Arithmetic Operators and Assignment Statements Assignment

Write a Python program that inputs an integer between 10 and 20, inclusive, from the user and tests it for primality by testing it against 2, 3, 5, and 7 (the only primes that can non-trivially divide a positive integer between 10 and 20). If the number is prime, the program should output a message of the form

```
13 is prime
```

Otherwise, the program should output the prime factorization of the number in the form:

```
12 = 2^2 3^1 5^0 7^0
```

As shown, the output can include with 0 exponents any of these primes that do not divide the input number.

Do not use anything "fancy" in this program, such as a library function for testing primality. Instead, use only Python as we have covered it through the Python Activity 03 Arithmetic Operators and Assignment Statements. Also, do not include in the program knowledge such as that 11, 13, 17, etc. are primes. The program must "discover" this for itself by testing against 2, 3, 5, and 7.

Grading

0: Program does not run or "cheats," e.g., by using Python not covered thus far or incorporating knowledge of primality that is not allowed.
5: Program runs and conforms perfectly with specifications above
4: Program runs, does not "cheat," and is mostly correct but deviates from the above specification in one way (e.g., says that a number is prime when it is not, gets one of the exponents of a prime factor wrong, etc.)
3: Program runs, does not "cheat," and is mostly correct but deviates from the above specification in two or more ways
0: Program deviates from the above specification in three or more ways