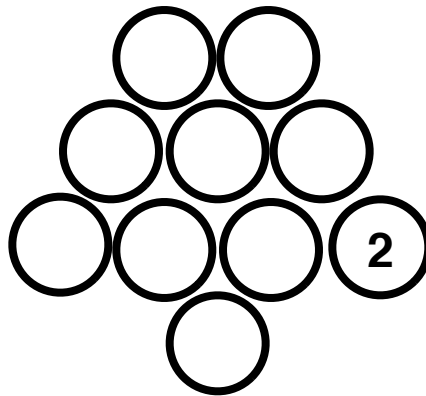
Penny Pyramid 2 solution



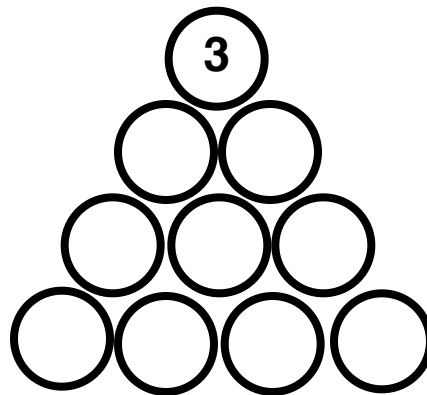
step 1--->



step 2--->



step 3--->



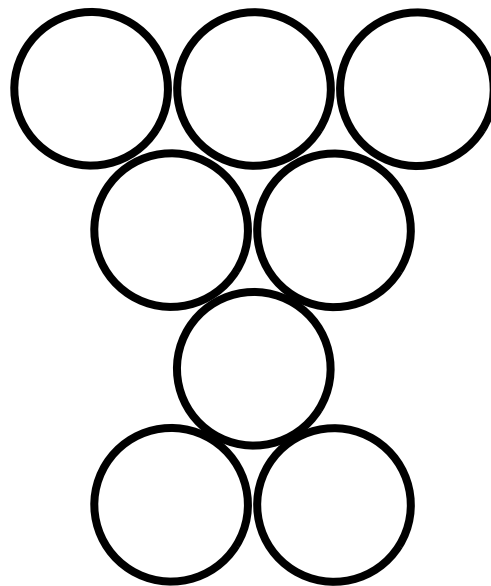


to

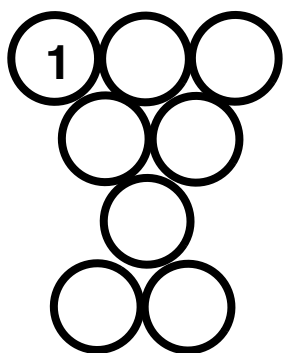


Turn It Over

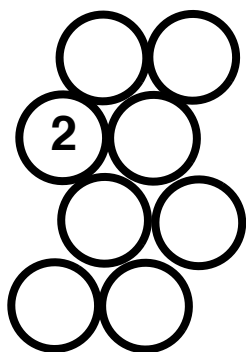
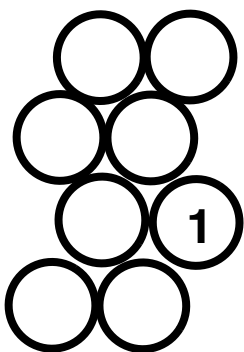
Place a penny in each circle below. Move one penny at a time to rearrange the figure on the left to form the figure shown on the right above in **2 moves**. Each move consists of sliding a **single** penny to a new location. When you move a penny to the new location the penny you move must **end up touching at least two other pennies**.



