Lesson Title: Lesson 2, Exploring Prime and Composite Numbers
Course: 6th Grade Mathematics
Designer: Annissa Foster

Learning Outcomes/Intentions

Formal Unit Outcome(s): N6.2 Demonstrate understanding of factors and multiples (concretely, pictorially, and symbolically) including:
• determining factors and multiples of numbers less than 100
• relating factors and multiples to multiplication and division
Indicator(s): e. Analyze a whole number to determine if it is a prime number or composite and explain the reasoning.
a. Determine the whole-numbered dimensions of all rectangular regions with a given whole-numbered area and explain how those dimensions are related to the factors of the whole number.

Objective: Students will be able to know how to determine prime and composite numbers. They will also be able to identify prime and composite numbers from at least 1-20.

Mathematical Processes:
Learners will be able to **communicate** by sharing their findings during the group discussion. They will also use **reasoning** to reach conclusions and develop their logical thinking when looking for prime numbers.

Essential Questions: Can you find the prime numbers under 20?
Can you find the composite numbers under 20?
Can you identify two ways we can find prime and composite numbers?

First Nations Content

Assessment Evidence

Formative Assessments (Assessment for Learning):
Learners will show they achieved the outcomes through mostly informal processes.
Questioning - See below
Students will also be given feedback throughout the lesson through class discussion as the teacher evaluates how students are doing.

Summative Assessments (Assessment of Learning):
No summative assessment for this lesson.

Materials
10x10 Chart sized to connecting cubes, one for each student (see below) 10 connecting cubes for each student Pencil for each student Blank sheet of paper for each student
Learning Plan

Learning Experiences & Instruction:

Explore:

Distribute a chart and 10 connecting cubes to each student. Instruct the students to take one cube and place it on the chart.

Ask:

How many quadrilaterals can you make? (Answer: only 1)

What are the dimensions? (Answer: 1x1)

Allow students to discuss with the class. The chart will help students visualize the dimensions of the quadrilateral. Have students write down the dimensions in the form of a multiplication sentence (1x1=1 etc), and explain that the dimensions are factors of that product.

Repeat the process with two cubes, asking the same questions, (the dimensions will be 1x2), and then instruct them to do the same with three cubes. With three dimensions students might try to make an L shape with the cubes, so retirate what a quadrilateral is and that an L shape has more than four sides, so it is not a quadrilateral. Ensure that students are still writing down the dimensions/factors. Once students get to four cubes,

Ask:

How many quadrilaterals can you make? (Answer: 2)

What are the dimensions of both quadrilaterals? (1x4, 2x2)

Have students share their findings with the class. Now let students work in pairs and see if they can find all the quadrilaterals and their dimensions up to 10. The teacher will walk around the room and observe in discussion. Come back as a class and have them share their findings with the larger group to make sure everyone has found every possible quadrilateral.

Ask:

Do you notice a pattern in the dimensions/factors?

Based on the factors, what different ways could we group these numbers?

Students will hopefully be able to identify which numbers only have one set of factors, which is 1 x itself (1, 2, 3, 5, 7) and which ones have more than one set (4, 6, 8, 9, 10). If they are struggling, help identify them on the board.

Explain that the numbers that only have one set of factors are known as Prime Numbers, and all others are known as Composite Numbers. Explain that a prime number has to be greater than 1, so 1 is neither a prime nor a composite number. Have students work in pairs and find the dimensions of all the quadrilaterals up to 20, as once they get to 12 there will be more than two possible sets of factors. Have students return to the group for a discussion.

Have you noticed anything interesting about the prime numbers? (Answer: all except 2 are odd numbers).
Does this mean all odd numbers must be prime numbers? (no, ex. 9 is not a prime number).
How could we find the factors of a number without making quadrilaterals?
Students may answer that they could use multiplication facts to come up with the factors of a number to determine if it is prime or not, and easily ruled out numbers, like even numbers, ensure that we do not need to do every number. Students may use the U method or factor trees. Students should then work it partners to come up with prime numbers up to 40.

Extend:
Have students collaborate in a small group of around 5 students to see if they can find all prime numbers from 1-100.

Reflection

10x10 Chart is below

X	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										