



<https://sites.google.com/site/kivalligsciencecommunity/kivallig-math-month>
<http://ksosciencemath.wikispaces.com/Math+Resources>

Aggammuuqtuq Math is a “*Hands-on at Home*” program containing activities that encourage parental involvement. Copy and laminate the instruction cards and include them in a zip-lock with any materials that the activities require. Assign students to take them home during Math Month (January) or throughout the year. Aggammuuqtuq Math activities also work well as classroom centers and group work activities.



Coin Puzzles





Coin Puzzles

This collection of activities includes coin puzzles suitable for students in grades 4—12. The puzzles are organized from simple to more difficult and all utilized simple discs like counters, bingo chips or coins. These activities encourage many of the WNCPC math processes including: visualization, reasoning, communication, and problem solving, as well as the IQ principles of Qanuqtuurniq (innovation), Tunnganarniq (inclusion), Pilimmaksarniq (hands-on learning), and Piliriqatigiinniq (collaboration).

Solutions are provided near the end of the card series. The solutions are for teacher reference only. Sharing solutions with students may limit their perseverance and ultimate enjoyment of the puzzles.

For more puzzles of this type check out the following web links:

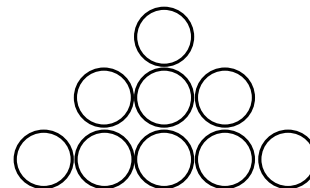
- www.puzzles.com/puzzleplayground/Coins.htm
- www.ageofpuzzles.com/Puzzles/CoinPuzzles.htm



Coin Puzzle #1

Set-up

Arrange nine counters or pennies in the shape of a triangle as shown in the diagram on the right.



The Challenge

Move the coins by sliding them to a new position. Change the triangle into a square by moving the minimum of the coins.

- Can you figure out how to do this? How many moves does it take you? Show your parents.
- Ask your other family members to try as well.
- Show your teacher your solution when you go to school.



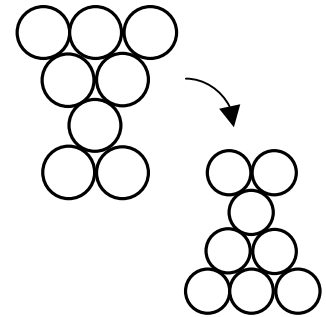
Coin Puzzle #2

Set-up

Using 8 similar coins or counters, make the cup shown in the diagram.

The Challenge

Slide the coins, one at a time, to a new position so that the cup is standing upside-down.



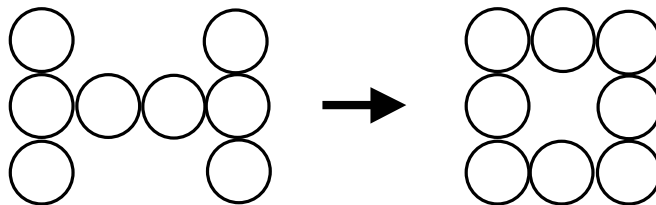
- Can you figure out how to do this? How many moves does it take you? Show your parents.
- Ask your other family members to try as well.
- Show your teacher your solution when you go to school.



Coin Puzzle #3

Set-up

Arrange eight pennies or counters on the table to form the letter “H” as shown in the diagram on the right.



The Challenge

Turn the letter “H” into a letter “O” as shown above.

A move consists of sliding one coin to a new position where it must touch two other coins.

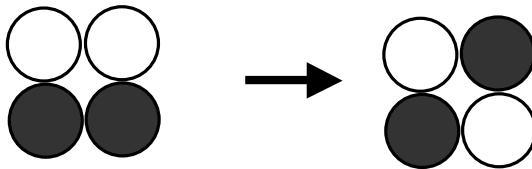
- Can you figure out how to do this? How many moves does it take you? Show your parents.
- Ask your other family members to try as well.
- Show your teacher your solution when you go to school.



Coin Puzzle #4

Set-up

Take four pennies or four two-colour counters and make a square as shown in the first diagram; two coins - heads up in the top row, and the other two - tails up in the bottom row.



The Challenge

Sliding two adjoining coins at a time (no rotating or turning allowed), transform the first square into the second square, shown above. The final square will not be formed exactly in the same spot as the start square.