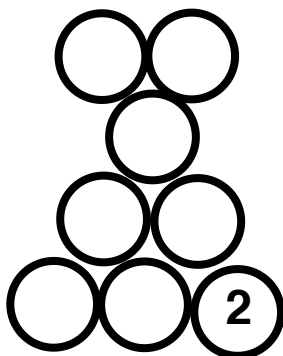
Turn It Over Solution

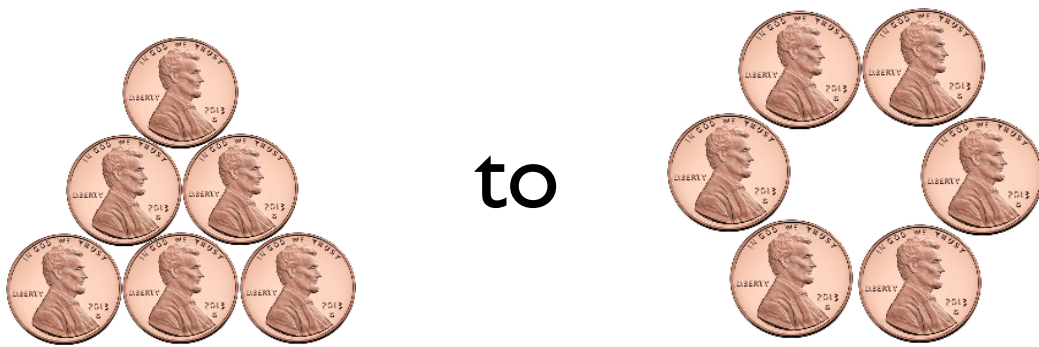


to



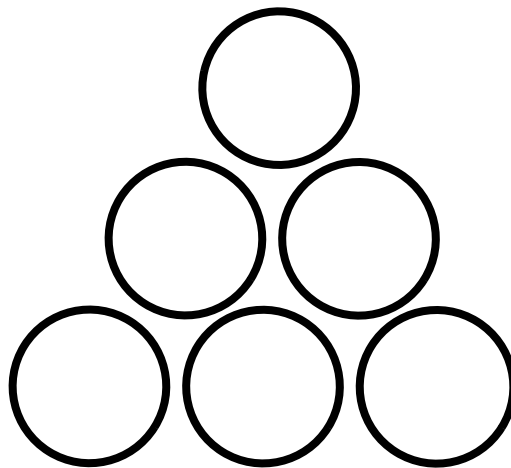
to



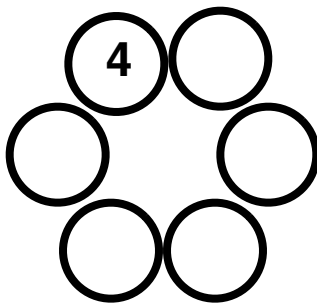
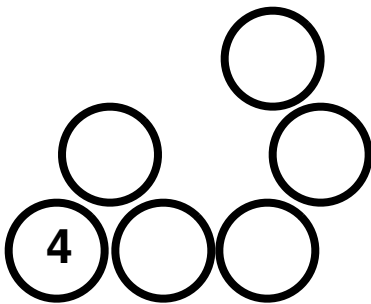
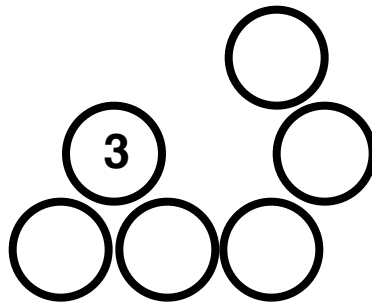
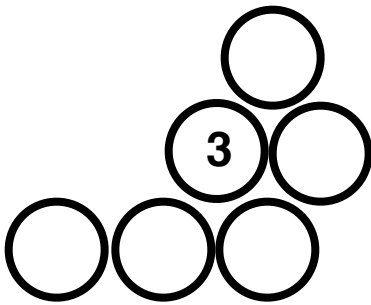
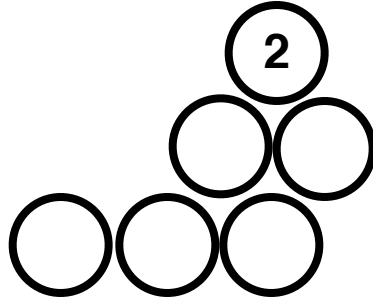
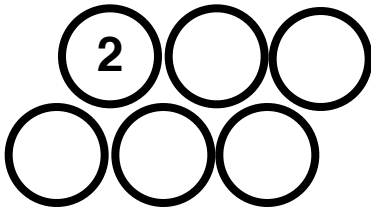
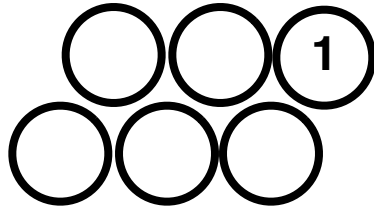
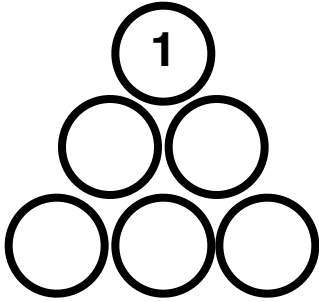


