The invention provides a dice game machine which can be improved in amusement. A dice game machine 1 of the present invention includes a gaming section 3 in which a plurality of dice are rolled, player terminals 4 each including a BET display unit which enables a BET operation predicting rolled numbers on the plurality of dice when rolled and stopped in the gaming section 3, and a control unit which controls rolling and stopping operations of the plurality of dice in the gaming section 3 and controls payout processing of gaming values corresponding to the BET operations from the player terminals 4 and award ratios. When rolled numbers on the plurality of dice determined in the gaming section 3 are in a predetermined combination and a player has bet on the predetermined combination, the control unit executes additional bonus lottery processing with a winning probability different depending on the BET amount for the player.
<table>
<thead>
<tr>
<th>BET AMOUNT</th>
<th>WINNING NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1~5</td>
<td>0</td>
</tr>
<tr>
<td>6~10</td>
<td>1~2</td>
</tr>
<tr>
<td>11~15</td>
<td>11~13</td>
</tr>
<tr>
<td>16~20</td>
<td>21~24</td>
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<tr>
<td>21~30</td>
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<td>31~40</td>
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<tr>
<td>41~50</td>
<td>51~57</td>
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<tr>
<td>81~90</td>
<td>91~100</td>
</tr>
<tr>
<td>91~100</td>
<td>110~125</td>
</tr>
<tr>
<td>100~</td>
<td>130~150</td>
</tr>
</tbody>
</table>
Fig. 10

START

BET ACCEPTANCE PROCESSING ~ ST01

RETENTION PROCESSING ~ ST02

ACCEPTANCE TIME ELAPSED ?

YES

GAMING SECTION DRIVING PROCESSING ~ ST04

GAMING SECTION STOPPING PROCESSING ~ ST05

ROLLED NUMBER DETECTION PROCESSING ~ ST06

WINNING JUDGMENT PROCESSING ~ ST07

WON?

YES

ARE ALL SAME NUMBER?

YES

LOTTERY PROCESSING ~ ST12

NO

CREDIT AMOUNT ADDITION PROCESSING ~ ST11

NO

CREDIT AMOUNT ADDITION PROCESSING ~ ST13

WON?

YES ~ ST14

RESULT NOTIFICATION PROCESSING ~ ST09

DICE COLLECTION PROCESSING ~ ST15

RETURN
DICE GAME METHOD AND DICE GAME MACHINE

RELATED APPLICATION


BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a dice game method in which rolled numbers on a plurality of dice when rolled are predicted and a dice game machine for performing such a dice game method.

[0004] 2. Description of the Prior Art

[0005] Generally, various game machines are installed in a game hall or casino, and among these, there is a dice game machine in which a BET operation predicting rolled numbers on a plurality of dice when rolling these is performed. For dice games, various rules and machines for performing these have been proposed, and for example, in U.S. Pat. No. 5,413,351, a game method is disclosed in which after a player performs a BET operation, a dealer rolls dice, and when the results of rolling are in a predetermined combination, a player can roll a dice and acquire a high award. As a dice game that people are conventionally familiar with, a dice game called Sic Bo in which a BET operation is performed by predicting rolled numbers on three dice rolled is known.

[0006] Sic Bo is widely known as a dice game from ancient China, and is a dice game in which a BET is made by predicting being rolled numbers on three dice after rolled or a combination of the numbers. The method of making a BET and an award ratio are indicated on a table at which players sit (may be displayed on an image display device), and on the table, an area for making a BET predicting a rolled number on one dice rolled, an area for making a BET predicting that rolled numbers on two dice are the same, an area for making a BET predicting that rolled numbers on three dice are the same, an area for making a BET predicting a combination of rolled numbers on two dice rolled, and an area for making a BET predicting a total of rolled numbers on three dice rolled are provided. The award ratio is set to approximately 1 to 1 through 1 to 180 according to an appearance probability although this cannot be determined constantly according to circumstances of the regions and countries.

[0007] A dice game proposed in U.S. Pat. No. 5,413,351 as described above is performed according to special rules, however, there is a problem that people are not familiar with this game and its special rules and therefore this game lacks amusement. The Sic Bo generally widely known is familiar to people, so that it can amuse players, however, the BET patterns are limited, so that there is still room for upgrading in terms of improvement in amusement. In detail, in the BET region whose appearance frequency is low and award ratio is highest (approximately 1 to 180), it is considered that a player performs a BET operation in an excited state, however, in this BET region, it is only predicted that rolled numbers on three dice rolled are the same (the combination of rolled numbers on the dice is (1, 1, 1), (2, 2, 2) . . . (6, 6, 6)), and this area lacks excitement when making a BET. There is an upper limit to the award players can acquire, so that players may lose interest in the game.

[0008] The present invention was made in view of the above-described problem, and an object thereof is to provide a dice game method and a dice game machine which can further improve amusement.

SUMMARY OF THE INVENTION

[0009] In order to achieve the above-described object,

[0010] (1) in a dice game method, a gaming section in which a plurality of dice are rolled and player terminals which can make BETs predicting rolled numbers on the plurality of dice rolled in the gaming section are used, and when the rolled numbers on the plurality of dice determined in the gaming section are in a predetermined combination and a player has bet on the predetermined combination, additional bonus lottery processing with a winning probability different depending on the BET amount is performed for the player.

[0011] (2) In the dice game method according to (1) described above, when a player has bet on the predetermined combination, accumulation processing is applied to a predetermined percentage in the BET amount, and when winning is won in the additional bonus lottery processing, payout of an amount accumulated until the winning is performed.

