

Polynomial Review

Name: KLU

Simplify:

1.  $(2n+2)(6n+1)$

$$\begin{array}{|c|c|c|} \hline 2n^2 & +2n & +12n \\ \hline \hline 12n^2 & +14n & +2 \\ \hline \end{array}$$

2.  $(2a-1)(8a-5)$

$$\begin{array}{|c|c|c|} \hline 16a^2 & -10a & -8a \\ \hline \hline 16a^2 & -18a & +5 \\ \hline \end{array}$$

3.  $(-3x+3)(4x-2)$

$$\begin{array}{|c|c|c|} \hline -12x^2 & +6x & +12x \\ \hline \hline -12x^2 & +18x & -6 \\ \hline \end{array}$$

4.  $9xy(2x^2+9xy-4xy^2)$

$$18x^3y + 81x^2y^2 - 36x^2y^3$$

5.  $(6n^2-6n-5)(7n^2+6n-5)$

$$\begin{array}{|c|c|c|} \hline 6n^2 & -6n & -5 \\ \hline 7n^2 & 42n^4 & -42n^3 & -35n^2 \\ \hline +6n & 36n^3 & -36n^2 & -30n \\ \hline -5 & -30n^2 & 30n & +25 \\ \hline \hline 42n^4 & -6n^3 & -10n^2 & +25 \\ \hline \end{array}$$

6. A rectangle has a base of  $4x-1$  and a height of  $3x+2$ . What is the area?

$$(4x-1)(3x+2)$$

$$12x^2 + 8x - 3x - 2$$

$$12x^2 + 5x - 2$$

7.  $5(2k^2-3k)-6k(-k^2+k-7)$

$$10k^2 - 15k + 6k^3 - 6k^2 + 42k$$

$$6k^3 + 4k^2 + 27k$$

8.  $5a(4a^2-2a)+3a(-2a+4a)$

$$20a^3 - 10a^2 - 6a^2 + 12a^2$$

$$20a^3 - 4a^2$$

9.  $(4x-8)(4x-8)$

$$16x^2 - 32x - 32x + 64$$

$$16x^2 - 64x + 64$$

10.  $(-3x^2y+2xy^2-5)-(-xy^2-5)$

$$-3x^2y + 2xy^2 - 5 + xy^2 + 5$$

$$-3x^2y + 3xy^2$$

11.  $(2y-3)(y^2+5y-1)$

$$\begin{array}{|c|c|c|} \hline y^2 & +5y & -1 \\ \hline 2y & 2y^3 & 10y^2 & -2y \\ \hline -3 & -3y^2 & -15y & 3 \\ \hline \hline 2y^3 & +7y^2 & -17y & +3 \\ \hline \end{array}$$

12.  $(3x+4)(5x^2-4x+6)$

$$\begin{array}{|c|c|c|} \hline 5x^2 & -4x & +6 \\ \hline 3x & 15x^3 & -12x^2 & 18x \\ \hline +4 & 20x^2 & -16x & 24 \\ \hline \hline 15x^3 & +8x^2 & +2x & +24 \\ \hline \end{array}$$

13.  $(x^2-3x+6)(2x^2+3x+4)$

$$\begin{array}{|c|c|c|} \hline 2x^2 & +3x & +4 \\ \hline x^2 & 2x^4 & 3x^3 & 4x^2 \\ \hline -3x & -6x^3 & -9x^2 & -12x \\ \hline +6 & 6x^2 & 18x & 24 \\ \hline \hline 2x^4 & -3x^3 & +7x^2 & +6x & +24 \\ \hline \end{array}$$

$$2x^4 - 3x^3 + 7x^2 + 6x + 24$$

14.  $(5x-3)(5x+3)$

$$25x^2 - 9$$

15.  $(2b+4)(2b+4)$

$$4b^2 + 16b + 16$$

Solve:

16. A cafeteria has two meal plans. One requires the worker to pay \$20 for the card, and \$1 each time  $x$  she uses it. The other plan requires the worker to pay \$30 for the card, but only \$0.50 each time  $x$  she uses it. After how many uses will the workers with different plans have spent the same amount of money?