Make a Hexagon

Place a penny in each circle below. Move 1 penny at a time to rearrange the pennies to form a hexagon in **four moves**. Each move consists of sliding a **single** penny to a new location. When you move a penny to the new location the penny you move must **end up touching at least two other pennies**.



Make a hexagon solution



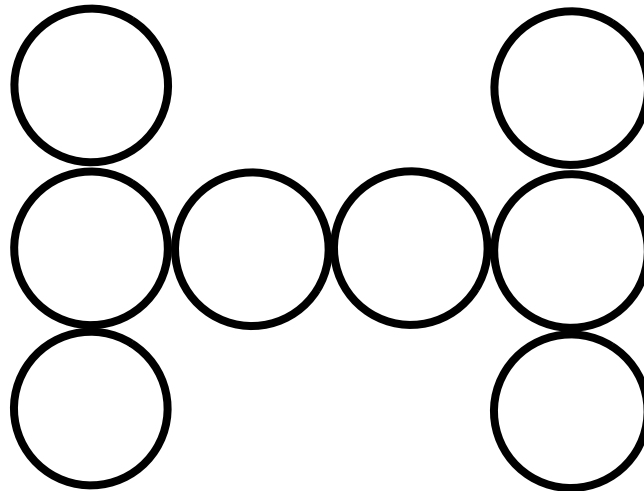


to

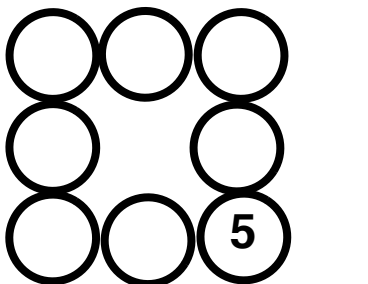
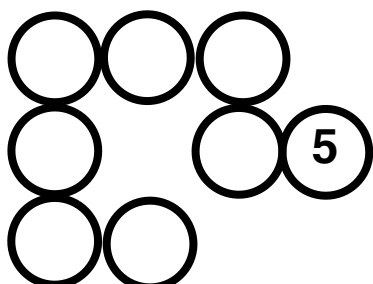
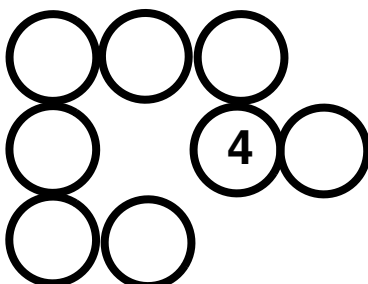
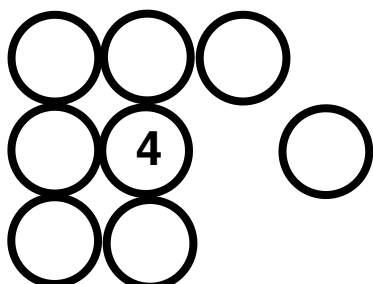
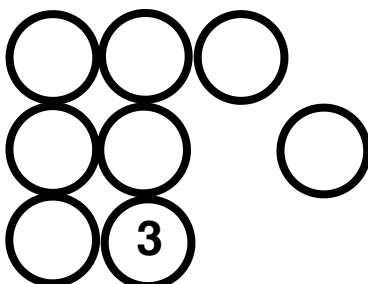
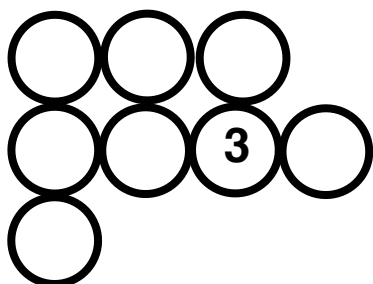
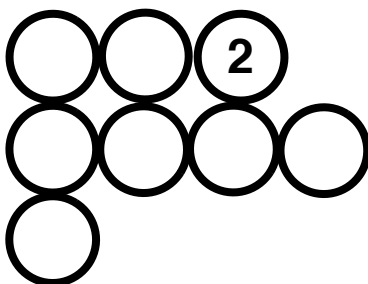
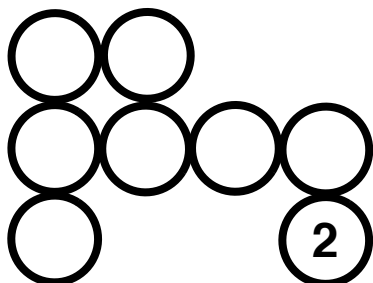
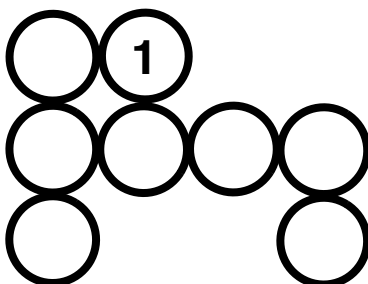
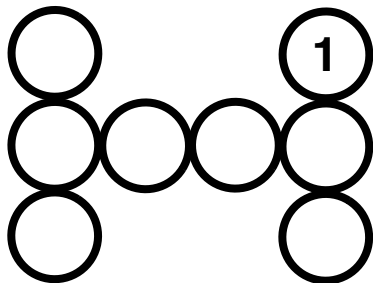