[0012] (3) In order to achieve the above-described object, a dice game machine includes: a gaming section in which a plurality of dice are rolled and stopped; player terminals each including a BET display unit which enables a BET operation predicting rolled numbers on the plurality of dice when rolled and stopped in the gaming section; and a control unit which controls rolling operations of the plurality of dice in the gaming section and controls awarding based on BET operations from the player terminals, wherein when rolled numbers on the plurality of dice determined as a result of rolling and stopping of the plurality of dice in the gaming section are in a predetermined combination and a player has bet on the predetermined combination, the control unit executes additional bonus lottery processing with a winning probability different depending on the BET amount.

[0013] (4) In the dice game machine according to (3) described above, the control unit applies accumulation processing to a predetermined percentage in a BET amount bet by the player, and when winning of the additional bonus lottery processing is won, the control unit executes processing for paying out an amount accumulated until the winning to the player terminal which the winning is won.

[0014] According to the present invention, a dice game method and a dice game machine which can be further improved in amusement are obtained.

[0015] Additional objects and advantage of the invention will be set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the invention. The objects and advantages of the invention may be realized and obtained by means of the instrumentalities and combinations particularly pointed out hereinafter.
BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE INVENTION OF THE DRAWINGS

[0016] The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate embodiments of the invention, and together with the general description given above and the detailed description of the embodiments given below, serve to explain the principals of the invention.

[0017] FIG. 1 is a drawing showing a display example on a BET screen for enabling BET operations;

[0018] FIG. 2 is a perspective view showing an entire construction showing an example of a dice game machine according to the present invention;

[0019] FIG. 3 is a plan view showing a construction of a gaming section;

[0020] FIG. 4 is a drawing showing a schematic construction of the structure of the gaming section;

[0021] FIG. 5 is a block diagram showing an example of a rolled number detecting device;

[0022] FIG. 6 is a drawing showing an imaging example of dice obtained in the rolled number detecting device shown in FIG. 5;

[0023] FIG. 7 is a block diagram schematically showing a control system of the dice game machine;

[0024] FIG. 8 is a diagram showing an example of a sortition table to be referred to when executing additional bonus lottery processing;

[0025] FIG. 9 is a block diagram schematically showing a control system of a player terminal;

[0026] FIG. 10 is a flowchart showing control operations of procedures of a dice game performed between a main control unit and player terminals of the dice game machine.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0027] A dice game method of this embodiment uses a gaming section in which a plurality of dice are rolled and player terminals which can make BETs predicting rolled numbers on the plurality of dice rolled in the gaming section, and when the rolled numbers on the plurality of dice determined in the gaming section are in a predetermined combination and a player has bet on the predetermined combination, additional bonus lottery processing with a winning probability different depending on the BET amount is executed for the player.

[0028] In this dice game method, in the gaming section, when rolled numbers on the plurality of dice are in a predetermined combination and a player bet on this predetermined combination, additional bonus lottery processing is executed for the player, so that the player may acquire more gaming value, and amusement can be improved. The winning probability differs depending on the BET amount (the winning probability increases as the BET amount increases), so that to acquire such an additional bonus, the player actively bets on the predetermined combination, and accordingly, the excitement of the rolled numbers on the dice is improved.

[0029] When a player has bet on the predetermined combination, accumulation processing is applied to a predetermined percentage in the BET amount, and when winning is won in the additional bonus lottery processing, payment of an amount accumulated until the winning can be performed.

[0030] In this dice game method, when a player bets on the predetermined combination, the BET amount is accumulated in a predetermined percentage (including the whole BET amount) each game, and finally, an amount to be paid out when winning of additional bonus lottery processing is won is enormous, and the player plays the game with a greater level of interest.

[0031] In order to execute each dice game method described above, a dice game machine is provided which includes: a gaming section in which a plurality of dice are rolled and stopped; player terminals each including a BET display unit which enables a BET operation predicting rolled numbers on the plurality of dice when rolled and stopped in the gaming section; and a control unit which controls rolling operations of the plurality of dice in the gaming section and controls awarding based on BET operations from the player terminals, wherein when rolled numbers on the plurality of dice determined as a result of rolling and stopping of the plurality of dice in the gaming section are in a predetermined combination and a player has bet on the predetermined combination, the control unit executes additional bonus lottery processing with a winning probability different depending on the BET amount for the player.

[0032] With this dice game machine, for example, a gaming section in which a plurality of dice are rolled can be installed in a central region of a casing and player terminals which enable a plurality of players to participate in the game can be installed around the gaming section, and players can perform BET operations predicting the results of rolled numbers on the plurality of dice in the gaming section from the player terminals. In this dice game machine, when the rolled numbers on the plurality of dice in the gaming section are in a predetermined combination and a player has bet on the predetermined combination, additional bonus lottery processing is executed for this player, so that the player may acquire more gaming value, and amusement can be improved. Further, the winning probability differs depending on the BET amount (the winning probability increases as the BET amount increases), so that to acquire such an additional bonus, a player actively bets on the predetermined combination, and the excitement of the rolled numbers on the dice is improved.

[0033] In the dice game machine described above, the control unit applies accumulation processing to a predetermined percentage in a BET amount bet by the player, and when winning of the additional bonus lottery processing is won, the control unit executes processing for paying out an amount accumulated until the winning to the player terminal which the winning is won.

[0034] In this dice game machine, a BET amount of a player is accumulated with each game, and finally, the amount to be paid out when winning of additional bonus lottery processing is won is enormous, so that the player plays the game with a greater level of interest. In this case, in the accumulation processing, it is allowed that all BET operations of the player terminal are subjected to the accumulation processing and BET amounts of the BET opera-
tions are accumulated in a predetermined percentage, or when a player bets on the predetermined combination, a BET amount thereof is accumulated in a predetermined percentage.

Thus, the dice game of this embodiment is performed between the gaming section in which a plurality of dice are rolled and the player terminals installed for players, and players can perform BET operations predicting rolled numbers on the plurality of dice in the gaming section. Under conditions that the rolled numbers on the dice in the gaming section are in a predetermined combination and a player performs a BET operation predicting the predetermined combination, additional bonus lottery processing is executed for the player.

