Lab Framework

Text: CORD

Unit number and title: Unit 23 - Factoring

  Short Description: Using starburst candy to have students start to think of integer pairs that multiply to a given number.

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Lab Title
Starburst Stacks

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

  Have students start to think of integer pairs that multiply to a given number

- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)

  Unit 7, Units 14-16, Unit 18

- **Vocabulary**

  factor

- **Materials List**

  starburst candy

  lab sheet

- **State Standards addressed**

  Math: A1.2.E and A1.2.F

  Reading: 1.2.2

  Writing: 1.1.1

- **Leadership Skills**

  Students working together in pairs. Each student must show initiative when "switching off" to find factors of the numbers given.

- **SCAN Skills/Workplace Skills**

  Writing: A. Communicates thoughts, ideas, information, and messages in writing

  B. Records information completely and accurately

  Arithmetic: A. Performs basic computations

  D. And uses tables, graphs, diagrams, and charts to obtain or convey quantities information

  Mathematics: B. Uses quantitative data to construct logical explanations for real world situations

  C. Expresses mathematical ideas and concepts orally and in writing

  D. And understands the role of occurrence and prediction of events.

  Listening: A. Receives, attends to, interprets, and responds to verbal messages and other cues such as body language in ways that are appropriate to the purpose

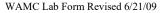 B. For example, to comprehend

  C. To learn

  D. To critically evaluate

  E. To appreciate

  F. Or to support the speaker

  Speaking: A. Organizes ideas and communicates oral messages appropriate to listeners and situations

  B. Participates in conversation, discussion, and group presentations

  C. Selects an appropriate medium for conveying a message

  E. Speaks clearly and communicates a message

F. Understands and responds to listener feedback

- **Set-up information**

  No set-up! Just buy lots of starburst!!

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**

  This should only take one class period (50-55 minutes). See organization on student handout.

- **Teacher Assessment of student learning** (scoring guide, rubric)

  See final page of this lab for scoring guide.

- **Summary of learning** (to be finished after student completes lab)

  -discuss real world application of learning from lab

  -opportunity for students to share/present learning

  Have students start to think of integer pairs that multiply to a given number

- **Optional activities**

  Give students pairs of numbers---one number that they must multiply to and the other that they must add to (the precursor to factoring, of course).

  For example: Multiply to 18, add to 9. What are the two numbers? 3 & 6.

- **Career Applications**

  Computer and information systems managers, engineering and natural sciences managers, computer control programmers and operators, computer software engineers, mathematicians, chemical/electrical/mechanical/nuclear engineers, engineering technicians, biological scientists, chemists, physicists, medical records and health information technicians, teachers (post-secondary)

LAB TITLE: Starburst Stacks
STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
  Find all ways to stack the given number of starburst.

- **Grouping instructions and roles**
  2 per group. Group members alternately give a factor pair. (Meaning each student does the same amount of work!)

- **Procedures** – steps to follow/instructions

1. Arrange 12 starburst in stacks that are only 1 deep.

2. What are all of the ways you can arrange the starburst? Draw your results on another sheet of paper.

3. Now do the same thing with the following numbers of starburst. (Make sure you draw your pictures!):

   30   35

   48   50

4. Without using starburst, find all the ways to arrange 96. Make sure they are organized!

5. Find all the ways to arrange 1,184 starburst.

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- **Procedures** – steps to follow/instructions

1. Arrange 12 starburst in stacks that are only 1 deep.
2. What are all of the ways you can arrange the starburst? Draw your results on another sheet of paper.

1 x 12, 2 x 6, 3 x 4, 4 x 3, 6 x 2, 12 x 1

check pictures for accuracy.

3. Now do the same thing with the following numbers of starburst. *(Make sure you draw your pictures!)*:

30	35
1 x 30, 2 x 15, 3 x 10, 5 x 6,	1 x 35, 5 x 7,
6 x 5, 10 x 3, 15 x 2, 30 x 1	7 x 5, 35 x 1

48	50
1 x 48, 2 x 24, 3 x 16, 4 x 12, 6 x 8,	1 x 50, 2 x 25, 5 x 10,
8 x 6, 12 x 4, 16 x 3, 24 x 2, 48 x 1	10 x 5, 25 x 2, 50 x 1

check pictures for accuracy.

4. Without using starburst, find all the ways to arrange 96. Make sure they are organized!

1 x 96, 2 x 48, 3 x 32, 4 x 24, 6 x 16, 8 x 12
12 x 8, 16 x 6, 24 x 4, 32 x 3, 48 x 2, 96 x 1

5. Find all the ways to arrange 1,184 starburst.

1 x 1184, 2 x 592, 4 x 296, 8 x 148, 16 x 74, 32 x 37
37 x 32, 74 x 16, 148 x 8, 296 x 4, 592 x 2, 1184 x 1