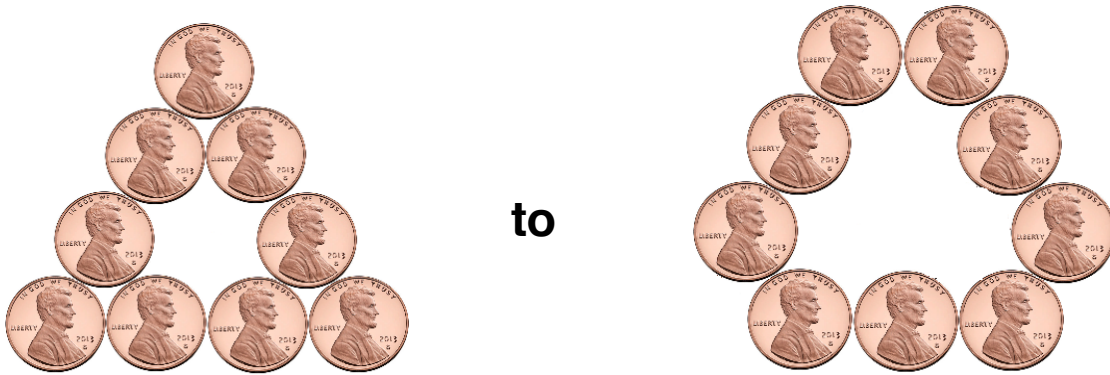
H to O

Place a penny in each circle below to form an H. Move one penny at a time to rearrange the pennies to form the figure O shown in **4 moves**. Each move consists of sliding a **single** penny to a new location. When you move a penny to the new location the penny you move must **end up touching at least two other pennies**.