In detail, as in the embodiment described below, in the gaming section, for example, three dice are rolled, and a player can perform a BET operation predicting rolled numbers on the dice. The BET operation is performed in, for example, a BET area 41 of a BET table shown in FIG. 1 (for predicting rolled numbers on the dice in the gaming section) as described later, and the player performs a BET operation by indicating a chip on any portion in the BET area 41. In this case, by performing a BET operation on a BET portion 41E for a specific combination of dice (all the same numbers whose appearance frequency is low and for which a higher award is set in this embodiment), the player can acquire a right to perform additional bonus lottery processing. That is, when a BET operation on the BET portion 41E is performed and the actual rolled numbers on the three dice in the gaming section 3 match the bet numbers, the player can acquire the right to perform the additional bonus lottery processing. The winning probability in the lottery processing is set so as to change according to the BET made by the player.

Hereinafter, the dice game method and the dice game machine of this embodiment will be described in detail with reference to the accompanying drawings.

FIG. 2 is a perspective view showing an embodiment of a dice game machine. FIG. 3 is an enlarged view of a gaming section (in which three dice roll and stop) of the dice game machine of FIG. 2, and FIG. 4 is a drawing schematically showing a path from collection to release of the dice in the gaming section.

The dice game machine 1 includes a casing 2 as a main body, a dice game performing section 3 (hereinafter, referred to as a gaming section 3) which is provided at substantially the central portion of the upper surface of the casing 2 and in which one or more dice roll and stop, and a plurality (10 in this embodiment) of player terminals 4 installed around the gaming section 3 so as to surround the gaming section 3.

The player terminal 4 is constructed so that a player can perform a BET operation, and includes at least a game media accepting device 5 into which game media such as coins or medals to be used for gaming are inserted, a controller 6 consisting of a plurality of control buttons, etc., into which a predetermined instruction is input by a player, and an image display device 7 for displaying mainly an image relating to a BET table when playing a game. By operating the controller 6, etc., while looking at an image displayed on the image display device 7, a player can participate in a game continuously performed in the gaming section 3.

In side surfaces of the casing 2 in which the respective player terminals 4 are installed, payout openings 8 for paying-out game media that players have formed, respectively. On the upper right of the image display device 7 of each player terminal 4, a speaker 9 for playing music or effect sounds is provided.

In the gaming section 3, a plurality of dice are rolled and stopped. In this embodiment, similar to the conventionally known Sic Bo, three dice D1, D2, and D3 are used in the gaming section 3.

The gaming section 3 is entirely formed into a substantially circular shape, and includes a dice releasing unit 3a from which the dice D1, D2, and D3 described above are released when gaming, a rotary plate 3b for rolling the dice D1, D2, and D3 released from the dice releasing unit 3a, and a stop plate for finally stopping the dice rolling on the rotary plate 3b.

The dice releasing unit 3a is set on a circular outer frame 3F of the gaming section 3, and from this dice releasing unit, dice D1 through D3 are successively (or simultaneously) released toward the rotary plate 3b.

The rotary plate 3b is formed into a so-called cone shape gradually sloping downward to the inner side from the circular outer frame 3F, and is supported rotatably in a state that a plurality of drive rollers 3d are in contact with a lower surface of the rotary plate. In response to start of gaming, the plurality of drive rollers 3d are driven and rotated by the rotary plate driving motor 3A, whereby the rotary plate 3b is driven and rotated. On the surface of the rotary plate 3b, projections 3h are formed at predetermined intervals (for example, formed so as to extend radially at substantially 90-degree intervals), and when driving and rotating the rotary plate 3b, bounce the respective dice so that the dice easily roll.

The stop plate 3c is formed into a circular plate on the bottom of the cone-shaped rotary plate 3b, and an area in which the dice D1, D2, and D3 rolling on the rotary plate 3b drop according to the stop of the rotary plate 3b along the slope of the rotary plate and finally stop. That is, the dice D1, D2, and D3 released from the dice releasing unit 3a roll on the surface of the rotary plate according to rotation of the rotary plate 3b, and when the rotary plate 3b stops, they drop along the slope surface of the rotary plate and finally stop on the stop plate 3c.

The stop plate 3c is constructed so as to be driven to slide by a stop plate driving motor 3I as shown in FIG. 4, and by driving the stop plate 3c to slide, the dice D1, D2, and D3 drop toward a collect/release mechanism 10 while colliding with a contact portion 3f formed on the bottom of the rotary plate 3b.

The collect/release mechanism 10 includes an accommodation unit 10a which receives dropped dice from the stop plate 3c, a conveyance mechanism 10b which conveys the dice in the accommodation unit 10a toward the dice releasing unit 3a, and a conveyance driving motor 3C which drives the conveyance mechanism 10b. In this case, this structure is not limited to a special form as long as the collect/release mechanism 10 is constructed so as to collect the dice after rolled numbers on dice stopping on the stop plate 3c are detected by a rolled number detecting device 15, and release the dice toward the rotary plate 3b from the dice.
releasing unit 3a again. That is, for example, the conveyance mechanism 10b can be carried out in various embodiments in which dice are conveyed by air pressure toward the dice releasing unit 3a from the accommodation unit 10a, or the dice are conveyed toward the dice releasing unit 3a from the accommodation unit 10a by a conveying body such as a conveyor.

[0049] The entire upper side of the gaming section 3 is covered by a transparent acrylic cover member 12, whereby rolling ranges of the respective dice are restricted.

[0050] In the gaming section 3, on the top of the cover member 12, a rolled number detecting device 15 which detects rolled numbers on the respective dice stopped is installed. The rolled number detecting device 15 of this embodiment includes, as shown in the block diagram of FIG. 5, an image pickup device (CCD camera) 17 which takes images of the dice as subjects, and a rolled number detecting circuit 18 which detects rolled numbers on the respective dice by processing imaging signals from the image pickup device.

