


In other words, all gentlemen have as the main fan of their hand a 16-points fan consisting of three pure chows shifted by step one, two or three. Every gentleman is waiting for the tile left in hand. Since the lady is 72 points away, the strategy of each gentleman is to either win the deal and the title, or not give mahjong to the other gentlemen neglecting Mrs. Hudson. It was Lestrade who chose to deal a "safe" discard directly into Mrs. Hudson's "Hu".

Question 1: Please, provide Mrs. Hudson's hand (both the melded and concealed parts) under two conditions (considered as a whole):

- her hand has a 3-sided wait leading to a hand containing a 16-points fan and consisting of three pure chows shifted strictly by step one for one waiting tile, by step two for the other waiting tile and by step three for the third waiting tile

- her winning hand contains a "Tile Hog" of 

Question 2: Who won the game?

[Hint](#)

[Solution](#)



4-2. Mrs. Hudson's Record

Sherlock Holmes and Dr. Watson were away from 221B Baker Street for almost a month. They were involved in trapping some major criminals. Meanwhile, Mrs. Hudson attended her first MCR tournament. One hand she won was a tremendous success. Dr. Watson bought the newspaper "Mahjong News" and began to read, "Mrs. Hudson, MCR tournament debutant, has managed to collect a 16-point hand consisting **only** of 1-point fans!" "Sherlock!" he asked Mr. Holmes. "Is it really possible?"

"Watson, It's rather elementary!" answered Holmes and began to draw the hand.

Question: Please, re-construct Mrs. Hudson's hand.

[Hint](#)

[Solution](#)



4-3. Mrs. Hudson's New Record

After Sherlock Holmes drew a list of fans and the approximate hand of Mrs. Hudson, consisting of 16 one-point fans (see [4-2. Mrs. Hudson's Record](#)), he turned to Dr. Watson, "Watson, do you want to know which hand will be discussed in the newspaper tomorrow?"

"But, how??" Watson's amazement had no bounds.

"Oh, it's rather elementary, my dear friend!" I just assume that tomorrow Mrs. Hudson will be able to repeat her record, but since she already collected her hand on 1-point fans, this time it will be 2-point fans.

Question: Please, construct a hand consisting only of 2-point fans. Try to find a solution for at least six of these fans.

[Hint](#)

[Solution](#)



4-4. N-Point Extensions of Mrs. Hudson's Record

After Mrs. Hudson returned from the MCR-tournament where she managed to collect a winning hand containing solely 1-point and 2-point fans, she decided in a solitaire mode to collect other hands consisting purely of 'N'-point fans.

"Please, try 6-point, 8-point, and 64-points. Others are not interesting to solve," proposed Sherlock Holmes to Mrs. Hudson.

Question: Please, construct a hand consisting only of four 6-point fans, a hand consisting only of four 8-point fans and a hand consisting only of three 64-point fans.

[Hint](#)

[Solution](#)



4-5. Four Declarations

Our foursome, Holmes, Dr. Watson, Mrs. Hudson, and Inspector Lestrade are playing mahjong at 221B Baker Street. At some point, Mrs. Hudson, looking at a tile, says to herself, "I can make four of the five possible declarations with this one tile," and then she announces loudly to everyone "Hu!"

Question: Please, provide a 100+ point-value hand (with no flowers) of Mrs. Hudson's which before "Hu!" allows her to make four different possible declarations on the same winning tile.

Note: Five possible declarations are: "Chow", "Pung", "Kong", "Flower", and "Hu".

[Hint](#)


[Solutions](#)



4-6. Celebratory Pie




On March 8th, Sherlock Holmes, Dr. Watson, Mrs. Hudson and Inspector Lestrade decided

to play mahjong at 221B Baker Street. Mrs. Hudson took  from the wall to a concealed hand and declared "Hu". From the kitchen, a sweet smoky smell emitted. "Oh my God, it's the pie, I must run to pull it out of the oven," exclaimed Mrs. Hudson, running away. "Please, gentlemen, count my hand. I'll be back in five minutes."