H 2 O Solution

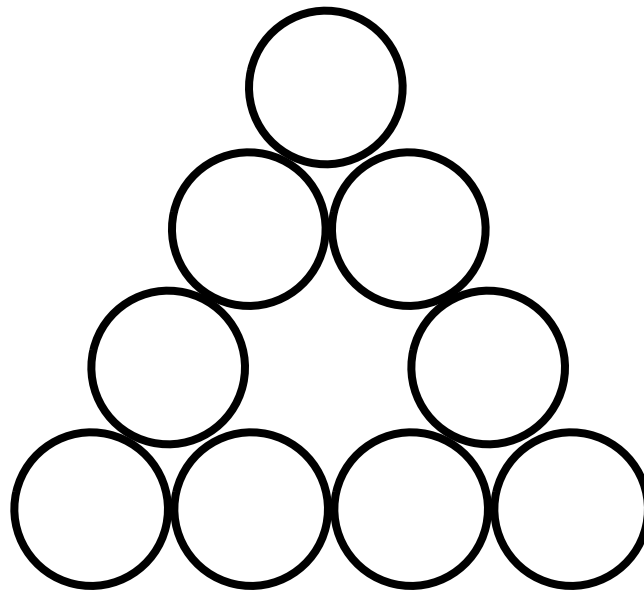




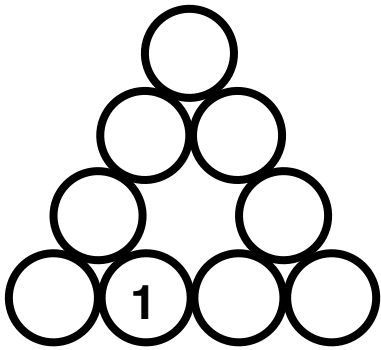
to

Round The Corners

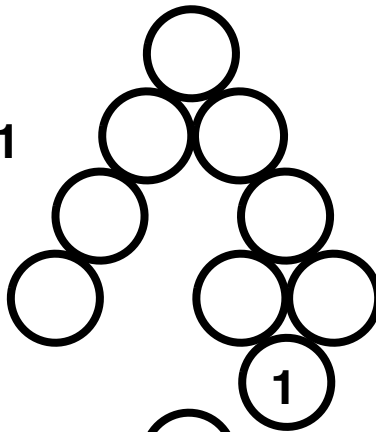
Place a penny in each circle below. Move one penny at a time to rearrange the figure on the left to form the figure on the right in **4 moves**. Each move consists of sliding a **single** penny to a new location. When you move a penny to the new location the penny you move must **end up touching at least two other pennies**.



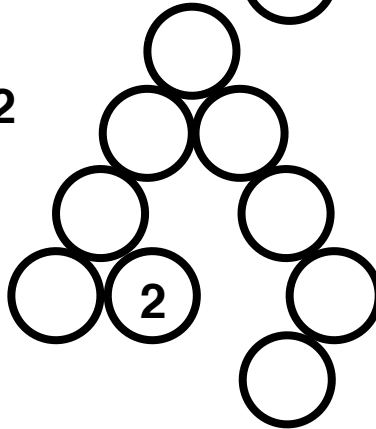
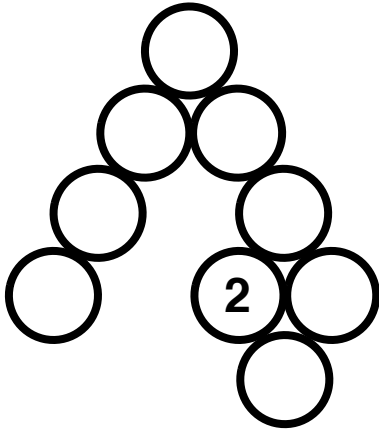
Round The Corners Solution



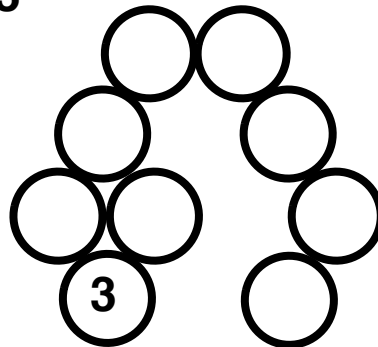
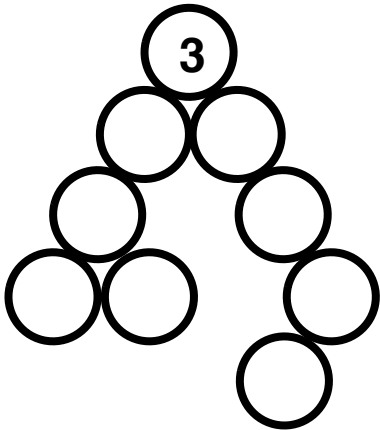
move 1