[0051] The focal point of the image pickup device 17 is set on the stop plate 3c in advance by the focal lens 17a so as to take an image of the dice on the stop plate 3c, and is controlled in exposure. The rolled number detecting circuit 18 includes a subject recognizing unit 19 which recognizes a position of a subject (dice) by receiving an imaging signal from the image pickup device, a recognition processor 21 which identifies rolled numbers on the respective dice, a rolled number data storage 22 storing comparison data on rolled numbers on the dice, a control RAM 23, and a controlling CPU 24 which controls these, and these units are connected via a bus and each unit is structured so as to be controlled by the controlling CPU 24.

[0052] In detail, an imaging signal of the dice whose images were formed on the image pickup device 17 is measured in image intensity distribution in a subject recognizing unit 19. As schematically shown in FIG. 6, by measuring the intensity distribution, the positions of the dice D1, D2, and D3 (surface states) on the stop plate 3c can be identified. Then, the three dice identified herein are compared with rolled number patterns (patterns of six rolled numbers) stored in advance in the rolled number data storage unit 22, and thereby, rolled numbers exposed are identified for each dice.

[0053] Whereby, number information identified for the respective three dice is stored in the control RAM 23 and transmitted to a main control unit described later via an interface 25 when game media payout processing is performed. That is, the rolled number detecting unit 15 detects rolled numbers on the respective three dice D1, D2, and D3 stopping in the gaming section 3, and transmits the rolled number information to the main control unit which controls the entirety of the dice game machine.

[0054] Next, constructions of the controller 6 and the image display device 7 will be described.

[0055] The controller 6 is provided on the side of the image display device 7 of the player terminal 4 as shown in FIG. 2, and buttons to be operated by a player are arranged thereon. In detail, in order from the left side viewed from a position facing the player terminal 4, a BET determining button 30, a CASH-OUT button 31, and a HELP button 32 are arranged.

[0056] The BET determining button 30 is a button to be depressed for determining a BET after a BET operation by the image display device 7. When a BET is determined and made on a region corresponding to the rolled numbers on the respective dice in the gaming section 3 during gaming, winning is won. In the case of winning, based on a payout table, credits corresponding to a number of bet chips are added to current credits that the player has.

[0057] The CASH-OUT button 31 is normally a button to be depressed when finishing a game, and when the CASH-OUT button 31 is depressed, game media corresponding to credits that a current player acquired by gaming and has are paid out from the payout opening 8.

[0058] The HELP button 32 is a button to be depressed when the game operation method is unknown, and when the HELP button 32 is depressed, a HELP image screen showing various operation information is immediately displayed on the image display device 7.

[0059] The image display device 7 is, as shown in FIG. 1, a so-called touch-panel type liquid crystal display having a touch panel 35 attached to the front face thereof, and icons displayed on a liquid crystal display surface 36 can be selected by pushing the icons with a finger or the like.

[0060] FIG. 1 is a drawing showing an example of a display screen to be displayed on the display device 7 during gaming. As shown in the figure, during gaming of the dice game machine 1, on the image display unit 7, a table type betting board for predicting rolled numbers on the respective dice D1, D2, and D3 in the gaming section 3 of the current game is displayed. A BET operation can be performed by using credits that a player has while the player looks at the BET screen 40 displayed on the display device 7.

[0061] Herein, the BET screen 40 will be described in detail.

[0062] On the BET screen 40, a BET area 41 in which dice are displayed is displayed arranged in a grid-like manner, and a BET operation is performed by designating the BET area 41 by pushing (touching) the touch panel 35 with a finger and displaying a chip on the designated portion. This BET area 41 is an area for performing a BET operation predicting rolled numbers on three dice D1, D2, and D3 rolled in the gaming section 3.

[0063] On the lower side of the BET screen 40, in order from the left side of the screen, a unit BET button 43, a CASH-OUT result display area 45, and a credit number display area 46 are displayed.

[0064] The unit BET button 43 is for betting a chip on the BET area 41 that a player designated. The unit BET button consists of four buttons of a 1-BET button 43A, a 5-BET button 43B, a 10-BET button 43C, and a 100-BET button 43D. When a BET operation is failed, the BET operation can be performed again by touching the Re-BET button 43E.

[0065] The player designates a BET portion in the BET area 41 to be bet on with a cursor 47 by directly pushing the screen with a finger or the like. In this state, when depressing the 1-BET button 43A, chips can be bet one by one (the number of chips bet is increased in the order of “1”, “2”, “3” . . . each time of pushing the 1-BET button 43A with a finger). Similarly, by pushing the 5-BET button 43B, chips can be bet in increments of 5 (the number of chips bet is
increased in the order of "5," "10," "15" ... each time of pushing the 5-BET button 43B with a finger), and by pushing the 10-BET button 43C, chips can be bet in increments of 10 (the number of chips bet is increased in the order of "10," "20," "30" ... each time of pushing the 10-BET button 43C), and further, by pushing the 100-BET button 43D, chips can be bet in increments of 100 (the number of chips bet is increased in the order of "100," "200," "300" ... each time of pushing the 100-BET button 43D with a finger or the like). In the BET area 41, the number of chips bet until the current time point is displayed as a chip mark 48, and the number indicated on the chip mark 48 shows the number of chips bet.

[0066] On the CASH-OUT result display area 45, a number of bet chips and a number of credits to be refunded to the player in the previous game are displayed. A number obtained by subtracting the number of bet chips from the number of refunded credits is a credit number newly acquired by the player in the previous game.

[0067] Further, on the credit number display area 46, a current credit number that the player has is displayed. When chips are bet, this credit number decreases according to the number of bet chips (1 credit corresponds to 1 chip). When bet chips are won and credits are refunded, the credit number increases by the refunded number. When the credit number that the player has reaches zero, the game is finished.