Then something interesting happened. Inspector Lestrade first took the tiles left by Hudson and began to turn them over, making sets. When he was finished, he recorded the sets of the hand and the total number of points. The tiles were then turned over and shuffled. Then the same operation was done by Watson and by Holmes.

When Mrs. Hudson returned, she asked, "Well, gentlemen, have you counted up my hand?" "Well, you see, what is the matter," began Holmes. "We've done it three times and each time, we got something different. Twice the score was the same and one time less," he continued. "We are ready to write you this score and the structure of this hand. Agreed?" he showed a piece of paper to Mrs. Hudson.

"Not at all! I have collected more points both by structure, and by the score!" exclaimed the outraged Mrs. Hudson. "Please, look at yourselves, gentlemen!" And with those words, she laid out the tiles in a different way to yield a substantially higher value hand than the gentlemen had suggested.

Question: Please, provide a fully concealed hand of Mrs. Hudson's (winning tile is ) allowing four different ways of breaking it into sets and three different hand values.

[Hint](#)

[Solution](#)



4-7. Chow Duel

Before the last deal of the first session of the latest London MCR Championship, Professor Moriarty leads by 80 game points. The deal starts, but with only three minutes left until the end of the session. Moriarty (East) picks up an impossible starting hand:



. Other days it would be perfect to try even **Nine Gates** but this time the only priority is to finish the hand safely in

three minutes. He discards . After South's move, West discards a Dot tile (Moriarty

cannot pung it) and Holmes (North) declares Chow discarding . Professor takes

and after discarding a Bamboo the hand has already a 3-sided wait: for , , and . Once again after South moves, West discards another Dot tile (not for Moriarty's wait).

Holmes declares Chow discarding . One minute remains until the end of the session.

Now, an incredible thing happens: the wind blow opens the windows and overturns five of

Holmes' tiles exposing with only two tiles left unexposed. Moriarty









takes . He understands that no matter how the exposed tiles are to be treated, intentionally or unintentionally exposed, he has to make a discard. Despite this, he has the option to throw as many as nine different tiles, yet all nine of those tiles could be dangerous to discard and possibly costly should he discard the winning a mahjong tile into Sherlock's hand. Whenever there is room for a guess, even a mastermind can guess wrong. Moriarty discards a tile.

"Hu," declares Holmes. "**Pure Shifted Chows** – 16 points, **Half Flush** – 6 points, **Seat Wind** – 2 points, **Prevalent Wind** – 2 points. 16+6+2+2=26 points in total."

Holmes has won the session with only a two point lead.

Question: Which two chows, declared by Holmes, together with the tiles on the table exposed by the wind and two unknown tiles in his hand, made all nine different tiles in Moriarty's hand potentially dangerous for discard?

Note: Moriarty could observe two exposed chows in Holmes' hand. For instance, for


 and 
 dangerous discards potentially giving a 16-point fan **Pure Shifted Chows** would be ,  or  (yielding "link"-chow    for completing a high-scoring fan).

[Hint](#)

[Solution](#)



4-8. Trap for a Dragon

The current session of the London MCR Championship this year has brought together Sherlock Holmes, Mrs. Hudson, Professor Moriarty, and his loyal henchman Colonel Moran. Before the last deal, players had the following scores:

- Holmes – 200 points
- Moriarty – 25 points
- Hudson – -50 points
- Moran – -175 points

To win Moriarty has to overcome a difference of $200 - 25 = 175$ points, which can be done in one of three ways:

1. To win from the wall with a hand scoring not less than $(175 - 32) / 4 = 36$ points.
2. To win from Holmes' discard with a hand scoring not less than $(175 - 32) / 2 = 72$ points.
3. To win from a discard by Hudson or Moran with a hand scoring no less than $175 - 32 + 1 = 144$ points.