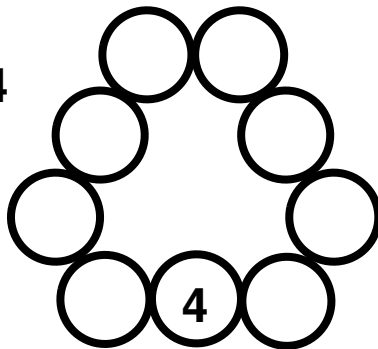
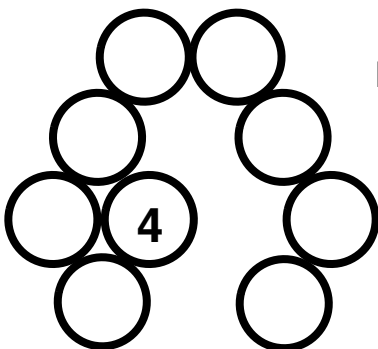
move 2



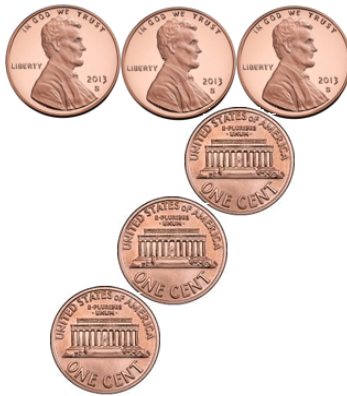
move 3



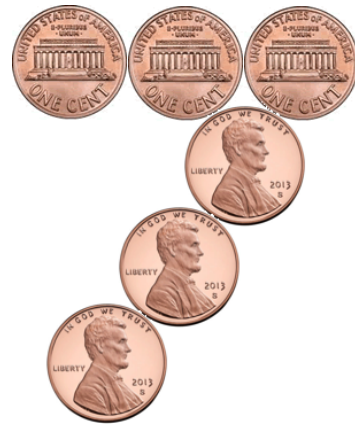
move 4



7 to 7



to

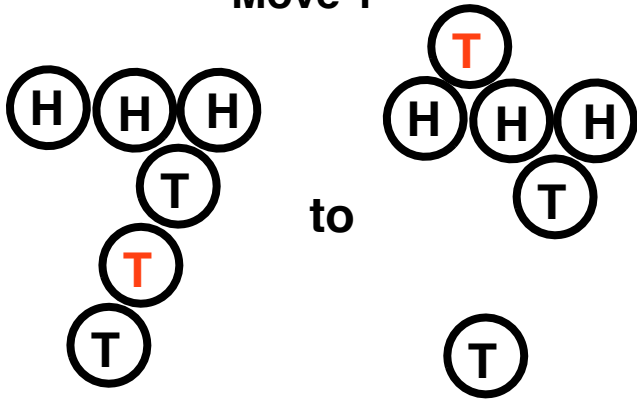


Place a real penny on each penny below. Move one penny at a time to rearrange the figure on the left to form the figure on the right in **5 moves**. Each move consists of sliding a **single** penny to a new location. When you move a penny to the new location the penny you move must **end up touching at least two other pennies**.