[0068] On the upper side of the BET screen 40, a bar-shaped BET timer graph 49 is provided. The BET timer graph 49 is a graph indicating the remaining time during which the player can bet, and a red graph gradually extends rightward since the start of the game, and when it extends to the rightmost side, the time during which betting is possible in the current game ends. In each player terminal 4, when the BET time of the player ends, the dice D1 through D3 are successively thrown from the dice releasing unit 3a to the rotary plate 3b.

[0069] Herein, the BET area 41 of the BET screen 40 will be described. The BET area 41 includes a plurality of BET portions, and by chipping the BET portion, a BET operation is performed.

[0070] In the drawing, the BET portions 41A and 41B are portions to be bet on by predicting a total value of the dice D1 through D3. That is, when it is predicted that the total value is 4 through 10, the BET portion 41A is selected, and when it is predicted that the total value is 11 through 17, the BET portion 41B is selected. The award ratio is set to 1 to 1 (two chips are paid out for one chip bet), when the total value is 3 or 18 (the combination of 1, 1, and 1 or 6, 6, and 6), the player loses.

[0071] The BET portion 41C is a portion to be bet on by predicting that rolled numbers on two of the three dice will become equal to each other. That is, the BET portion 41C is a portion to be bet on by predicting that any of (1, 1), (2, 2), (3, 3), (4, 4), (5, 5), and (6, 6) will appear among the three dice, and its award ratio is set to 1 to 10.

[0072] The BET portion 41D is a portion to be bet on by predicting that rolled numbers on three dice rolled will be all the same. That is, the BET portion 41D is a portion to be bet on by predicting that any of (1, 1, 1), (2, 2, 2), (3, 3, 3), (4, 4, 4), (5, 5, 5), and (6, 6, 6) will appear on the three dice, and the award ratio is set to 1 to 30.

[0073] The BET portion 41E is a portion to be bet on by predicting that the rolled numbers on the three dice are all the same and predicting the number. That is, it is a portion to be bet on by predicting that the rolled numbers on the three dice are (1, 1, 1), (2, 2, 2), (3, 3, 3), (4, 4, 4), (5, 5, 5), and (6, 6, 6) and predicting the number, and its award ratio is set to 1 to 180. A BET operation on the BET portion 41E may trigger execution of additional bonus lottery processing described later.

[0074] The BET portion 41F is a portion to be bet on by predicting a total value of the three dice. The award ratio is set according to the appearance frequency of the total value, and when the total value is 4 or 17, the award ratio is set to 1 to 60, when the total value is 5 or 16, the award ratio is set to 1 to 30, when the total value is 6 or 15, the award ratio is set to 1 to 18, when the total value is 7 or 14, the award ratio is set to 1 to 12, when the total value is 8 or 13, the award ratio is set to 1 to 8, when the total value is 9 or 12, the award ratio is set to 1 to 7, and when the total value is 10 or 11, the award ratio is set to 1 to 6.

[0075] The BET portion 41G is a portion to be bet on by predicting that rolled numbers on two of the three dice will become equal to each other, and the award ratio is set to 1 to 5.

[0076] The BET portion 41H is a region to be bet on by predicting rolled numbers on the dice, and its award ratio is set according to the numbers of dice the rolled numbers on which match predicted numbers. For example, when betting is performed by predicting the rolled number “1” and the resultant rolled numbers on the three dice include one “1,” the award ratio is set to 1 to 1, when they include two “1,” the award ratio is set to 1 to 2, and when they include three “1,” the award ratio is set to 1 to 10.

[0077] The dice game machine of this embodiment is constructed so that, when rolled numbers on the three dice in the gaming section are in a predetermined combination and a player made a BET on the predetermined combination, the dice game machine executes additional bonus lottery processing for a player terminal that performed the BET operation. In this case, the additional bonus lottery processing is executed in the main control unit 80 described later which controls operations of the dice game machine, and in detail, a CPU constituting the main control unit extracts a random number from a predetermined range and determines winning of the extracted a random number by referring to a sortition table. When winning is won according to this lottery processing, the player can obtain a special award of this additional bonus in addition to an award obtained in a normal dice game.

[0078] In this embodiment, a mode (progressive function) is employed in which, for the award of the additional bonus, the control unit of the dice game machine applies accumulation processing (accumulation of game media) to a predetermined percentage in BET amounts from the respective player terminals, and when winning is won, the accumulated game media are paid out. Therefore, as the period during which winning is not won becomes longer, the award to be provided when winning is won increases.

[0079] In the above-described construction, “rolled numbers on the three dice in the gaming section 3 are in a predetermined combination” means that the rolled numbers
on the three dice are all the same number, and when a player made a BET predicting the appearance of this result, an additional bonus (lottery processing) is executed for the player. That is, in the BET table of FIG. 1, when the player has bet on the BET portion 41E relating to six patterns of the same numbers and the combination of the numbers on the three dice stopped in the gaming section 3 wins the BET, the additional bonus (lottery processing) is executed for this player.

[0080] In this lottery processing, the winning probability is set so as to vary according to the BET amount of the BET the player made on the BET portion 41E. That is, the larger the BET amount (the player takes a greater risk to obtain the higher award), the higher the winning probability. The change in winning probability according to the BET amount is determined by the above-described sortition table.

[0081] It is allowed that the accumulation processing of the BET amounts is applied to all BET operations made by a player and a predetermined percentage thereof is accumulated, however, in this embodiment, all BET amounts of BETs made by a player on the BET portion 41E are accumulated. The reason for this is that the probability of resultant rolled numbers of the same number on the three dice is low (6/216), and the player does not frequently make BET operations on the BET portion 41E by predicting such the resultant numbers of the same number, so that the above-described accumulation processing does not pose a problem.

[0082] Of course, regarding the payout when winning the additional bonus, a predetermined number of chips may be provided without depending on the above-described progressive function.

