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| **Synopsis of high-quality task:**Students will be completing a worksheet in small groups on the statistics of social media users. Students will be writing numbers in scientific notation and performing operations using these numbers. **Anticipated student time spent on task:** 30 minutes **Student task structure(s):** Individual work/partner work/group work Students work in groups of 2 or 3 to complete the questions. Statistics of users taken from <https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/>  |
| [**Math Content Standards and Practices**](http://www.doe.mass.edu/frameworks/math/2017-06.pdf)**:****8.EE.A.3** Use numbers expressed in the form of a single digit multiplied by an integer power of 10 to estimate very large or very small quantities and express how many times as much one is than the other. For example, estimate the population of the United States as 3108 and the population of the world as 7109, and determine that the world population is more than 20 times larger.**8.EE.A.4** Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology. **SMP1** Makes sense of problems and persevere in solving them. **SMP2** Reason abstractly and quantitatively.**SMP4** Model with mathematics.**SMP6** Attend to precision.**SMP7** Look for and make use of structure. |
| **Prior Knowledge:** **6.EE.A.1** Write and evaluate numerical expressions involving whole-number exponents.**8.EE.A.1** Know and apply the properties of integer exponents to generate equivalent numerical expressions. |
| **Connections to the real-world:**At this age, students are very interested in social media and will find these statistics interesting because most likely they themselves are users of these social media platforms.  |
| **Mastery Goals:****Learning Objective:** Students will be able to express numbers in scientific notationStudents will be able to perform operations with numbers expressed in scientific notation.**Language Objective:**Students will be able to communicate with their peers how to write numbers and perform operations.  |
| **Teacher instructions****Instructional Tips/Strategies/Suggestions:*** After students have learned how to write numbers in scientific notation, they will be ready to work through the scientific notation questions on the social media usage worksheet (see attached)
* Students can work in small groups of 2 or 3.
* Have students complete the worksheet
* Teacher will review answers with students.
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| **Instructional Materials/Resources/Tools:** -Social Media Usage worksheet (see attached)   |
| **Accessibility and Supports:** **Potential sentence starters:** The difference of users is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.Facebook has \_\_\_\_\_\_\_\_\_ times as many users as Instagram. **Key academic vocabulary:** Scientific notation, standard form, difference, times |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Social Media Usage

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| --- | --- | --- | --- |
| **Social Media** | **Number of users**  | **Standard Form**  | **Scientific Form**  |
| Facebook | 2.27 Billion |  |  |
| YouTube |  | 1,900,000,000 |  |
| Instagram | 1 Billion  |  |  |
| Twitter |  |  | 3.26 x $10^{8}$ |
| Snapchat | 287 Million |  |  |

1. Complete the table above.

2. Pick any two social media platforms and show the difference in users. Represent this number in scientific notation.

3. Explain the process of using numbers written in scientific notation to find the difference.

4. Pick any two social media platforms and show about how many times more users one has than the other.

5. Explain the process of using numbers written in scientific notation to find how many times one has than the other.

6. It is estimated that 400 million snapchats are sent per day and 100 million Instagram posts are uploaded per day. How many times more snapchats are sent then Instagram’s posts uploaded per year?

**Sample Student Work**



