

Prime Time

Investigation 2: The Product Game Day 1

Connections

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none"> Multiplication facts. 	<ul style="list-style-type: none"> Develop understanding of the relationships between multiples and factors. 	<ul style="list-style-type: none"> Arithmetic operations with fractions. Factoring binomials.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
<p>Launch</p> <p>10-15 minutes</p>	<ul style="list-style-type: none"> Read or listen to the rules for playing the Product Games. Play the Product Game against the teacher. 	<ul style="list-style-type: none"> “In the Factor Game, you start with a number and find its factors. In the Product Game, you start with factors and find their product.” “What does the word product mean?” Review the definition of product. Explain that the list of numbers at the bottom of the board are factors and the numbers in the grid are the products that can be made by multiplying g any two factors. Introduce the Product Game by playing a game against the class. 	<ul style="list-style-type: none"> Correct labeling to facilitate talk related to work.

Steps	Student activity	Teacher Support	Comment/Evaluation
<p>Explore</p> <p>20-25 minutes</p>	<ul style="list-style-type: none"> • Play the Product Game, Problem 2.1, with a partner. • Look for interesting patterns and winning strategies. • Make notes of observations. • Complete Problem 2.1 Follow-Up. 	<ul style="list-style-type: none"> • Distribute Labsheet 2.1. • “As you play the game, think about whether it is better to go first or second.” • “Make notes about the strategies that will help you win the game.” • Have students work on Problem 2.1 Follow-Up after completing two or three games. • Are students able to find the multiples of specified numbers? • How are the factors, products, and multiples of numbers alike and how area they different? 	<ul style="list-style-type: none"> • Labeling. • Emphasize relationships between factors, products, and multiples. • Practice in considering two sources of information simultaneously.
<p>Summarize</p> <p>10-15 minutes</p>	<ul style="list-style-type: none"> • Share interesting patterns found in playing the Product Game. • Share winning strategies used in playing the Product Game. 		
<p>Homework</p>	<p>ACE questions 1-8, 10, 13</p>		

Prime Time

Investigation 2: The Product Game Day 2

Connections

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none"> Determine factors for specified numbers. 	<ul style="list-style-type: none"> Explore how factors and multiples of two or more numbers are related. 	<ul style="list-style-type: none"> Arithmetic operations with fractions. Find GCF and LCM of given sets of numbers.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
<p>Launch</p> <p>10-15 minutes</p>	<ul style="list-style-type: none"> Check entries on table for ACE question 10. Share new primes found from table. Draw Venn diagram with a circle for the factors of 30 and a circle for the factors of 36. Work with teacher to place the numbers from 1-12 in the correct regions of the diagram. 	<ul style="list-style-type: none"> Compare and check the new primes found from ACE question 10. Ask students the reason for identifying specified numbers as primes. Draw two overlapping circles, labeled “Factors of 30” and “Factors of 36” on the board. “Give me some examples of numbers that go in each circle.” Record a few numbers that student give, always asking in which area of the diagram the number goes. “Are there any numbers that belong in both circles? Why or why not?” 	<ul style="list-style-type: none"> “Making Your Own Product Game”, Investigation 2.2, may be skipped.

Steps	Student activity	Teacher Support	Comment/Evaluation
		<ul style="list-style-type: none"> • “We put the numbers that belong in both circles in the intersection or overlap, of the circles.” • Write some numbers that are factors of both 30 and 36, for example 2 and 6, in the intersection of the circles. • “Are there any numbers that do not belong in either circle?” • Help students see that 7, 8, 11, and many other numbers are not factors of 30 or 36, and therefore do not belong in either circle. Draw a rectangle that encloses the circles. • “We can show these numbers by putting them in the area outside of the circles.” • Write these numbers inside the rectangle and outside of the circles. 	
<p>Explore</p> <p>20-25 minutes</p>	<ul style="list-style-type: none"> • Work in pairs or groups to complete Problem 2.3 and Problem 2.3 Follow-Up. • Start Mathematical Reflections. • Add writings for the special number project. 	<ul style="list-style-type: none"> • Students work in pairs on Problem 2.3 and Problem 2.3 Follow-Up. 	
<p>Summarize</p> <p>10-15 minutes</p>	<ul style="list-style-type: none"> • Present solutions to class. 	<ul style="list-style-type: none"> • Each group may draw their Venn diagram on transparency and present their work and explain their thinking. • Students should realize that the numbers in the intersection are divisible by both 2 and 3, which means 	<ul style="list-style-type: none"> • Ask what is special about the numbers in the intersection of the circles.

Steps	Student activity	Teacher Support	Comment/Evaluation
		they are also divisible by 6. In other word, they are all multiples of 6.	
Homework	<ul style="list-style-type: none"> • ACE questions 11, 12, 15, 16. • Complete Mathematical Reflections. 		