[0083] Next, a construction of a control system of the dice game machine 1 described above will be described with reference to FIG. 7. FIG. 7 is a block diagram schematically showing the control system of the dice game machine.

[0084] The main control unit 80 of the dice game machine 1 includes a microcomputer 85 which mainly consists of a main controlling CPU 81, a ROM 82, a RAM 83, and a bus 84 which performs data transfer among these components.

[0085] The CPU 81 is connected to various devices for driving the gaming section 3, specifically, the rotary plate driving motor 3A, the stop plate driving motor 3B, the conveyance driving motor 3C as a main driving unit of the dice collect/release mechanism 10, and so on via an I/O interface 90. To the I/O interface 90, the above-described rolled number detecting device 15 is connected, the I/O interface transmits and receives a signal for notifying that the gaming operation was ended and a signal relating to the rolled numbers on the three dice stopped on the stop plate 3C to and from the rolled number detecting device 15. Further, to the I/O interface 90, a communication interface 95 is connected, and via this communication interface 95, the main control unit 80 transmits and receives various data of BET Information, award information, etc., to and from the respective player terminals 4.

[0086] The ROM 82 in the main control unit 80 consists of, for example, a semiconductor memory, etc., and stores programs for realizing the basic functions of the dice game machine 1, specifically, a program for controlling various devices for driving the gaming section 3, a program for realizing the above-described progressive function, a program for directly controlling the respective player terminals 4, and so on, and stores a payout table and a sortition table, etc., to be referred to when executing the dice game and the lottery processing.

[0087] The RAM 83 is a memory which temporarily stores various data computed in the CPU 81, and temporarily stores, for example, BET information of chips transmitted from the respective player terminal 4, BET accumulation information about accumulation of a predetermined percentage in BET amounts of chips transmitted from the respective player terminals 4, rolled number information of the respective dice D1 through D3 transmitted from the rolled number detecting device 15 as gaming results in the gaming section 3, data on the results of processing executed by the CPU 81, and so on.

[0088] The CPU 81 executes control processing along with the progress of gaming, specifically, controls the rotary plate driving motor 3A driving the gaming section 3, the stop plate driving motor 3B, and the conveyance driving motor 3C based on data and programs stored in the ROM 82 and the RAM 83, throws the dice onto the rotary plate 3C of the gaming section 3, and collects the dice from the stop plate 3C and conveys the dice toward the dice releasing unit 3A so that the dice can be thrown again, and confirms the rolled numbers on the dice stopped on the stop plate 3C.

[0089] In addition to control processing accompanying the advance of the gaming, the CPU 81 has a function of advancing the gaming by transmitting and receiving data to and from the respective player terminals 4 and directly controlling the respective player terminals 4. In detail, the CPU 81 accepts BET information transmitted from the respective player terminals 4, executes the winning judgment processing of BET chips based on rolled numbers on the dice D1, D2, and D3 as results of gaming and the BET information transmitted from the respective player terminals 4, and calculates the number of credits to be paid out to the respective player terminals 4 by referring to the payout table.

[0090] When executing the winning judgment processing, the CPU 81 judges whether the additional bonus has been won for each player terminal, and when the additional bonus is won, it performs the lottery processing for each player terminal which won the additional bonus. At the time of this lottery processing, a sortition table set so that the winning result differs depending on the BET amount of the BET on the predetermined BET portion 41E is referred to, and when the winning is won, to a player terminal that won the winning, a signal notifying the winning is transmitted and information on the data media accumulated until this winning is transmitted.

[0091] The above-described lottery processing can be executed by extracting an arbitrary random number or sampling a random number on the operation program of the CPU 81 by connecting a random number generating circuit or a sampling circuit, etc., to the CPU 81, and the execution method is not limited to a specific one. Alternatively, it is also allowed that a player is made to play a special game and win depending on the game results (winning probability is set so as to differ depending on the BET amount).

[0092] FIG. 8 is a drawing showing an example of the sortition table to be referred to when executing lottery processing.
As described above, in the CPU, one arbitrary random number value is extracted in a predetermined random number range (for example, 0 to 10000) in one lottery processing (lottery processing for one player terminal). Then, the CPU judges whether the extracted random number value is a winning number by referring to the sortition table shown in FIG. 8. At this time, as shown in the sortition table of FIG. 8, setting is made so that the winning probability changes according to the amount of chips bet on the BET portion 4YE by a corresponding player (who acquired the additional bonus) (the larger the amount of chips, the higher the winning probability).

The sortition table shown in FIG. 8 shows an example, and the possible random number range and the winning probability according to the BET amount can be appropriately varied.

Next, a construction relating to a control system of the player terminal 4 connected to the CPU 81 of the main control unit 80 will be described.

FIG. 9 is a block diagram schematically showing a control system of the player terminal 4 according to this embodiment.

The player terminal 4 includes a main body 100 in which the above-described controller 6, the display device 7, and the speaker 9, etc., are installed, and a game media acceptance device 5 attached to the main body 100, and the main body 100 further includes a player terminal control unit 110 and several peripheral devices.

The player terminal control unit 110 includes a player terminal controlling CPU 111, a ROM 112, and a RAM 113.

The ROM 112 consists of, for example, a semiconductor memory, etc., and stores programs for realizing basic functions of the player terminal 4 and other various programs and data tables necessary for controlling of the other player terminals 4.

The RAM 113 is a memory which temporarily stores various data computed in the CPU 11, a number of credits that a player currently has, a BET state of chips bet by the player, and so on.

To the CPU 111, a BET determining button 30, a CASH-OUT button 31, and a HELP button 32 provided on the controller 6 (see FIG. 2) are connected. The CPU 111 performs control so as to perform various operations corresponding to operation signals outputted in response to depressing the respective buttons. In detail, based on an input signal supplied from the controller 6 in response to an input of a player’s operation and data and programs stored in the ROM 112 and the RAM 113, various processings are executed, and the results of the processings are transmitted to the CPU 81 of the main control unit 80 described above.

