SOLUTION TO:

HOLDIN' KINGS

Melchior, as his last line suggests, sees the solution to the puzzle on the paper Wenceslas was writing on earlier. It thus suffices to know what values were written on that paper, in what position and orientation each value was written, and in what orientation Melchior views the result. Call Wenceslas's side of the table "south"; then Melchior, seated right across from him, is on the "north" side, Balthazar, who has Melchior to his left, is on the "west" side, and Caspar (by elimination) is on the "east" side. So the (counterclockwise) deal went Caspar, Melchior, Balthazar, Caspar, Melchior, Balthazar, Wenceslas, and the values (call them C1, M1, B1, C2, M2, B2, and W, respectively), were written (left to right, as seen from the south) so as to be readable from the east, north, west, east, north, west, and south, respectively; Melchior then views the result from the north.

To get the values, we can reason as follows:

(I) As we find out during and after the dealing, M1 and M2 are the two highest face-up cards, with M1 > M2, B2 > B1, and C2 > C1. Also, Balthazar and Melchior each have one pair after each of flops 4–6, so for each of them, one of his card values is in the set {3, 6, 10} and one is in the set {4, 7, A}. Balthazar can't have the 10 or A (or else it would be higher than one of Melchior's cards) so Balthazar has one card from {3, 6} and one from {4, 7}. W is halfway between B1 and B2, so (B1, B2) can't be (6, 7) or (3, 4); thus, (B1, B2) is (3, 7) or (4, 6), and either way **W = 5**.

(II) In each of rounds 1–3, it is impossible for anyone to make a straight, flush or four of a kind (the fourth K, Q, and J show up in flops 7–9), and if Wenceslas ended up with only a three-of-a-kind then Melchior would have done at least as well, so Wenceslas's winning hand must be a full house the others don't have; thus, the last two cards in each such round include a 5. So there are no 5s dealt in rounds 4–9, so in those rounds Wenceslas can't beat Melchior with a pair, two pair, or three-of-a-kind (or full house or four-of-a-kind, but those are impossible anyway). So since Wenceslas can't make a flush in rounds 4–6, or a straight in rounds 7–9, he must make a straight in rounds 4–6 and a flush in rounds 7–9.

(III) In round 4, Wenceslas's straight requires that the last two cards be {2, 4} or {4, 7}. Three other 4s appear in flops 5–7, so Balthazar's hand cannot contain a 4, so from (I) **B1 = 3** and **B2 = 7**, and then to make M1 and M2 both larger than B2, we must have **M1 = A** and **M2 = 10**. Since B2 is 7 and there are three 7s in flops 5–7 the last two cards in round 4 can't be {4, 7}, and must be {2, 4}. Also, in rounds 5 and 6, Wenceslas's straight requires that the last two cards be {2, 3}, {3, 6}, or {6, 8}, but if they included a 3 then Balthazar would have two pair (3s and 7s) so they must be {6, 8}. Finally, Wenceslas's flushes in rounds 7–9 require that his 5 be specifically 5♠, and that the last two cards in rounds 7, 8, and 9 include two spades, one spade, and one spade respectively; by elimination, these must be 2♠, 6♠, 8♠, and 9♠ in some order.

(IV) Now, C1 and C2 must both be less than M2 (10), and we have elsewhere exhausted all the 5s (as seen in (II)), 4s and 7s (as seen in (III)), and 6s (6♦ in flop 4, 6♠ in the last two cards in round 7, 8, or 9, and the other two 6s in the last two cards of rounds 5 and 6). Since C1 < C2, the possibilities for (C1, C2) are (2, 3), (2, 8), (2, 9), (3, 8), (3, 9), or (8, 9). But Caspar never has exactly one pair up through round 6, and the only one of these possibilities that doesn't give him exactly one pair in round 4 or rounds 5 and 6 (or both) is (2, 3); thus, **C1 = 2** and **C2 = 3**.

Thus, what Wenceslas wrote down, from his point of view, was:

which, as seen by Melchior (rotated 180°) gives the answer: **SNOWMAN**.

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