So, after the 16th deal starts, and a few turns later, Moriarty's concealed hand has five pairs of honors:





(no more flowers are left in the wall).

All three plans may work well for his hand:

1. **Seven Pairs** self-drawn will bring 24 points for **Seven Pairs**, 4 for **Fully Concealed Hand**, 4 for **Flowers Tiles**, totaling $24 + 4 + 4 = 32$ points. The remaining four points that are needed may come from **Half Flush** or even from **All Terminals and Honors**.
2. Pungs on Winds or Dragons will bring 64 points for **All Honors**, 4 for **Flowers Tiles**, totaling $64 + 4 = 68$ points. The four missing points may be obtained either from **Two Dragons Pungs**, or from **Big Three Winds**, or from concealed Pungs, or from Kongs, etc.



3. For the third option, most likely the fan **Little Four Winds** is needed. This requires three Wind pungs, but also getting into the hand two North wind tiles, or alternatively points can come from concealed Pungs and Kongs.

Hudson discards  and Moran pungs it. After a few turns, Moran discards . What to do? The third plan, obviously, is not going to work. At this moment there are too many terminal tiles in the discards, which leaves only two options: **Seven Pairs** with a **Half Flush** or plenty of pungs of honor tiles.

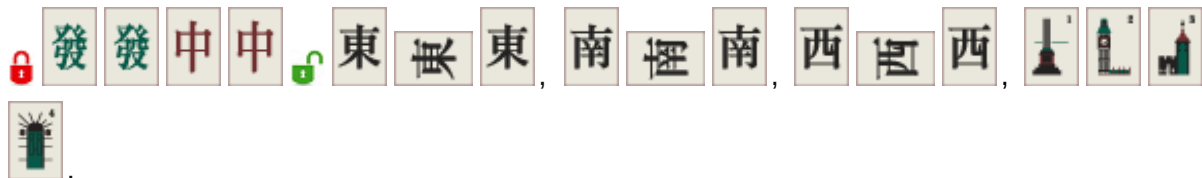
Stop. What is it? Despite the fact that every player has discarded by this point 9-10 tiles, Moriarty sees the following picture:

- there are no Honor tiles in the discards
- the hands of Holmes and Hudson are still concealed


What's going on? Either all the honor tiles are in the hands of the two "H's", Holmes and Hudson, or, on the contrary, plenty of them will come from the wall very soon. Moriarty goes

with possibility 2. "Pung!" After a few moves Moran discards , "Pung!" and discarded  was also punged. The hands of Holmes and Hudson are still concealed.

And here comes the culmination, the hand of Moriarty:



He has long been waiting in vain for a dragon tile, but the dragons still have not yet appeared in the discards. For the last tile from the wall Moriarty takes a dragon tile ... but not

a needed one! It is , and therefore no mahjong in hand. Out of five tiles, he has to discard one. Moriarty chooses, discards and hears from two sides, "Hu!"

Question: Please, provide hands of Sherlock Holmes and Mrs. Hudson under the condition that both hands are waiting for **any** of these possible discarded dragon tiles by Moriarty:



[Hint](#)

[Solution](#)



4-9. Full Flush Accident

Not for the first time, Sherlock Holmes with his friend and colleague Dr. Watson went away for a long time chasing London's criminals. This gave Mrs. Hudson an opportunity to play in the MCR London Championship. The two gentlemen are now home again, both having returned safely to 221B Baker Street. The pair is reading in "Mahjong News", "Mrs. Hudson happened to win the MCR London Championship **by accident**, which may be called a "Full Flush Accident". Here are details of what happened.'

Mrs. Hudson will be in the Top 3 of the championship if she manages to get 2 TP during the last session, while a win in that session will bring her the championship. Before the last deal of the last session, she has -110 game points, while the other players at her table have: 80, 20 and 10 game points.