Further, the CPU 111 receives a command signal from the CPU 81 of the main control unit 80, controls the peripheral devices constituting the player terminal 4, and advances the dice game in the player terminal 4.

Depending on the contents of the processing, the CPU 111 executes various processings based on an input signal supplied from the controller 6 in response to an input of a player’s operation and data and programs stored in the ROM 112 and the RAM 113, and controls the peripheral devices constituting the player terminal 4 based on the processing results, and advances the dice game in the player terminal 4. It is set for each processing which of the methods is used according to the contents of the processing. For example, game media payout according to rolled numbers on the dice is according to the former method, and BET operation processing by the player is according to the latter method.

To the CPU 111, a hopper 114 is connected, and in response to a command signal from the CPU 111, the hopper 114 pays out a predetermined number of game media from the payout opening 8.

Further, to the CPU 111, the display device 7 is connected via a liquid crystal driving circuit 120. The liquid crystal driving circuit 120 includes a program ROM, an image ROM, an image control CPU, a work RAM, a VDP (video display processor), and a video RAM, etc. The program ROM stores image controlling programs and various selection tables relating to display on the display device 7, and the image ROM stores, for example, dot data for forming an image to be displayed on the display device 7. The image control CPU determines an image to be displayed on the display device 7 among dot data stored in advance in the image ROM based on parameters set in the CPU 111 according to an image control program stored in advance in the program ROM. The work RAM is constructed as a temporary storing unit when the image control program is executed by the image control CPU. The VDP forms an image corresponding to the display contents determined by the image control CPU and outputs it to the display device 7. The video RAM is constructed as a temporary storing unit when an image is formed in the VDP.

To the front face of the display device 7, as described above, the touch panel 35 is attached, and operation information of the touch panel 35 is transmitted to the CPU 111. The touch panel 35 detects an operation of betting chips by a player on the above-described BET screen 40. In detail, selection in the BET area 41 and an operation on the unit BET button 43 on the BET screen 40 are performed by touching the touch panel 35, and information of these is transmitted to the CPU 111. Based on the information, current BET information of the player (BET area 41 designated on the BET screen 40 and the number of chips bet) is stored in the RAM 113 as appropriate. Further, the BET information is transmitted to the CPU 81 of the main control unit 80 and stored in a BET information storage area of the RAM 83.

Further, a sound output circuit 126 and a speaker 9 are connected to the CPU 111, and the speaker 9 generates various effect sounds for providing various effects based on an output signal from the sound output circuit 126. Further, the CPU 111, a game media acceptance device 5 for inserting game media such as coins and medals is connected via a data receiver 127. The data receiver 127 receives a credit signal transmitted from the game media acceptance device 5 and the CPU 111 increases the number of credits of the player stored in the RAM 113 based on the transmitted credit signal.

Next, control operations of the dice game machine 1 constructed as described above will be described based on player’s operation when playing the game with the player terminal 4.
[0109] FIG. 10 is a flowchart showing control operations of procedures of a dice game to be performed between the main control unit 80 and the player terminal 4 of the dice game machine 1.

[0110] First, in the dice game machine 1, BET acceptance processing is performed (Step ST01). During this BET acceptance processing, a player sitting at the player terminal 4 inserts game media such as coins or medals into the game medium acceptance device 5, and performs the above-described BET operation while looking at the BET screen 40 (see FIG. 1). During the BET acceptance processing, on the BET screen 40 in each player terminal, a BET timer graph 49 is displayed, and the main control unit 80 accepts the BET operation within the time of the graph. In the credit number display area 46 of the BET screen 40, by each BET operation, the number of chips (remaining chips) that can be bet is displayed after being subtracted.

[0111] Regarding the above-described BET operation, a player can perform a BET operation predicting rolled numbers on the three dice in the gaming section 3, and can perform a BET operation on each of the BET portions 41A through 41G of the BET area 41 according to the above-described operation method. On the portion that the player bets on, as shown in FIG. 1, a chip mark 48 is displayed.

[0112] When accepting the above-described BET operations from the respective player terminals, the main control unit 80 writes the contents of the BETs onto a predetermined storage area of the RAM 83 for each player terminal, and retains a part of the BETs (ST02). The retention processing herein is set so that the chips (the amount of game media) bet on the BET portion 41E are all retained, and the number of chips bet on the BET portion 41E in the respective player terminals are successively written on a predetermined storage area of the RAM 83.

[0113] The above-described operation is performed until the BET acceptance time elapses (ST03), and when the BET acceptance time ends, the CPU 81 of the main control unit 80 transmits a drive signal to the gaming section 3 to drive the gaming section 3 (ST04). At this time, in the gaming section 3, the three dice D1 through D3 roll.

[0114] After a predetermined time elapses, the gaming section 3 is subjected to stop (ST05), and in this state, rolled number detection processing is executed (ST06). In the rolled number detection processing, the rolled number detecting device 15 is driven to detect rolled number information exposed on the surfaces of the three dice. The rolled number information of the three dice is transmitted to the main control unit 80, and the CPU 81 executes winning judgment processing based on the rolled number information and the BET information of the respective player terminals stored in the RAM 83 (ST07).

[0115] At this time, when winning is not judged (ST08: NO), it is a loss for the player, and this result is transmitted to the player terminal (ST09). In each player terminal, on the payout result display area 45 of the BET screen 40, result display processing for displaying "LOSS," etc., is performed.

