

Learning Objective: Students will be able to use Euclid's Ladder to find greatest common factors of two numbers.

# Warm Up

$$\begin{array}{r} 70 \\ \times 11 \\ \hline \end{array}$$

$$\begin{array}{r} 35 \\ \times 52 \\ \hline \end{array}$$

$$\begin{array}{r} 41 \\ \times 41 \\ \hline \end{array}$$

$$\begin{array}{r} 74 \\ \times 26 \\ \hline \end{array}$$

$$\begin{array}{r} 42 \\ \times 93 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ \times 42 \\ \hline \end{array}$$

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# Warm Up Answers

$$\begin{array}{r} 70 \\ \times 11 \\ \hline 70 \\ 700 \\ \hline 770 \end{array}$$

$$\begin{array}{r} 35 \\ \times 52 \\ \hline 70 \\ 1,750 \\ \hline 1,820 \end{array}$$

$$\begin{array}{r} 41 \\ \times 41 \\ \hline 41 \\ 1,640 \\ \hline 1,681 \end{array}$$

$$\begin{array}{r} 74 \\ \times 26 \\ \hline 444 \\ 1,480 \\ \hline 1,924 \end{array}$$

$$\begin{array}{r} 42 \\ \times 93 \\ \hline 126 \\ 3,780 \\ \hline 3,906 \end{array}$$

$$\begin{array}{r} 54 \\ \times 42 \\ \hline 108 \\ 2,160 \\ \hline 2,268 \end{array}$$

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# Homework Answers

## 1.4 Record and Practice Journal

List the factor pairs of the number.

1. 6

$1 \cdot 6, 2 \cdot 3$

2. 7

$1 \cdot 7$

3. 10

$1 \cdot 10, 2 \cdot 5$

4. 16

$1 \cdot 16, 2 \cdot 8, 4 \cdot 4$

5. 35

$1 \cdot 35, 5 \cdot 7$

6. 55

$1 \cdot 55, 5 \cdot 11$

Write the prime factorization of the number.

7. 9

$3^2$

8. 24

$2^3 \cdot 3$

9. 40

$2^3 \cdot 5$

10. 44

$2^2 \cdot 11$

11. 50

$2 \cdot 5^2$

12. 65

$5 \cdot 13$

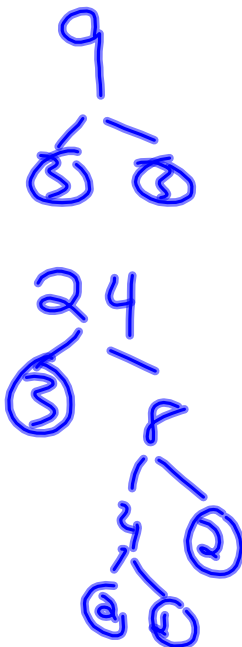
13. A fitness instructor arranges 30 people into rows. Each row has the same number of people.

a. Can the instructor arrange the people into rows of 6?

yes

b. Can the instructor arrange the people into rows of 9?

no



$1 \cdot 10$   
 $2 \cdot 5$



$1 \cdot 16$   
 $2 \cdot 8$   
 $4 \cdot 4$

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Lesson 1.5

September 12, 2014

## Essential Question:

How can you find the greatest common factor of two numbers?

## Lesson Objective:

Students will be able to:

use Euclid's Ladder to find greatest common factors of two numbers.

# Self-Evaluation Scale

Score	Description
4	I can teach other students how to use Euclid's Ladder to find greatest common factors of two numbers.
3	I can use Euclid's Ladder to find greatest common factors of two numbers.
2	I recognize, but still need help to use Euclid's Ladder to find greatest common factors of two numbers.
1	I do not know how to use Euclid's Ladder to find greatest common factors of two numbers.

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# Euclid

(323–283 BC)



also known as Euclid of Alexandria, was a Greek mathematician, often referred to as the "Father of Geometry".

12 20

①, ②, ③, ④, ⑥, ⑫

①, ②, ④ 5, 10, 20

①, ④



KISS

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$$\frac{12}{20} = \frac{3}{5}$$

## Euclid's Ladder

A diagram of Euclid's Ladder for the numbers 12 and 20. A large vertical oval on the left contains the number 2. To its right, a horizontal line separates the numbers 12 and 20 (written in blue) from the numbers 6 and 10 (written in red) below it. A red vertical line descends from the 2 in the oval to the 2 in the red 2, and a red horizontal line connects the 2 to the 6. Below the 6 and 10, the numbers 3 and 5 (written in red) are shown. A large number 4 is written below the entire structure.

A diagram of Euclid's Ladder for the numbers 14 and 35. A large vertical oval on the left contains the number 7. To its right, a horizontal line separates the numbers 14 and 35 (written in blue) from the numbers 2 and 5 (written in black) below it. A black vertical line descends from the 7 in the oval to the 7 in the black 7, and a black horizontal line connects the 7 to the 14.

$$\begin{array}{r} 2 \\ 3 \times \\ \hline 6 \\ 18 \\ \hline 41 \end{array}$$

Handwritten multiplication showing the product of 23 and 6. The numbers 2 and 3 are circled together. The partial products are 36 and 18. The final sum is 41.

12 36

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## On Your Own

$$\begin{array}{r} 3 \overline{) 12 \quad 30} \\ 2 \overline{) 4 \quad 10} \\ \hline \end{array}$$

GCF = 6   2   5

$$\begin{array}{r} 2 \overline{) 32 \quad 54} \\ \hline \end{array}$$

16   27

$$\begin{array}{r} 2 \overline{) 24 \quad 108} \\ 2 \overline{) 12 \quad 54} \\ 2 \overline{) 4 \quad 18} \\ \hline \end{array}$$

GCF = 12   2   9

$$\begin{array}{r} 17 \overline{) 51 \quad 85} \\ \hline \end{array}$$

3   5

$$\begin{array}{r} 2 \overline{) 14 \quad 84} \\ 7 \overline{) 7 \quad 42} \\ \hline \end{array}$$

1   6

$$\begin{array}{r} 3 \overline{) 39 \quad 66} \\ \hline \end{array}$$

13   22

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# Homework

In your Big Ideas Record and Practice Journal  
page 22.