- Can you figure out how to do this? How many moves does it take you? Show your parents.
- Ask your other family members to try as well.
- Show your teacher your solution when you go to school.



Coin Puzzle #5

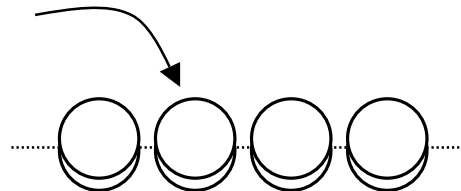
Set-up

Arrange eight pennies or counters in a row as shown in the diagram below.



The Challenge

Make four stacks of two counters each, in only four moves.



A move consists of jumping over two piles of counters and landing on the next pile. (A pile may consist of one or two counters only).

- Can you figure out how to do this? How many moves does it take you? Show your parents.
- Ask your other family members to try as well.

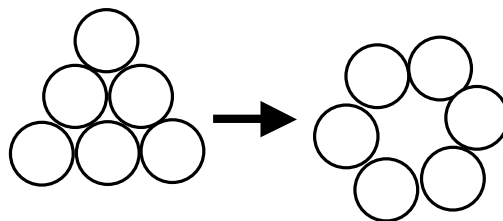


- Show your teacher your solution when you go to school.

Coin Puzzle #6

Set-up

Place six pennies or counters on the table to form a triangle as shown in the diagram.



The Challenge

By sliding one penny at a time, move them to form the shape on the far right. You can only move one penny at a time, without disturbing any other penny. When you move a penny, it has to be moved to a position where it touches two others.

The pennies have to stay flat on the table at all times

- Can you figure out how to do this? How many moves does it take? Show your parents.
- Ask your other family members to try as well.



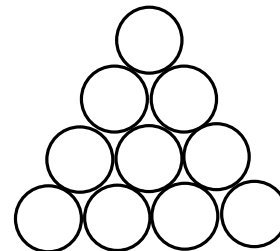
- Show your teacher your solution when you go to school.



Coin Puzzle #7

Set-up

Arrange ten counters or pennies in the shape of a triangle as shown in the diagram on the right.



The Challenge

1. How many different equilateral triangles can you count in the diagram?
2. Remove the minimum number of counters so that no equilateral triangles remain.

- Can you figure out how to do this? How many moves does it take you? Show your parents.
- Ask your other family members to try as well.
- Show your teacher your solution when you go to school.



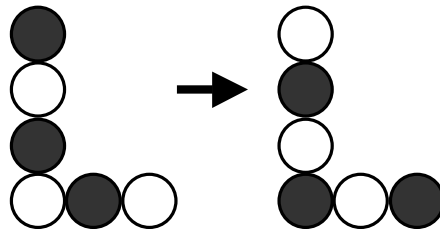
Coin Puzzle #8

Set-up

Take two-colour counters or coins (heads & tails) and arrange them in the pattern as shown in the first diagram.

The Challenge

Sliding two adjoining coins at a time (no rotating or turning allowed), transform the first pattern into the second pattern, shown above. The final pattern will not be formed exactly in the same spot as the start pattern. Try to do this in the fewest possible number of moves.

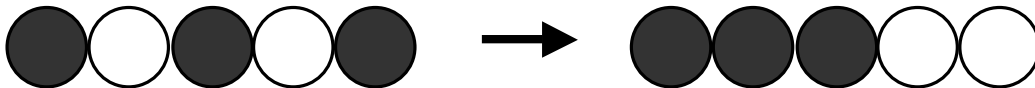


- Can you figure out how to do this? How many moves does it take you? Show your parents.
- Ask your other family members to try as well.
- Show your teacher your solution when you go to school.





Coin Puzzle #9



Set-up

Arrange 5 two-colour counters or coins (heads & tails) as shown above.

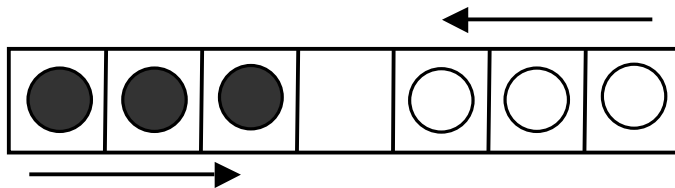
The Challenge

The object is to transform the pattern on the left to the pattern on the right in the fewest possible number of moves.