$$x + 20 = .50x + 30$$

$x = \#$  times the card is used

$$.50x = 10$$

$$x = 20 \text{ uses}$$

17.  $x(x-2) + 2x(x+3) + 10 = 3x(x-1) + 31$

$$x^2 - 2x + 2x^2 + 6x + 10 = 3x^2 - 3x + 31$$

$$3x^2 + 4x + 10 = 3x^2 - 3x + 31$$

$$7x = 21$$

$$x = 3$$

18.  $5x^2(2x-3) - x(2x^2+4x-8) = 8x(x^2-x) - 11x(x-8)$

$$10x^3 - 15x^2 - 2x^3 - 4x^2 + 8x = 8x^3 - 8x^2 - 11x^2 + 88x$$

$$8x^3 - 19x^2 + 8x = 8x^3 - 19x^2 + 88x$$

$$0 = 80x$$

$$x = 0$$

19. Simplify:  $(2x-4)^2$

$$4x^2 - 16x + 16$$

20. Simplify:  $(x+8)^2$

$$x^2 + 16x + 64$$

21. Given the points (4, -3) and (-5, 2), write the equation of the line in slope-intercept, standard, and point-slope form.

$$\frac{2 - (-3)}{-5 - 4} = \frac{5}{-9} \quad -3 = -\frac{5}{9}(4) + b$$

$$-3 = -\frac{20}{9} + b$$

$$-\frac{7}{9} = b$$

$$\textcircled{1} y = -\frac{5}{9}x - \frac{7}{9}$$

$$\textcircled{2} 5x + 9y = -7$$

$$\textcircled{3} y + 3 = -\frac{5}{9}(x - 4)$$

OR

$$y + 2 = -\frac{5}{9}(x + 5)$$

$$\uparrow \left( \frac{5}{9}x + y = -\frac{7}{9} \right)$$

22. Given the points (-1, 2) and (-3, -3), write the equation of the line in slope-intercept, standard, and point-slope form.

$$\frac{-3 - 2}{-3 - (-1)} = \frac{-5}{-2} = \frac{5}{2}$$

$$2 = \frac{5}{2}(-1) + b$$

$$2 = -\frac{5}{2} + b$$

$$+\frac{5}{2} \quad +\frac{5}{2}$$

$$4.5 = b$$

(9/2)

$$\textcircled{1} y = \frac{5}{2}x + 4.5$$

$$\textcircled{2} 5x - 2y = -9$$

$$\textcircled{3} y - 2 = \frac{5}{2}(x + 1)$$

OR

$$y + 3 = \frac{5}{2}(x + 3)$$

$$-2 \left( -\frac{5}{2}x + y = \frac{9}{2} \right)$$

Practice with Polynomials

Name Key date \_\_\_\_\_ block \_\_\_\_\_

Write each polynomial in standard form. Then name each polynomial by its degree and the number of its terms.

$3m - 7m^3 + 3$ $-7m^3 + 3m + 3$ ; degree = 3, cubic trinomial	$12x^2 - 6x^3 + 7 + x$ $-6x^3 + 12x^2 + x + 7$ ; degree = 3 4 terms, 4th degree
$x^2 + x^4$ $x^4 + x^2$ ; degree = 4, binomial	$6 + 7x$ $7x + 6$ ; degree = 1, binomial

Find each sum or difference. Write your answer in standard form.

$(d^2 + 8 - 5d) - (5d^2 + d - 2d^3 + 3)$ $d^2 + 8 - 5d - 5d^2 - d + 2d^3 - 3$ $2d^3 - 4d^2 - 6d + 5$	$(6c^2 + 5c - 3) - (3c^2 + 8c)$ $6c^2 + 5c - 3 - 3c^2 - 8c$ $3c^2 - 3c - 3$	$(4x + 7x^3 - 9x^2) + (3 - 2^2 - 5x)$ $4x + 7x^3 - 9x^2 + 3 - 4 - 5x$ $7x^3 - 9x^2 - x - 1$
$(2x^2 - 6x + 3) - (2x + 4x^2 + 2)$ $2x^2 - 6x + 3 - 2x - 4x^2 - 2$ $-2x^2 - 8x + 1$	$(x^2 + 15x + 13) + (3x^2 - 15x + 7)$ $4x^2 + 20$	$(2x^3 - 4x^2 + 3) + (x^3 - 3x^2 + 1)$ $3x^3 - 7x^2 + 4$
$(3y^2 - 8) + (5y + 9) - (y^2 + 6y - 4)$ $3y^2 - 8 + 5y + 9 - y^2 - 6y + 4$ $2y^2 - y + 5$	$(5ab^2 + 3ab) - (2ab^2 + 4 - 8ab)$ $5ab^2 + 3ab - 2ab^2 - 4 + 8ab$ $3ab^2 + 11ab - 4$	$(5x^2 + 3a^2 - 5x) + (2x^2 - 5ax + 7x)$ $7x^2 + 3a^2 - 5ax + 2x$

Find the GCF of each polynomial and then factor the polynomial completely.