With only 5 tiles left in the wall, the leader takes a tile, which is a flower, and ... he safely discards it. Before Mrs. Hudson's next move, she already has a concealed hand comprised of a full flush with a multiple wait, and no flowers nor kongs. Now she takes a tile, declares kong, takes a replacement tile, which is a flower, and ... she decides to discard it.

Oh, heavens! Perhaps from nervous tension, Mrs. Hudson confused the flower with a winning tile which could have fit her hand but which would only gain her second place (the hand earning no less than $24+8+4+2=38$ points). She did not replace the flower and she decided to discard it. The next player takes the next-to-last tile from the wall. Alas, having four exposed sets earning only 3 points, this player has to discard the picked tile. He has no choice left since the picked tile matches his one and only concealed tile; both tiles are identical.

"Hu!" announces Mrs. Hudson. This is a sad point to the table leader since even from a discard from a third party, Mrs. Hudson gets enough points from him to overcome the leader, and win the session and championship.

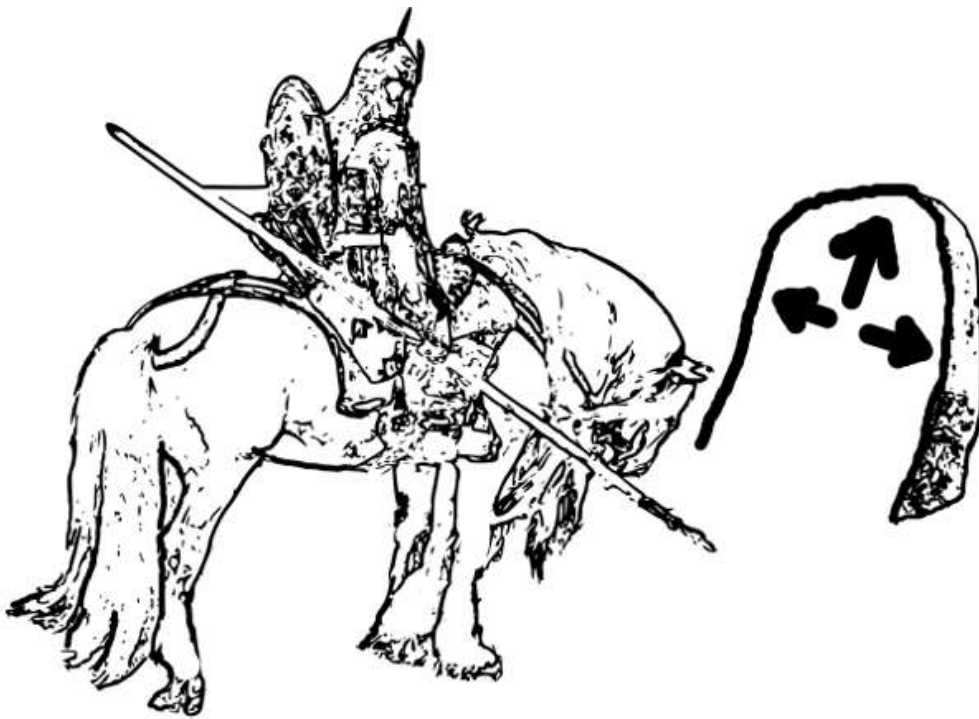
Question: Please, provide a variant of Mrs. Hudson's hand.

[Hint](#)

[Solution](#)



4-10. Three-sided wait



Question: Please, find a Mrs. Hudson's hand with three-sided wait under the condition that minimum required for mahjong hand (8 points) is achieved:

- for the first waiting tile only when declaring "Hu" from **discard**
- for the second waiting tile only when declaring "Hu" from the **wall**
- for the third waiting tile "Hu" can be declared **either way**, from discard or from the wall

Note: no special conditions with respect to winning tile (like **Last Tile**, **Robbing the Kong**, etc.) should be assumed.

[Hint](#)

[Solution](#)



4-11. Missed Opportunity



221B Baker Street. After the draw game, Mrs. Hudson exclaimed:

"Seemingly, I missed an opportunity to win this deal. Despite the fact that my four melded **chow** sets produce no higher than the 1-point fans, I should earlier change my only standing tile in a hand for the other one to win."

