

Worksheet

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Problem quickname: 2001

1)

Determine the greatest common divisor (GCD). Use the Euclidean Algorithm as shown in the example. Write down the computational steps in detail.

a) Number 1: 876, Number 2: 203. Determine the larger number of these: 876.

Round 1:

Determine the quotient and remainder of $876 : 203$.

We have $876 = 4 \cdot 203 + 64$, so the quotient is 4, the remainder is 64.

Now select the divisor 203 of this round as new dividend and the remainder 64 as new divisor.

Round 2:

Determine the quotient and remainder of $203 : 64$.

We have $203 = 3 \cdot 64 + 11$, so the quotient is 3, the remainder is 11.

Now select the divisor 64 of this round as new dividend and the remainder 11 as new divisor.

Round 3:

Determine the quotient and remainder of $64 : 11$.

We have $64 = 5 \cdot 11 + 9$, so the quotient is 5, the remainder is 9.

Now select the divisor 11 of this round as new dividend and the remainder 9 as new divisor.

Round 4:

Determine the quotient and remainder of $11 : 9$.

We have $11 = 1 \cdot 9 + 2$, so the quotient is 1, the remainder is 2.

Now select the divisor 9 of this round as new dividend and the remainder 2 as new divisor.

Round 5:

Determine the quotient and remainder of $9 : 2$.

We have $9 = 4 \cdot 2 + 1$, so the quotient is 4, the remainder is 1.

Now select the divisor 2 of this round as new dividend and the remainder 1 as new divisor.

Round 6:

Determine the quotient and remainder of $2 : 1$.

We have $2 = 2 \cdot 1 + 0$, so the quotient is 2, the remainder is 0.

Finished. The last dividend 1 is also the GCD, so we have $\text{gcd}(876,203)=1$.

- b) Number 1: 506, Number 2: 838.
- c) Number 1: 647, Number 2: 331.
- d) Number 1: 372, Number 2: 630.
- e) Number 1: 290, Number 2: 534.
- f) Number 1: 765, Number 2: 340.
- g) Number 1: 626, Number 2: 816.

2)

Determine the greatest common divisor (GCD). Use the Euclidean Algorithm and write down the computational steps in detail.

- a) Number 1: 82, Number 2: 78.
- b) Number 1: 74, Number 2: 46.
- c) Number 1: 79, Number 2: 47.
- d) Number 1: 50, Number 2: 82.
- e) Number 1: 70, Number 2: 66.
- f) Number 1: 28, Number 2: 24.
- g) Number 1: 34, Number 2: 44.

3)

Determine the greatest common divisor (GCD). Use the Euclidean Algorithm as shown in the example. Write down the computational steps in detail.

- a) Number 1: 22, Number 2: 76. Determine the larger number of these: 76.

Round 1:

Determine the quotient and remainder of $76 : 22$.

We have $76 = 3 \cdot 22 + 10$, so the quotient is 3, the remainder is 10.

Now select the divisor 22 of this round as new dividend and the remainder 10 as new divisor.

Round 2:

Determine the quotient and remainder of $22 : 10$.

We have $22 = 2 \cdot 10 + 2$, so the quotient is 2, the remainder is 2.

Now select the divisor 10 of this round as new dividend and the remainder 2 as new divisor.

Round 3:

Determine the quotient and remainder of $10 : 2$.

We have $10 = 5 \cdot 2 + 0$, so the quotient is 5, the remainder is 0.

Finished. The last dividend 2 is also the GCD, so we have $\gcd(76,22)=2$.

- b) Number 1: 45, Number 2: 27.
- c) Number 1: 38, Number 2: 46.
- d) Number 1: 30, Number 2: 42.
- e) Number 1: 39, Number 2: 42.
- f) Number 1: 63, Number 2: 42.
- g) Number 1: 60, Number 2: 38.

4)

Determine the greatest common divisor (GCD). Use the Euclidean Algorithm as shown in the example. Write down the computational steps in detail.

- a) Number 1: 946, Number 2: 450. Determine the larger number of these: 946.

Round 1:

Determine the quotient and remainder of $946 : 450$.

We have $946 = 2 \cdot 450 + 46$, so the quotient is 2, the remainder is 46.

Now select the divisor 450 of this round as new dividend and the remainder 46 as new divisor.

Round 2:

Determine the quotient and remainder of $450 : 46$.

We have $450 = 9 \cdot 46 + 36$, so the quotient is 9, the remainder is 36.

Now select the divisor 46 of this round as new dividend and the remainder 36 as new divisor.

Round 3:

Determine the quotient and remainder of $46 : 36$.

We have $46 = 1 \cdot 36 + 10$, so the quotient is 1, the remainder is 10.

Now select the divisor 36 of this round as new dividend and the remainder 10 as new divisor.

Round 4:

Determine the quotient and remainder of $36 : 10$.

We have $36 = 3 \cdot 10 + 6$, so the quotient is 3, the remainder is 6.

Now select the divisor 10 of this round as new dividend and the remainder 6 as new divisor.

Round 5:

Determine the quotient and remainder of $10 : 6$.

We have $10 = 1 \cdot 6 + 4$, so the quotient is 1, the remainder is 4.

Now select the divisor 6 of this round as new dividend and the remainder 4 as new divisor.

Round 6:

Determine the quotient and remainder of $6 : 4$.

We have $6 = 1 \cdot 4 + 2$, so the quotient is 1, the remainder is 2.

Now select the divisor 4 of this round as new dividend and the remainder 2 as new divisor.

Round 7:

Determine the quotient and remainder of $4 : 2$.

We have $4 = 2 \cdot 2 + 0$, so the quotient is 2, the remainder is 0.

Finished. The last dividend 2 is also the GCD, so we have $\gcd(946,450)=2$.

- b) Number 1: 858, Number 2: 316.
- c) Number 1: 488, Number 2: 704.
- d) Number 1: 464, Number 2: 792.
- e) Number 1: 820, Number 2: 320.
- f) Number 1: 873, Number 2: 921.
- g) Number 1: 765, Number 2: 772.

Good Luck!