$8bc^2 + 24bc$ $8bc(c + 3)$	$4x^4 - 12x^3 + 6x^2$ $2x^2(2x^2 - 6x + 3)$
$x^2 + 5x + 7x + 35$ $x^2 + 12x + 35$ NO GCF	$10x^2 - 12xy - 15x + 21y$ NO GCF
$6m^4 - 9m^3 + 18m^2$ $3m^2(2m^2 - 3m + 6)$	$5z^4 - 25z^3 - 20z$ $5z(z^3 - 5z^2 - 4)$
$9 - 27x^3$ $9(1 - 3x^3)$	$2x^2 + 8x - 14$ $2(x^2 + 4x - 7)$

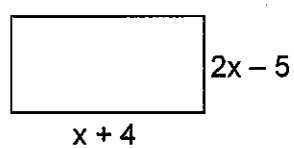
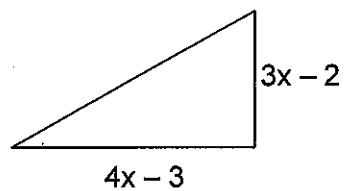
**Simplify**

$d(-2d + 4) + 15d$ $-2d^2 + 4d + 15d$ $-2d^2 + 19d$	$-x(4x^2 - 2x) - 5x^3$ $-4x^3 + 2x^2 - 5x^3$ $-9x^3 + 2x^2$
$3w(6w - 4) + 2(w^2 - 3w + 5)$ $18w^2 - 12w + 2w^2 - 6w + 10$ $20w^2 - 18w + 10$	$4y(y^2 - 8y + 6) - 3(2y^3 - 5y^2 + 2)$ $4y^3 - 32y^2 + 24y - 6y^3 + 15y^2 - 6$ $-2y^3 - 17y^2 + 24y - 6$

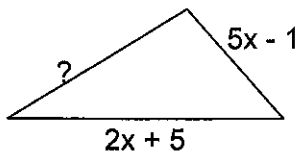
**Multiply**

$(x + 7)(x + 5)$ $x^2 + 12x + 35$	$(3m^2 - 7m + 8)(m - 2)$ <table border="1"> <tr><td></td><td><math>3m^2</math></td><td><math>-7m</math></td><td><math>+8</math></td></tr> <tr><td><math>m</math></td><td><math>3m^3</math></td><td><math>-7m^2</math></td><td><math>8m</math></td></tr> <tr><td><math>-2</math></td><td><math>-6m^2</math></td><td><math>14m</math></td><td><math>-16</math></td></tr> <tr><td></td><td><math>3m^3</math></td><td><math>-13m^2</math></td><td><math>22m - 16</math></td></tr> </table>		$3m^2$	$-7m$	$+8$	$m$	$3m^3$	$-7m^2$	$8m$	$-2$	$-6m^2$	$14m$	$-16$		$3m^3$	$-13m^2$	$22m - 16$	$(3a + 4)(3a - 5)$ $9a^2 - 3a - 20$																				
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$8x^2y(5x + 2y^2 - 3)$ $40x^3y + 16x^2y^2 - 24x^2y$	$(4x + 3)(x - 7)$ $4x^2 - 25x - 21$	$(2x - 1)(x^2 - 7x + 1)$ <table border="1"> <tr><td></td><td><math>x^2</math></td><td><math>-7x</math></td><td><math>+1</math></td></tr> <tr><td><math>2x</math></td><td><math>2x^3</math></td><td><math>-14x^2</math></td><td><math>2x</math></td></tr> <tr><td><math>-1</math></td><td><math>-x^2</math></td><td><math>7x</math></td><td><math>-1</math></td></tr> <tr><td></td><td><math>2x^3</math></td><td><math>-15x^2</math></td><td><math>9x - 1</math></td></tr> </table>		$x^2$	$-7x$	$+1$	$2x$	$2x^3$	$-14x^2$	$2x$	$-1$	$-x^2$	$7x$	$-1$		$2x^3$	$-15x^2$	$9x - 1$																				
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	$18x^4$	$-3x^3$	$20x^2 - 10x + 8$																																			

Write an expression to represent the area of the figure.

	$(2x - 5)(x + 4)$ $2x^2 + 3x - 20$		$\frac{1}{2}(3x - 2)(4x - 3)$ $\frac{1}{2}(12x^2 - 17x + 6)$
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The perimeter of a triangular park is  $16x + 3$ . What is the missing length?



$5x - 1 + 2x + 5 + ? = 16x + 3$   
 $7x + 4 + ? = 16x + 3$   
 $? = 16x + 3 - 7x - 4$   
 $? = 9x - 1$