

Name:

Period:

Notes 3-4

Greatest Common Factor (GCF) & Introduction To Factoring

Unit 1

Int 1

What is a factor?

A # that we can multiply by another # to get something.

A # can have many factors!

Example: 2 is a factor of 6. $2 \cdot 3 = 6$

How do you find the ^{BIGGEST SAME} Greatest Common Factor (GCF)?

Step 1: List out factor pairs for each #
*Start with the smaller #

Step 2: Find the GREATEST # that occurs on both sides.

Find the greatest common factor (GCF).

A. 4, 30 GCF = 2

$\begin{array}{r} 4 \\ \hline 1 \cdot 4 \\ 2 \cdot 2 \end{array}$	$\begin{array}{r} 30 \\ \hline 1 \cdot 30 \\ 2 \cdot 15 \\ 3 \cdot 10 \\ 5 \cdot 6 \end{array}$
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D. 20, 100, 80 GCF = 20

$\begin{array}{r} 20 \\ \hline 1 \cdot 20 \\ 2 \cdot 10 \\ 4 \cdot 5 \end{array}$	$\begin{array}{r} 100 \\ \hline 1 \cdot 100 \\ 2 \cdot 50 \\ 4 \cdot 25 \\ 5 \cdot 20 \\ 10 \cdot 10 \end{array}$	$\begin{array}{r} 80 \\ \hline 1 \cdot 80 \\ 2 \cdot 40 \\ 4 \cdot 20 \\ 5 \cdot 16 \\ 8 \cdot 10 \end{array}$
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B. 12, 8 GCF = 4

$\begin{array}{r} 12 \\ \hline 1 \cdot 12 \\ 2 \cdot 6 \\ 3 \cdot 4 \end{array}$	$\begin{array}{r} 8 \\ \hline 1 \cdot 8 \\ 2 \cdot 4 \end{array}$
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E. 6, 14, 22 GCF = 2

$\begin{array}{r} 6 \\ \hline 1 \cdot 6 \\ 2 \cdot 3 \end{array}$	$\begin{array}{r} 14 \\ \hline 1 \cdot 14 \\ 2 \cdot 7 \end{array}$	$\begin{array}{r} 22 \\ \hline 1 \cdot 22 \\ 2 \cdot 11 \end{array}$
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C. 11, 23 GCF = 1

$\begin{array}{r} 11 \\ \hline 1 \cdot 11 \end{array}$	$\begin{array}{r} 23 \\ \hline 1 \cdot 23 \end{array}$
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F. 81, 45, 9 GCF = 9

$\begin{array}{r} 81 \\ \hline 1 \cdot 81 \\ 3 \cdot 27 \\ 9 \cdot 9 \end{array}$	$\begin{array}{r} 45 \\ \hline 1 \cdot 45 \\ 3 \cdot 15 \\ 5 \cdot 9 \end{array}$	$\begin{array}{r} 9 \\ \hline 1 \cdot 9 \\ 3 \cdot 3 \end{array}$
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Find the greatest common factors (GCF) with variables AND numbers.

1) $4, 12dw$

$1 \cdot 4 \cdot 4 \cdot 3$

GCF = 4

4) $16r, 8, 24y$

$8 \cdot 2 \cdot 8 \cdot 1 \cdot 8 \cdot 3$

GCF = 8

2) $8h, 24$

$1 \cdot 8 \cdot 3 \cdot 8$

GCF = 8

5) $9, 3m, 18w$

$3 \cdot 3 \cdot 1 \cdot 3 \cdot 3 \cdot 6$

GCF = 3

3) $50w, 11g$

$1 \cdot 50 \cdot 1 \cdot 11$

GCF = 1

6) $17n, 13g, 41n$

$1 \cdot 17 \cdot 1 \cdot 13 \cdot 1 \cdot 41$

prime
#'s

GCF = 1

What does it mean TO FACTOR an expression?

it means to un distribute!

Every answer should look like ()

* check by distributing!

Factor the expressions completely.

CHECK:

$$7) \quad 16hf + 8 = 8(2hf + 1)$$

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

$$8(2hf + 1)$$
$$16hf + 8$$

$$8) \quad 13w - 26y = 13(w - 2y) = 13(w - 2y)$$

$1 \cdot 13$ $2 \cdot 13$
 $13w - 26y$

$$9) \quad 28 - 4ks = 4(7 - ks)$$

$7 \cdot 4$ $1 \cdot 4$
 $2 \cdot 2$
 $4(7 - ks)$

$$10) \quad 36hw - 24 - 12k = 12(3hw - 2 - k)$$

$3 \cdot 12$ $2 \cdot 12$ $1 \cdot 12$
 $12(3hw - 2 - k)$

11) $12xy + 16h + 4$

12) $9h - 36m - 18x$