Factoring phrase Worksheet   Name:_____

Factor, solve or simplify each expression in Table I. Then, find the corresponding answer in Table II. This will give you a correspondence between a letter and a number. Use this to reveal the mystery phrase.

Mystery phrase

" $\underset{1}{\_}$ $\underset{2}{\_}$ $\underset{6}{\_}$ $\underset{7}{\_}$ $\underset{4}{\_}$ $\underset{9}{\_}$ $\underset{6}{\_}$ $\underset{5}{\_}$ $\underset{10}{\_}$, $\underset{1}{\_}$ $\underset{2}{\_}$ $\underset{8}{\_}$ $\underset{1}{\_}$ $\underset{4}{\_}$ $\underset{9}{\_}$ $\underset{3}{\_}$ $\underset{11}{\_}$ $\underset{12}{\_}$ $\underset{9}{\_}$ $\underset{7}{\_}$; "

Table I

O	N	E	A
Simplify $(2x^3 - 5)^2$	Factor $3y^3 - 27y$	Simplify $\left(\frac{1}{2}x^2y^3\right)^3 \cdot \left(\frac{1}{3}x^3\right)^2$	Factor $x^2 + 8x + 16$
T	**C**	**B***	**M**
Factor $6x^2 + 11x - 10$	Solve $1 - 6x = -9x^2$	Solve $x^3 + 2x^2 = 9x + 18$	Simplify $\left(\frac{1}{2}x^2y^3\right)^3 \div \left(\frac{1}{3}x^4\right)^2$
I	**H**	**S**	**G**
Factor $x^6 - 27$	Factor $6x^2 - 5x + 1$	Solve $x^2 - 2x = 0$	Factor $x^9 + 27y^3$

Factoring phrase Worksheet   Name:_____

Table II

1	4	5	2
$(3x - 2)(2x + 5)$	$3, -3, -2$	$3y(y + 3)(y - 3)$	$(2x - 1)(3x - 1)$
11	**3**	**9**	**6**
$4x^6 - 20x^3 + 25$	$\dfrac{1}{3}$	$\dfrac{x^{12}y^9}{72}$	$(x^2 - 3)(x^4 + 3x^2 + 9)$
7	**10**	**8**	**12**
$x = 0$ or $x = 2$	$(x^3 + 3y)(x^6 - 3x^3y + 9y^2)$	$(x + 4)^2$	$\dfrac{9y^9}{8x^2}$

Some extra challenge factoring:

1. Factor: $16x^2 + 2x + \dfrac{1}{16}$

2. Factor: $2xy - 4x^2 - \dfrac{y^2}{4}$

3. Factor: $-x - 4 + \dfrac{x^2}{2}$

Factoring phrase Worksheet   Name:_____

Factor, solve or simplify each expression in Table I. Then, find the corresponding answer in Table II. This will give you a correspondence between a letter and a number. Use this to reveal the mystery phrase.

Mystery phrase

" _ _ _ _   _ _ _ _ _ ,   _ _ _ _   _ _ _ _ _ _ _ ; "
   1 2 6 7   4 9 6 5 10   1 2 8 1   4 9 3 11 12 9 7

Pratītyasamutpāda (Sanskrit: प्रतीत्यसमुत्पाद), commonly translated as dependent origination.
"This being, that becomes; from the arising of this, that arises. This not being, that does not become; from the ceasing of this, that ceases." Majjhima Nikaya

Table I

O➔11	N➔5	E➔9	A➔8
simplify $(2x^3 - 5)^2$	factor $3y^3 - 27y$	Simplify $\left(\frac{1}{2}x^2y^3\right)^3 \cdot \left(\frac{1}{3}x^3\right)^2$	factor $x^2 + 8x + 16$
T➔1	C➔3	B➔4	M➔12
factor $6x^2 + 11x - 10$	Solve $1 - 6x = -9x^2$	Solve $x^3 + 2x^2 = 9x + 18$	Simplify $\left(\frac{1}{2}x^2y^3\right)^3 \div \left(\frac{1}{3}x^4\right)^2$
I➔6	H➔2	S➔7	G➔10
factor $x^6 - 27$	factor $6x^2 - 5x + 1$	factor $x^2 - 2x = 0$	factor $x^9 + 27y^3$

Table II

1	4	5	2
$(3x - 2)(2x + 5)$	$3, -3, -2$	$3y(y + 3)(y - 3)$	$(2x - 1)(3x - 1)$
11	3	9	6
$4x^6 - 20x^3 + 25$	$\frac{1}{3}$	$\frac{x^{12}y^9}{72}$	$(x^2 - 3)(x^4 + 3x^2 + 9)$
7	10	8	12
$x = 0$ or $x = 2$	$(x^3 + 3y)(x^6 - 3x^3y + 9y^2)$	$(x + 4)^2$	$\frac{9y^9}{8x^2}$