Beat the Tax Man:

A Strategic Multiplies and Factors Game

Before playing this game, you are going to explore the possible factors of numbers 1-12 using square tiles. To start, students will:

* Work individually or in pairs.
* Only need 12 tiles.
* Record the numbers 1 to 12 in their notebooks with space underneath each number for recording possible factors.
* Need to know the definition of a factor vs. a multiple. What are they? Factors are the pairs of numbers that are multiplied to determine a particular multiple. Factors always come in pairs, but you can say, for example that 4 is a factor of 8 without mentioning the 2. You can also say (especially for this activity) that factors are the number of objects in the rows and columns of arrays. Multiples are the product of two factors, or the total number of objects in an array.

Next, have students build arrays using each number to find its possible factors. Encourage them to try to arrange them in every way possible. Some numbers need to be explored deeply (12, in particular). They should record the factors they discover:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
|  |  |  |  |  |  |  |  |  |  |  |  |

Students should have an opportunity to share what they discovered and make additions or corrections.

Time to play…Beat the Tax Man!

**Objective:**

* Select your earnings so that you end up with more money than the tax man.

**How to play:**

* Play with a partner. One will be the **Wage Earner** and one will be the **Tax Man.**
* Record the numbers 1 to 12 on a white board or a scrap piece of paper.
* Have the results of your square tile study close by so you can double check if necessary.
* The Wage Earner selects one number between 1 and 12. These are your earnings.
* Beware! For every wage you select, the Tax Man gets to take all the factors of that number (unless you already took them as a wage)
* Double Beware! If there are no factors of that particular number, the Tax Man gets everything left on the board (or on the paper).
* **Question is:** how can you play so that you are guaranteed to beat the Tax Man?

**Extension:**

* What happens when you play with a different set of numbers? Can you still get a good game going?