Question: Please, find four melded sets of Mrs. Hudson's hand under the conditions (considered as a whole):



- 8+ points hand can be declared from discard for any of 34 tile patterns (no flowers)
- 8+ points hand can be declared from the wall for 28 tile patterns (no flowers)

[Solution](#)

Hints

4-1. Three Men in a Boat

Concealed part of Mrs. Hudson's hand with 3-sided wait can produce only two chows.

Besides, tile hog in  can be only when a Pair consists strictly of two .

[Solution](#)



4-2. Mrs. Hudson's Record

The problem is rather difficult to solve. There exist two conceptual solutions.

[Solution](#)



4-3. Mrs. Hudson's New Record

There exist several solutions.

[Solutions](#)



4-4. N-Point Extensions of Mrs. Hudson's Record

Use restrictions on the compatibility of fans to reduce the number of the options considered.

[Solutions](#)



4-5. Four Declarations

Try to identify first where the winning tile comes from: wall or discard. Secondly, find how many tiles are needed as a part of hand for four declarations to be possible.

[Solution](#)





4-6. Celebratory Pie

Search within one-suited hands with regular structure.

[Solution](#)



4-7. Chow Duel

Find two Chows for which either of three Chows:  ,  , or 



will be a "link"-chow towards a 16-point fan.

[Solution](#)



4-8. Trap for a Dragon

Please, determine firstly the structure of the hand, which is waiting strictly 3-sided for honor tiles.

[Solution](#)



4-9. Full Flush Accident

Please, find the main fan of Mrs. Hudson's winning hand. Why did a change in winning tile change a lot in points won?

[Solution](#)




4-10. Three-sided wait

Which hand is waiting strictly from the discard?


[Solution](#)



Solutions

4-1. Three Men in a Boat

Mrs. Hudson hand   ,   

is waiting for:

-  – for three pure chows shifted by step **three**

-  – for three pure chows shifted by step **two**
-  – for three pure chows shifted by step **one**

Winning hand is scored:

- 24 = **Full Flush**
- 16 = three pure chows shifted either by step one or by step two or by step three
- 2 = **All Chows**
- 2 = **Tile Hog**

- 1 = (optional, only for  or ) **Short Straight**

Totally (guaranteed) – 24+16+2+2=44 points.

Final score is:

- Mrs. Hudson – -54+44+24=14 points
- Holmes / Watson – 18-8=10 points
- Lestrade – 18-44-8=-34 points

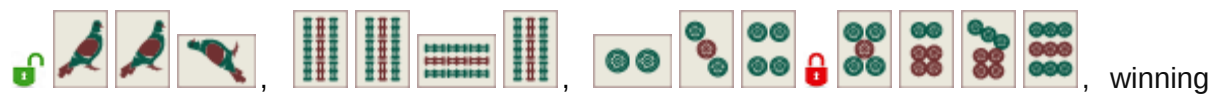
The best player of a season is Mrs. Hudson since she won the final game.



4-2. Mrs. Hudson's Record

There are two conceptual solutions to the problem.

Solution 1.



tile – :

- 1*2 = **Pung of Terminals or Honors** (twice)
- 1 = **Melded Kong**
- 1 = **One Voided Suit**
- 1 = **No Honors**
- 1 = **Short Straight**
- 1 = **Single Wait**
- 1 = **Self-Drawn**
- 1*8 = **Flower Tiles** (8 times)

Totaling 16 points.


Some alterations can be made:






4-5. Four Declarations

As a preliminary step let's consider where the winning tile comes from – wall or discard. It's interesting but one cannot declare pung or chow from the wall, and Flower is not declarable from a discard. Hence, only discards allow us to make four declarations: "Chow", "Pung", "Kong" and "Hu".