[0116] On the other hand, when winning is judged at ST08, it is subsequently judged whether the winning combination is a combination of the same number (the rolled numbers on the three dice are all the same) (ST10). Herein, when the rolled numbers on the dice are not all the same (ST10: NO), an award amount is directly calculated by referring to a predetermined payout table (credit amount addition processing: ST11), and the result of this calculation is stored in a predetermined work area of the RAM 83 and then a winning judgment signal is transmitted to each player terminal 4 (ST09). The CPU 111 of each player terminal 111 drives and controls the liquid crystal driving circuit 120 based on the winning judgment signal transmitted from the main control unit 80, and updates the payout result display area 45 and the credit number display area 46 displayed on the BET screen 40. The CPU 111 of each player terminal 4 drives the liquid crystal driving circuit 120 and the sound output circuit 126 to provide effects of images and sounds as appropriate.

[0117] At ST10, when it is judged that the rolled numbers on the dice are all the same number, the CPU 81 of the main control unit 80 subsequently performs lottery processing (ST12). This lottery processing is executed by extracting an arbitrary random number in the CPU 81 as described above, and based on the extracted random number and the number of chips bet on the BET portion 41E by the corresponding player, by referring to the sortition table shown in FIG. 8, it is determined whether the lottery result is won.

[0118] In this lottery processing, if the additional bonus is not won (ST13: NO), according to the processings of ST11 and ST09 described above, award amount calculation and transmission of the award result to the player terminal are performed.

[0119] On the other hand, in the lottery processing of ST12, by extracting a predetermined random number value, an additional bonus, that is, jackpot is won, (ST13: YES), and credit amount addition processing (ST14) is executed. Calculation of an award amount herein corresponds to an award acquired according to a gaming result in the gaming section 3 before the lottery processing and the BET amounts (retained amounts written on the RAM 83 at ST02) retained in the dice games performed until this time, and the calculation result of the totalized award amount is stored in a predetermined work area of the RAM 83 and then transmitted to the player terminal 4 (ST09).

[0120] When the additional bonus is won (jackpot is won), in the player terminal, result display processing for displaying the BET amount and the acquired game media amount on the payout result display area 45 of the BET screen 40 is performed. Of course, it is also allowed that a special effect is performed separately on the display device 7 or the like of the corresponding player terminal that won.

[0121] After the above-described procedures are finished in all player terminals, to transfer to the next game, the CPU 81 of the main control unit 80 drives the collect/release mechanism 10 to collect the dice on the stop plate 3c (ST15), and one game is ended.

[0122] In the dice game machine 1 constructed as described above and a dice game performed by the dice game machine, in the gaming section 3, when rolled numbers on the three dice are in a predetermined combination (all the same number) and a player has bet on the predetermined combination, additional bonus lottery processing is performed for the player, so that there is a possibility that the player acquires more gaming value, and amusement can be
improved. Particularly, in this lottery processing, the winning probability differs depending on the BET amount (the larger the BET amount, the higher the winning probability), so that a player actively bets on the predetermined combination to aim at acquisition of the additional bonus, so that the excitement of the rolled numbers on the dice is increased.

[0123] In this embodiment, a BET amount on a predetermined combination (rolled numbers being all the same) in each player terminal is accumulated with each game, so that finally, as the award when the additional bonus is won, the payout amount when the winning of the additional bonus lottery processing is won is enormous, so that players play the game with a greater level of interest, and many players are allowed to actively participate in the game.

[0124] The embodiment of the dice game machine and the dice game method of the present invention is described above, however, the present invention is not limited thereto, and can be variously modified.

[0125] For example, in the gaming section 3, the detailed method for rolling and stopping the dice, the unit for judging the rolled numbers on the respective dice, and the dice collecting method, etc., can be appropriately varied. For example, the dice may be rolled on a diaphragm, or may always be exposed in the gaming section without being collected. In the gaming section 3, instead of actually rolling the dice, images of the dice being rolled and stopped may be displayed by using the display device.

[0126] The number of dice to be used in the gaming section 3 are not limited to the number described in the embodiment above but can be varied in various ways, and accordingly, the BET method and kind can also be varied. The conditions for winning the additional bonus (combination of rolled numbers on a plurality of dice), the lottery method, the winning probability that changes according to the BET amount, and the award thereof can also be varied as appropriate. The awards of the BET portions and the sortition table are only examples, and can be varied as appropriate according to each region and regulations.

[0127] Further, the present invention is also applicable to a table game in which a dealer handles the dice simply.

[0128] Additional advantages and modifications will readily occur to those skilled in the art. Therefore, the invention in its broader aspects is not limited to the specific details and representative embodiments shown and described herein. Accordingly, various modifications may be made without departing from the spirit or scope of the general inventive concept as defined by the appended claims and their equivalents.

What is claimed is:

1. A dice game method, wherein

a gaming section in which a plurality of dice are rolled and player terminals which can make BETs predicting rolled numbers on the plurality of dice rolled in the gaming section are used, and

when the rolled numbers on the plurality of dice determined in the gaming section are in a predetermined combination and a player has bet on the predetermined combination, additional bonus lottery processing with a winning probability different depending on the BET amount is executed for the player.

2. The dice game machine according to claim 1, wherein

when a player has bet on the predetermined combination, a predetermined percentage in the BET amount is subjected to accumulation processing, and when winning of the additional bonus lottery processing is won, an amount accumulated until the winning is paid out.

3. A dice game machine comprising:

a gaming section in which a plurality of dice are rolled and stopped;

player terminals each including a BET display unit which enables a BET operation predicting rolled numbers on the plurality of dice when rolled and stopped in the gaming section; and

a control unit which controls rolling operations of the plurality of dice in the gaming section and controls awarding based on BET operations from the player terminals, wherein

when rolled numbers on the plurality of dice determined as a result of rolling and stopping of the plurality of dice in the gaming section are in a predetermined combination and a player has bet on the predetermined combination, the control unit executes additional bonus lottery processing with a winning probability different depending on the BET amount.

4. The dice game machine according to claim 3, wherein

the control unit applies accumulation processing to a predetermined percentage in a BET amount bet by the player, and when winning of the additional bonus lottery processing is won, the control unit executes processing for paying out an amount accumulated until the winning to the player terminal which the winning is won.