

Investigating Prime Numbers

Scene #	Description	Narration
1	6 kids are in a circle passing a parcel. 7 people are added to the ring.	<p>This is mathematical pass the parcel, with 6 people in the ring. Each person takes a candy bar and passes the bag to the second person, skipping one. Is this fair? Why is it sometimes unfair with a ring of 6 people?</p> <p>[MUSIC PLAYING]</p> <p>Now there are 7 people, and passing it to the third person around. Why will it always be fair with 7 people in the ring?</p>
2	Kids are in a classroom creating teams. As kids walk in the narrator says the amount in each team. When a prime number comes up one kid is stuck by himself.	<p>And what about fair teams, 2 people with 2 teams of 1? 3 make 3 teams of 1. 4 make 2 teams of 2. But with 5, you're stuck, because 5 is a prime number.</p> <p>6 people make 3 teams of 2, or 2 teams of 3. But with 7, you're stuck again. 7 is another prime number. 8 makes 2 teams of 4. 9 makes 3 teams of 3. 10 makes 2 teams of 5. 11 is another prime number. 12 makes two 6's or [? three ?] 4's. But 13 is another prime number. What other prime numbers are there below 20?</p>
3	The numbers 1 through 12 are showing in rows of 3. Dots to represent each number are placed on each number.	Some numbers fit into rectangles. 4 and 6 and 8 are all rectangular numbers. The numbers that won't fit into rectangles are called prime numbers.
4	A 100 grid is on the screen. The kids take post it notes and place them on all of the numbers that are not prime in the grid.	<p>One way to hunt for prime members is to start with a grid. Cross out all the numbers that aren't prime.</p> <p>First, cover the 1, because that's special.</p> <p>Then 6.</p> <p>Then, cover all the multiples of 2, That is, 4, 6, 8, 10, and so on. And all the multiples of 3, starting with 9, 15, and 21.</p> <p>[MUSIC PLAYING]</p> <p>And then the multiples of 5 and 7. Then all the uncovered ones must be prime numbers.</p>

Investigating Prime Numbers

5	A cartoon of Eratosthenes standing by a pop up shop in Egypt is showing. He purchases a sieve and his by a fountain collecting numbers in his sieve.	The man who invented this method of hunting for prime members was called Eratosthenes. He lived in Egypt about 240 BC. What sort of equipment would you take on a prime hunt? Eratosthenes had a good [INAUDIBLE]. But chose only a sieve.
6	Eratosthenes shake out multiples of different numbers. He does this until he only has prime numbers in his sieve.	In his sieve, Eratosthenes collected all the numbers up to 100. He took out the 1, because that's a special number. Then, he shook out all the multiples of 2. Then, he shook out all the multiples of 3 that he hadn't seen already. Then, he shook out all the remaining multiples of 5 and all the multiples of 7 that were left. And what he had left in his sieve were all the prime numbers below 100. How would you find the primes between 100 and 200?