A move consists of sliding two adjoining (*side by side*) different coloured counters to different position along the imaginary line shown in the illustration. When moving counters they must remaining touching each other and may not be rotated or turned. Gaps in the line are allowed at the end of any move except the final one. After the last move the counters need not necessarily be at the same spot on the imaginary line that they occupied at the start.



Coin Puzzle #10



Set-up

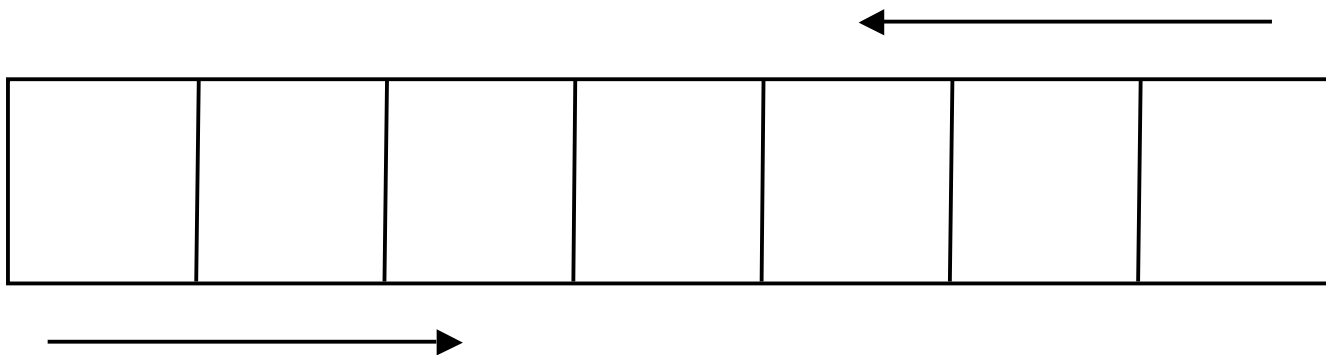
Arrange six two-colour counters or pennies (heads & tails) on the game board provided as shown in the diagram above.

The Challenge

The three red counters and the three yellow counters have to change positions. The red counters can only be moved to the right and the yellow ones can only be moved to the left. A counter can move into an empty square if it is beside the empty square. A counter can jump over a different coloured counter as long as there is an empty square to land in. A counter cannot jump over two counters or over a counter of the same colour.



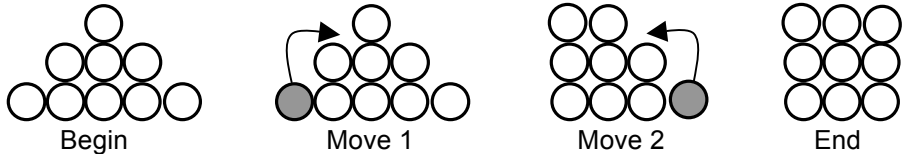
Game Board For Coin Puzzle #10



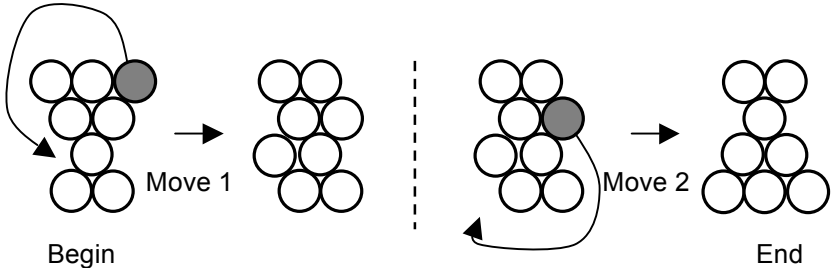
- Can you figure out how to do this? How many moves does it take you? Show your parents.
- Ask your other family members to try as well.
- Show your teacher your solution when you go to school.



