

Lesson Title: The Power of 10! Designer: Diane Hunter

Discipline: Math Grade Level: 4-5

Activity 1: Context for growing ten times

(Appropriate for AFTER the Broadcast Lesson)

Activity Goal: Explore what would happen if the amount of trash created would grow ten times larger repeatedly.

Targeted Math Skills: Multiplying by 10; finding patterns; connecting to real-world issues facing our world (i.e. civic role to reduce trash and take care of the environment)

Materials: Blank paper, writing utensil (pencil), context page (see attached), and calculator (optional).

Steps:

1. Review the context page (attached) and read the scenario.
2. Explore what you see happen to the amount of trash as a month goes by.
3. Write the amount of trash on your blank sheet of paper. Make sure you count each piece -- be precise.
4. Questions to Consider:
5. What pattern do you see with the amount of trash that is being created?
6. Do you think that this would continue on repeatedly?
7. Why or how could finding a pattern be useful?

Further Extension: What ways can you help reduce trash or dispose of it more efficiently in a way that benefits the environment?

Activity 2: Create a way to help teach others how to multiply by 10.

(Appropriate for AFTER the Broadcast Lesson)

Activity Goal: Apply what you know about multiplying by powers of ten.

Targeted Math Skills: Multiplying by 10.

Materials: Pick one or more: poster board/chart paper/construction paper/blank paper; writing utensils (pencil, crayons, colorful pens, markers, or colored pencils); OR: create your own video tutorial using an electronic device that is accessible to the internet (if available).

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Steps:

1. Practice with some examples about multiplying by 10.
2. Identify the pattern and put words around what you notice.
3. Make a plan for how you would present this example and “prove” the pattern to someone else learning how to multiply by tens. Make sure to explain why and how this pattern occurs.

Further Extension: Would a similar rule apply for 10 times less? Can you prove that this rule does or does not apply? Make sure you explain and justify your answers.

Additional Resources for Lesson-Related Extension Activities:

- **Student-Facing / Teacher-Facing:**
 - Supplemental Lesson Resource: Multiplying by Ten (BBC)-
<https://www.bbc.co.uk/bitesize/topics/z36tyrd/articles/z2fkwx>
- **Teacher-Facing:**
 - Supplemental Lesson Resource: Multiplying by Ten (Marilyn Burns’ Math Blog); (Maths No Problem Blog)-
<http://www.marilynburnsmathblog.com/when-you-multiply-by-10-just-add-a-zero-horrors/>
 - <https://mathsnoproblem.com/blog/teaching-tips/maths-misconceptions-multiplying-ten/>

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Activity 1 Materials

- Context Pictures:

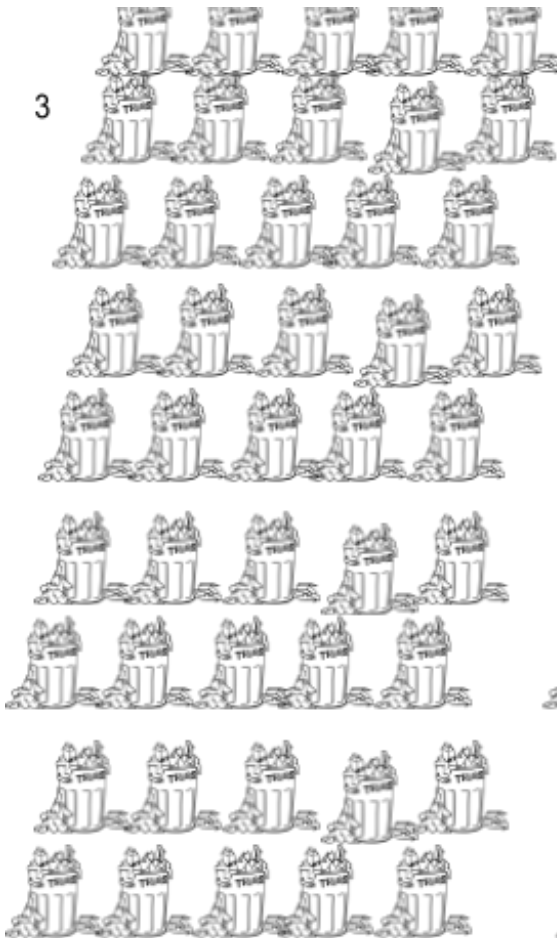


1



2

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Activity 2 Materials

- Sample Expressions:
 - 3×10
 - 3×100 ($3 \times 10 \times 10$)
 - 3×100 ($3 \times 10 \times 10 \times 10$)

 - 14×10
 - 14×100
 - 14×1000

 - 20×10
 - 20×100
 - 20×1000