## Page 1
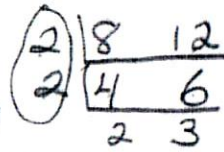
To **factor** an expressions means...

"Please make me into a multiplication problem"

Go FROM addition or subtraction of terms

Factor $5x + 10$

TO multiplication of factors    Simplify

$5(x + 2)$

$5 \cdot x + 5 \cdot 2$

$5x + 10$

## Page 2
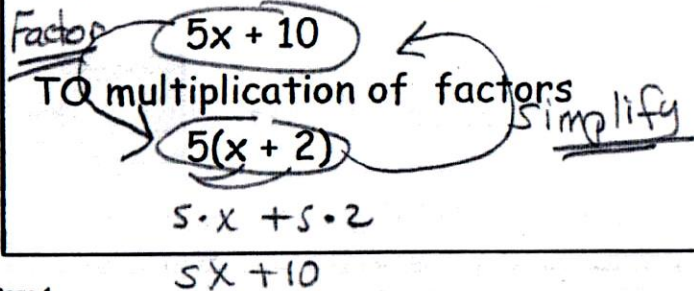
**Factor** $8x + 12$

*Think what is the GCF of 8 and 12?

$4 \cdot 2 \qquad 4 \cdot 3$

$$\begin{array}{c|cc} 2 & 8 & 12 \\ 2 & 4 & 6 \\ \hline & 2 & 3 \end{array}$$

GCF =
$2 \cdot 2 = 4$

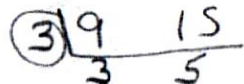*Write down the GCF and then parentheses like this:

(GCF)(   +   )

$4(2x + 3) = 8x + 12$

*Use distributive property to work backwards to find what must go in (   +   )

$4(2x + 3)$
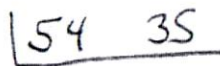
## Page 3

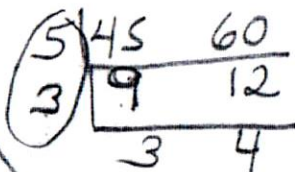Find the GCF (Greatest Common Factor) of each of the these monomials:

$9x$ and $15$   ③

$$\begin{array}{c|cc} 3 & 9 & 15 \\ \hline & 3 & 5 \end{array}$$

$54gh$ and $35g$   ⑨

$$\begin{array}{c|cc} & 54 & 35 \end{array}$$

$45x$ and $60x$   $15x$

$$\begin{array}{c|cc} 5 & 45 & 60 \\ 3 & 9 & 12 \\ \hline & 3 & 4 \end{array}$$

$100ab$ and $25b$   $25b$

$5 \cdot 3 = 15$

## Page 4

**Find what goes in the (   ) to make these expressions equivalent:**

$5(4x + 3) = 20x + 15$

$7x(x - 1) = 7x^2 - 7x$
$\qquad 7 \cdot x \cdot x$

$20(2x + 3) = 40x + 60$

• GCF
• Backwards Distributive Prop.

Factor. If Not Factorable, put NF

| 1) 24x + 8 | 2) 15ab + 30b | 3) 4x - 9 |
|---|---|---|
| 8(3x + 1) | 15b(a + 2) | NF |
| 4) 12x + 3 | 5) 16a - 12b | 6) 3x - 3 |
| 3(4x + 1) | 4(4a - 3b) | 3(x - 1) |

Factor. If Not Factorable, put NF

| 7) 48xy - 16x | 8) 25a - 30b | 9) 21x - 35 |
|---|---|---|
| 16x( - ) | 5( - ) | 7( - ) |
| 16x(3y - 1) | 5(5a - 6b) | 7(3x - 5) |
| 10) 12a + 5 | *11) $\frac{1}{4}x + 8$ | *12) $\frac{2}{5}x + 6$ |
| NF | $\frac{1}{4}$( + ) $\frac{1}{4}(x + 32)$ | $\frac{2}{5}(x + )$ $\frac{2}{5}(x + 15)$ |

Write an algebraic expression that represents the area of the shaded region. Simplify it and then factor it.

10a
4b  2  6
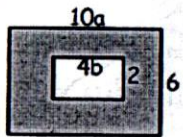
$A_{shaded} = A_{large\square} - A_{small\square}$

$= 6(10a) - 2(4b)$

Simplify $= 60a - 8b$

$= 4( - )$

Factor $= 4(15a - 2b)$

4 | 24   8
2 | 6    2
   3     1

5 | 5    30
3 | 3    6
   1     2

2 | 16   12
2 | 8    6
   4     3

2 | 48   16
2 | 24   8
2 | 12   4
2 | 6    2
   3     1

GCF = 2·2·2·2 = 16

2 | 60   8
2 | 30   4
   15    2

GCF = 2·2 = 4