Solution--Coin Puzzle #1

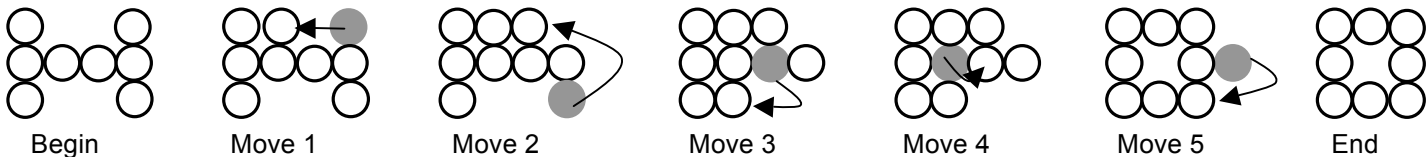


Solution--Coin Puzzle #2

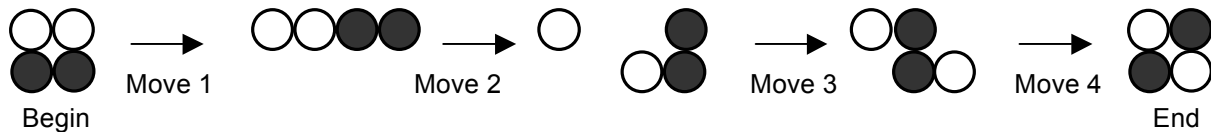




Solution--Coin Puzzle #3



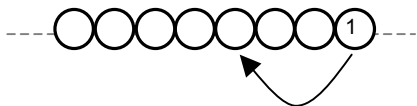
Solution--Coin Puzzle #4



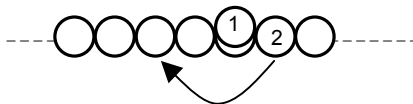


Solution--Coin Puzzle #5

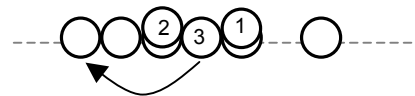
Move 1



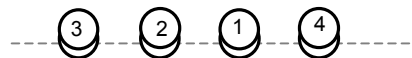
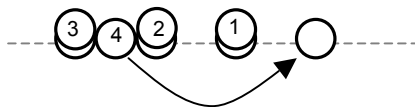
Move 2



Move 3

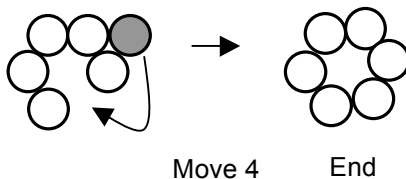
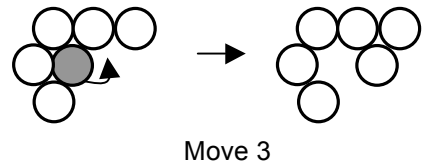
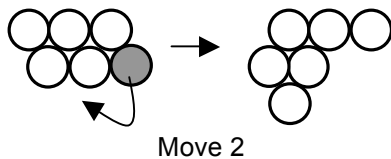
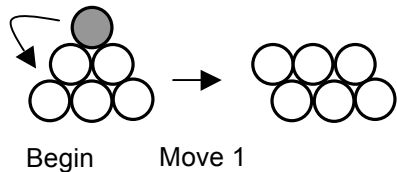


