1 Question2

What is the greatest common factor of 315 and 336?

1 18

2 21

3 31

4 7

5 1

6 I do not understand the question.

1.1 Question2.1

Which of the following is the prime factorization of 315?

1 $2 \times 3^2 \times 5 \times 11$

2 $3^2 \times 5 \times 7$

3 $2 \times 5^2 \times 7$

4 $2^5 \times 3^2 \times 5$

5 $2^2 \times 3 \times 5^3$

6 I do not understand the question.

1.1.1 Question2.1.1

Which of the following divide 315? (There can be more than one choices.)

1 5

2 7

3 9

4 10

5 11

6 I do not understand the question.

1.1.2 Question 1.1.2

What is $3^2 \times 5 \times 7$?

1 565

2 210

3 185

4 315

5 435

6 I do not understand the question.

1.2 Question2.2

Which of the following is the prime factorization of 336?

1 $2^4 \times 5 \times 11$

2 $2^3 \times 7 \times 5$

3 $2^4 \times 3 \times 7$

4 $2 \times 5^3 \times 3^2$

5 $2^2 \times 3 \times 5^3$

6 I do not understand the question.

1.2.1 Question2.2.1

Which of the following divide 336? (There can be more than one choices.)

1 3

2 5

3 7

4 11

5 16

6 I do not understand the question.

1.2.2 Question2.2.2

What is $2^4 \times 3 \times 7$?

1 565

2 336

3 180

4 217

5 433

6 I do not understand the question.

2 Solution2

To obtain GCF of two numbers, the standard approach is to compute the prime factorizations of the given numbers and collect the largest common factors. First we will obtain the prime factorization of 315 then we will obtain the prime factorization of 336.

2.1 Solution2.1

To obtain the prime factorization of a number we guess its divisor and then divide by that number and repeatedly find more divisors.

2.1.1 Solution2.1.1

Using basics of divisibility we can check that: $5, 7$ and 9, divide 315.

2.1.2 Solution2.1.2

Using the basics of multiplication we can check that:
$3^2 \times 5 \times 7 = 9 \times 5 \times 7 = 9 \times 35 = 315.$ Thus $315 = 3^2 \times 5 \times 7$.

2.2 Solution2.2

To obtain the prime factorization of a number we guess its divisor and then divide by that number and repeatedly find more divisors.

2.2.1 Solution2.2.1

Using basics of divisibility we can check that: $6, 7$, and 8 divide 336.

2.2.2 Solution2.2.2

Using the basics of multiplication we can check that:

$2^4 \times 3 \times 7 = 16 \times 3 \times 7 = 48 \times 7 = 336$.

Thus: $336 = 2^4 \times 3 \times 7$.

Since $315 = 3^2 \times 5 \times 7$ and $336 = 2^4 \times 3 \times 7$, the GCF of 315 and 336 is $3 \times 7 = 21$.