Secondly, what tiles should definitely be in Mrs. Hudson's hand for her to be able to make four declarations? For the winning tile to be used in either a kong, pung or chow, the following set

of five tiles must be present (in this example, wherein the winning tile is ):



Any of these structures (chow containing  and a pair , together with winning tile  take six tiles from a hand of fourteen tiles, allowing only eight "other" tiles.

Now, considering all the fans worth 48+ points, there are only four of them which are combinable with the above mentioned 6-tile pattern:

- 88 = All Green
- 88 = Nine Gates
- 64 = Little Three Dragons
- 48 = Quadruple Chow

The below three hands based on the four above-mentioned fan are shown in details. The fan **Last Tile Claim** (8 points) is added, and **Flowers Tiles** do not count (according to the mystery's conditions).

Hand 1. All Green + Quadruple Chow



- 88 = All Green
- 48 = Quadruple Chow
- 24 = Full Flush
- 8 = Last Tile Claim
- 2 = Concealed Hand
- 2 = All Simple
- 2 = All Chows

The total hand value is **174** points.

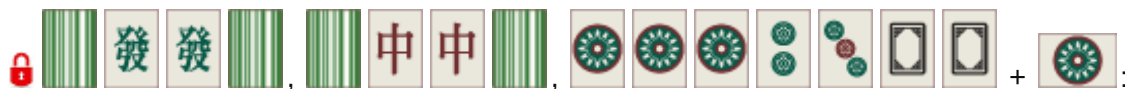
Hand 2. Nine Gates



- 88 = **Nine Gates**
- 16 = **Pure Straight**
- 8 = **Last Tile Claim**
- 2 = **Tile Hog**
- 0 = **Full Flush** (“Green Book” ban)
- 0 = **Pung of Terminals or Honors** (“Green Book” ban)

The total hand value is **114** points.

Hand 3. Little Three Dragons



- 64 = **Little Three Dragons**
- 16 = **Three Concealed Pungs** (we have a choice to place the winning tile to chow and not to pung!)
- 8 = **Two Concealed Kongs**
- 8 = **Last Tile Claim**
- 6 = **Half Flush**
- 4 = **Outside Hand**
- 2 = **Tile Hog**
- 2 = **Concealed Hand**
- 1 = **Pung of Terminals or Honors**

The total hand value is **111** points.



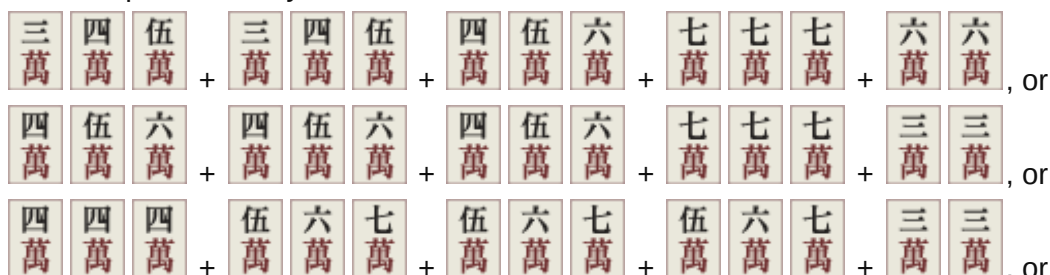
4-6. Celebratory Pie

There are two conceptual solutions.

Concept 1. A hand with tile patterns distribution 2-3-3-3-3, for instance:



It can be partitioned by sets as:





The second and the third versions are clones by hand structure and hand score.

Concept 2. A hand with tile patterns distribution [2-2-2-2-2-2-2](#), for instance:



The reader is invited to do the partitioning procedure by himself / herself.



4-7. Chow Duel

Two Chows and turned out to be powerful to breach Moriarty's position. Any of three Chows creates with those two exposed Chows 16-points fans **Pure Straight / Pure Shifted Chows** making it potentially dangerous to discard all nine different tiles in Moriarty's hand.



