

5th Grade Math Lesson

Lesson Title: Division Game

Grade: 5

Content Standard: Number and Operations in Base Ten 5.NBT.B.6

Find whole number quotients of whole number with up to 4-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and or area models

Materials: Game board (the game board needs to include rows of blank squares that would fit the size of a single linking cube), hundreds chart, linking cubes, dividend cards, secret recording card, thinking cards with probing questions, white boards and/or paper.

Shared Experience and procedure details:

Number of Players: Two to four players

Object: To be the first player or team to remain closest to the winning space on each game board.

Set-up: Each team will need a game board that included rows of squares that have 26 spaces that would fit the size of a single linking cube. Each Team needs a tub of base ten blocks. A Chart Representing the value of a letter corresponding to a number will be needed to figure out the value of the letter. Each team will be given a set of letter cards. The letter cards will go in the draw pile.

Play:

- Each player completes a fun challenge task (ex. Try to get a jumping toy frog into a bucket, or a race). Everyone gets to draw a letter card. The letter cards in the stack will the following letters: T-ZZ. Each player looks at the letter on the card and finds the corresponding letter on the value on the chart. The total values are added together to find the total amount to be divided.
- The players represent the amount to be divided using base ten blocks.
- The players examine the total amount to be divided. The player decides a secret number to use to repeatedly break their number into equal-sized groups with leaving the least amount of blocks leftover. The players may not have any leftover when dividing or they may have one or more leftover. The player cannot remove all the cubes at one time.
- The player secretly writes the number within a time limit of a minute or less. After each player has made a decision, the player begins to organize there groupings.
- Then, the players take turns repeatedly remove their secret number until they can't take any more equal-sized groups.
- The player who evenly divides their amount wins or the player that has the lowest leftover cubes wins the round and does not have to move from the winning space. All other players

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more one space away from the winning space. The game continues until the instructional period for the game ends. At the end of the instructional period, the player who is closest to the winning space wins a prize.

Note: Some letters were not used to increase the level difficulty.

Possible Picture:

Students draw a picture to show their thinking or what they did.

Some students will use the sharing model of division and others will use the grouping model for division.

Possible People Talk:

Students may use non-math and math terms to describe the game, explain the process, or the strategy used to play the game.

Feature Talk:

Total/amount/dividend

sharing, equal groups/grouping/sets

divide/division, repeated subtraction

multiply/multiple/multiplication

leftover/extra/remaining/remainder/sum/difference

equal/equality

- Students discover that they need to know the total amount to be divided before doing any grouping or sharing.
- Students learn that when you share equally, you are actually dividing into equal groups and then count number of items in each group.
- Students learn that when you group you divide the number of items in each group to find the number of equal groups.
- Students may use words or express that there is an equation or a number sentence that

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describes the solution they tried in each round of the game.

- Students understand that the product and the dividend are always the same and has a relationship when thinking of the inverse operations.
- Students may understand that there can be remainders when dividing to make equal groups or when dividing to share equally.
- Students understand that the unit or divisor is critical and must be understood in giving the remainder.
- Students understand using the denominator of the divisor helps when naming the remainder.

Possible Symbolic Representation:

- Students may illustrate the relationship between multiplication and division.
- Students illustrate the difference of sharing by dividing equally and dividing by grouping.
- Students may illustrate the situations when dividing and using either sharing and groupings may include a remainder.
- Students may use division symbols, and equation, the standard algorithm to show their thinking.

Extensions/Reteaching/Next steps:

Variation to moving away from the center or winning space, have students move away from the center by the number of leftover (remainder) cubes (ie: if 4 cubes are leftover, student moves 4 spaces)

Teacher Reflection:

Assign jobs: recorder, manipulatives, stacker, reporter (Eliminates confusion in the groups)

If you start with "X card" or 24, have students think about the different outcomes that could occur depending on a given divisor.

Written By: Math Camp Teachers 2015

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