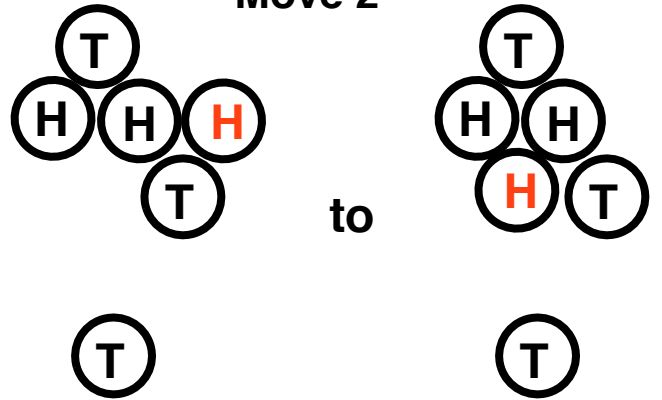


7 to 7 solution

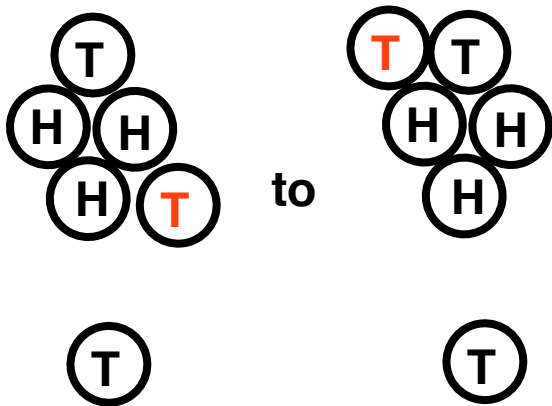
Move 1



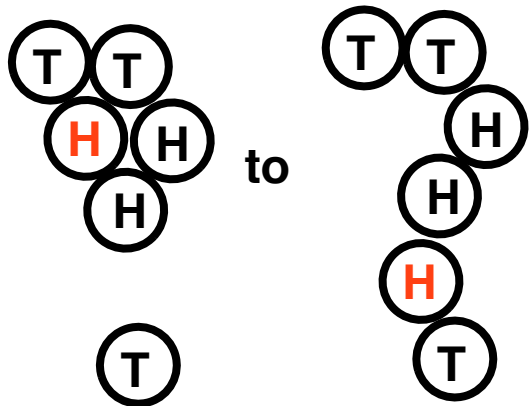
Move 2



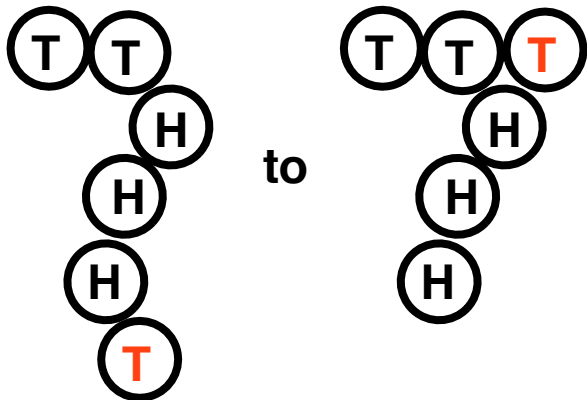
Move 3



Move 4



Move 5



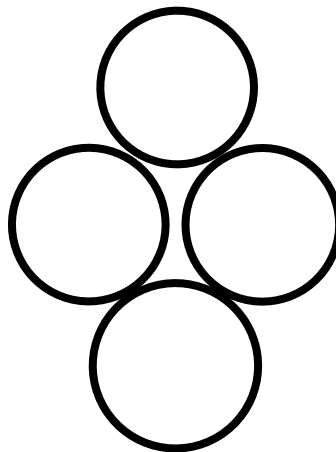


to

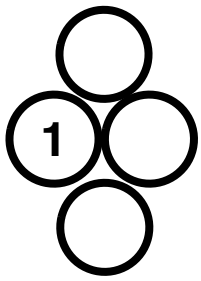


Get in Line

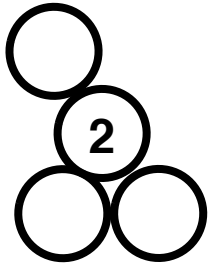
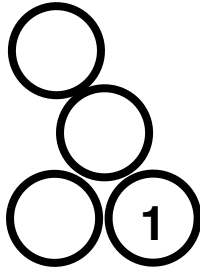
Place a penny in each circle below. Move one penny at a time to rearrange the pennies to form a straight line in **4 moves**. Each move consists of sliding a **single** penny to a new location. When you move a penny to the new location the penny you move must **end up touching at least two other pennies**.