4-8. Trap for a Dragon

The obvious structure of the hand, which is waiting strictly 3-sided for tiles, some of which may be Honors, is hand structure [Honors and Knitted Tiles](#). Here is an example of a hand:



The second hand which is waiting 3-sided for non-suited tiles must have very special, so-called "jumping" structure of the hand as different winning tiles change the structure of the complete hands from [irregular](#) to [regular](#) ones, for instance:



If add , we have **Seven Pairs** structure, while if add or then the hand structure is a [regular](#) one.



4-9. Full Flush Accident

To win the session Mrs. Hudson has to overcome the leader scoring no less than $80+110-32=158$ game points. This points can be obtained from three sources:

- self-draw with hand value no less than 40 ($158/4=39.5$) points
- win from leader's discard with hand value no less than $158/2=79$ points
- win from third party's discard with hand value no less than $158/1=158$ points

How can we get this 158 points? As a starting point, we have 24 (**Full Flush**) + 2 (**Concealed Kong**) = 26 points If three sets other than concealed kong are chows it can bring at maximum 24 more for **Pure Triple Chow**. If the whole hand consists of pungs then we may get 64 for **Four Concealed Pungs** and 48 for **Four Pure Shifted Pungs**, totaling $24+2+64+48=138$ points. Even if add 8 points for **Reversible Tiles** and couple more for 1-2 points fans there is no way to get 158 points.

Hence, it is clear that the main fan must be **All Green** with all structural restraints. Our hand before declaring concealed kong may be like:



or the same with

switched for . A hand is waiting for: , and . Please, note that hand with



costs as little as $24+1=25$ points plus points for concealed hand (2 or 4) only!

In our story after declaring concealed kong on and gaining (which pretty much can be confused with flower depending on design) Mrs. Hudson's hand is worth $24+8+4+2+1=39$ points If she declares "Hu!" at that point then a distribution of game points will be:

- leader, $80-39-8=33$ points
- Mrs. Hudson, $-110+(39+8)*3=31$ points
- 3rd player, $20-39-8=-27$ points
- 4th player, $10-39-8=-37$ points

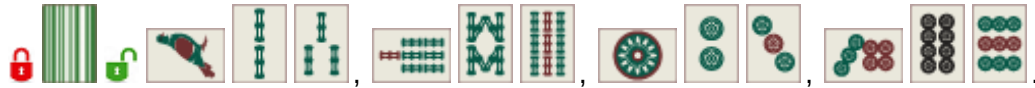
After third party's discard of hand is worth:

- 88 = **All Green**
- 24 = **Full Flush**
- 24 = **Pure Shifted Pungs**
- 16 = **Three Concealed Pungs**
- 6 = **All Pungs**
- 2 = **All Simplets**
- 2 = **Concealed Hand**




4-11. Missed Opportunity

Mrs. Hudson's has declared two terminal chows twice from any two chosen suits:



Her hand apparently has a valid "Hu" from the discarded tile of any pattern: **Melded Hand + Two Terminal Chows** (twice) + **Mixed Double Chow** = 9 points at least. Let's check how many points are generated for "Hu" from the wall for the different tile patterns (we start with 3 points for the fans on chows, 1 point for **Single Wait**, 1 point for **Self-Drawn**, totaling 5 points):

- any Honor tile generates additional fans **External Hand** and **One Voided Suit**, $5 + 4 + 1 = 10$ points
- any terminal tile generates additional fans **External Hand** and **All Chows** (optionally, **One Voided Suit**), $5 + 4 + 2 (+1) = 11$ (12) points
- any simple tile in two chosen suits generates additional fans **All Chows** and **One Voided Suit**, $5 + 2 + 1 = 8$ points
- finally, 5's in the third suit ( in our case) generates fan **Three-Suited Terminal Chows**, $16 + 1 + 1 = 18$ points

So, the only six tile patterns for which "Hu" cannot be declared from the wall are "simple" tiles 2, 3, 4, 6, 7 and 8 in the third suit.