Move 4



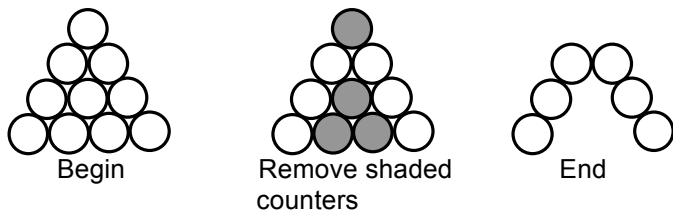


Solution--Coin Puzzle #6

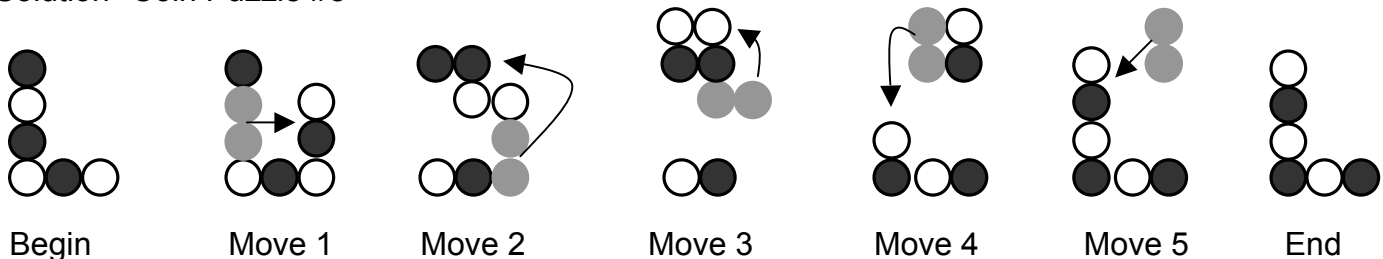




Solution--Coin Puzzle #7

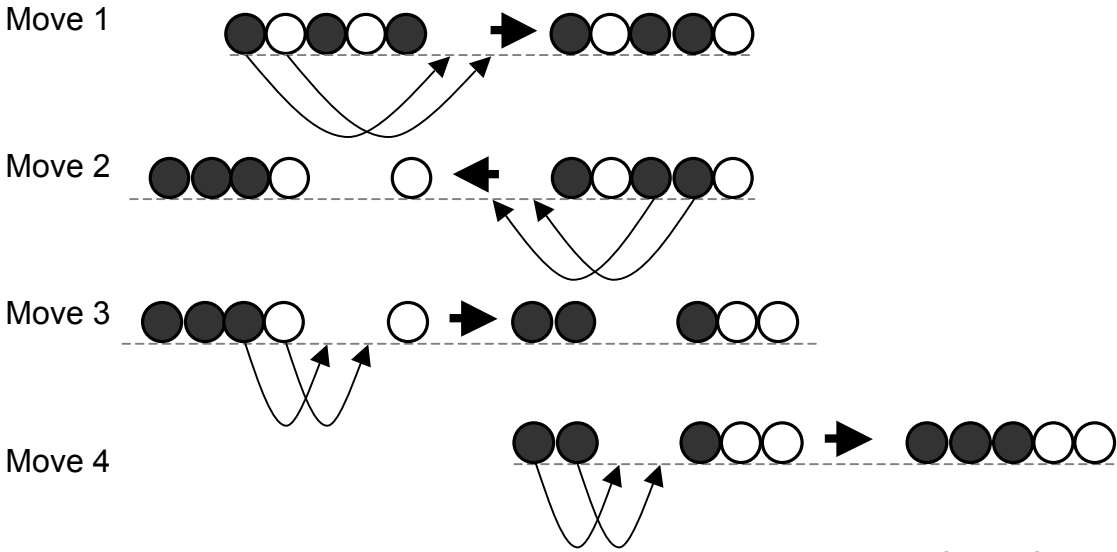


Solution--Coin Puzzle #8



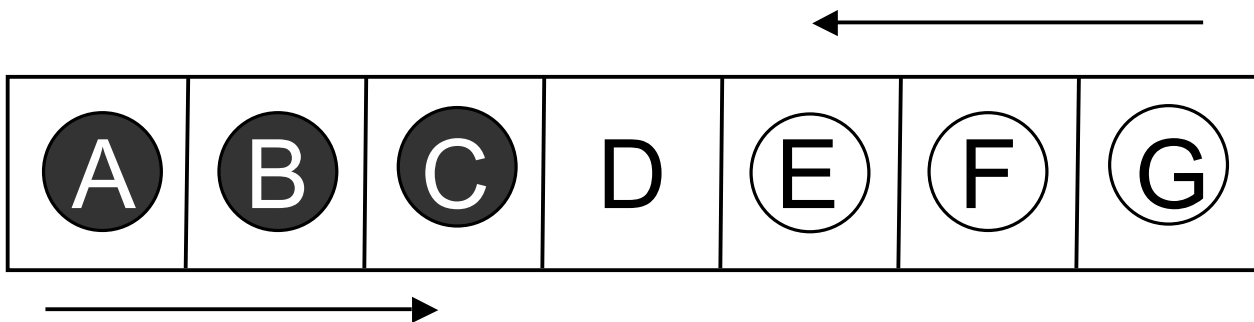


Solution--Coin Puzzle #9





Solution--Coin Puzzle #10



Moves:

1. E → D
2. C → E
3. B → C
4. D → B

5. F → D
6. G → F
7. E → G
8. C → E

9. A → C
10. B → A
11. D → B
12. F → D

13. E → F
14. C → E
15. D → C