



4. Mark the grid of numbers as follows:

- Cross out the number 1
- Circle the number 2. Cross out all the multiples of 2 (like 4, 6, 8, 10, ...).
- Circle the number 3. Cross out all the multiples of 3 (like 6, 9, 12, 15, ...).
- Circle the next number that hasn't been crossed out yet. Cross out all its multiples.
- Keep repeating the previous step until every number has been circled or crossed out.

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

**What do all the circled numbers have in common?**

5. (a) Give the first few terms of the Fibonacci Sequence and state the rule for generating more numbers in the sequence.

(b) Write 73 as the sum of Fibonacci numbers.

6. About 6,000,000 people live in Tennessee. Estimate how many cups of coffee are drunk in TN each year.

7. (a) Calculate  $(F_{n+1})^2 - (F_{n-1})^2$  for several examples.
- (b) There should be a pattern. Describe it either in words or in mathematical symbols.
8. List 5 strategies that can be used when devising and carrying out your plan to solve a problem.
9. I am expecting 93 students to take this exam. Why am I sure that there will be at least two students who earn exactly the same number of points on the exam?
10. What happens to the ratio  $\frac{F_{n+1}}{F_n}$  as  $n$  gets large?