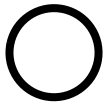
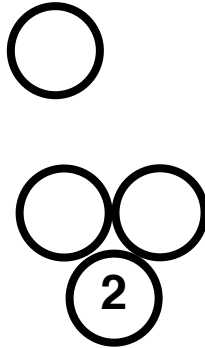
Get in Line Solution



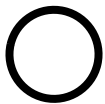
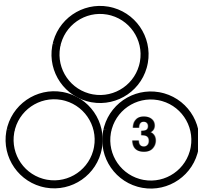
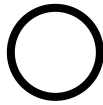
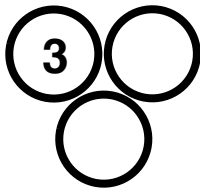
move 1



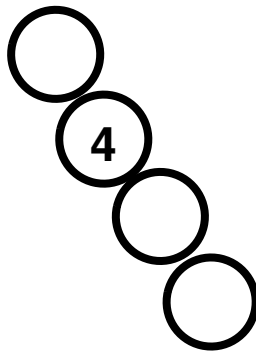
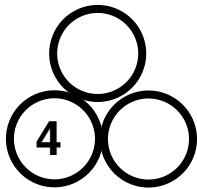
move 2

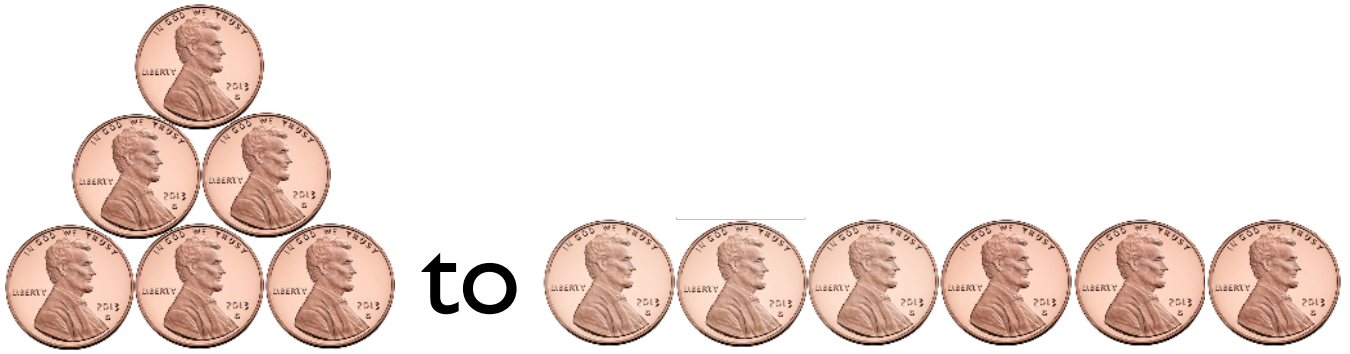


move 3



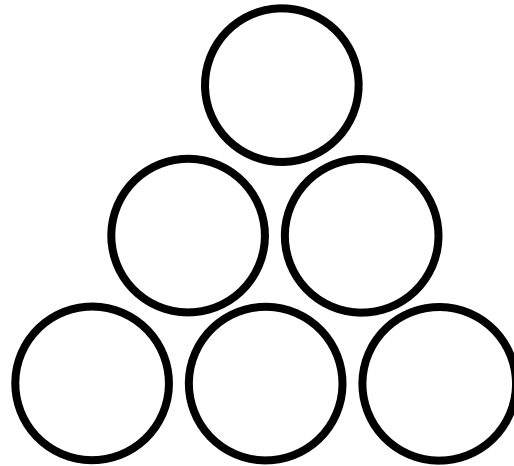
move 4





6 in a Row

Place a penny in each circle below. Move 1 penny at a time to rearrange the pennies to form a row of 6 pennies in **7 moves**. Each move consists of sliding a **single** penny to a new location. When you move a penny to the new location the penny you move must **end up touching at least two other pennies**.



6 in a Row Solution

