

Name	Examples	Non-Examples
Monomial (one term)	1. $3x^4$ degree: 4 or quartic 2. a^2 degree: 2 or quadratic 3. $5x^0 = 5 \cdot 1 = 5$ degree: 0 or constant	1. $2x^{-4}$ ← NO NEGATIVE EXP'S FOR VARIABLE 2. $5\sqrt{m}$ ← NO RADICALS OF VARIABLE 3. $3t^{\frac{2}{3}}$ ← NO RATIONAL EXP'S FOR VARIABLE
Binomial (two terms)	1. $2n^3 - n$ degree: 3 or cubic 2. $p^1 - 3$ degree: 1 or linear (monic) 3. $-3a^3b^4 + a^4b^5$ degree: 9 or nonic	1. $\frac{2x+1}{x} = \frac{2x}{x} + \frac{1}{x} = 2 + \frac{1}{x}$ ← NO VARIABLES IN THE DENOM. 2. $\sqrt{c^3 - 2}$ ← NO RADICALS OF VARIABLE.
Trinomial (three terms)	1. $-2x^3 + 2x - 3$ degree: 3 or cubic 2. $d(d^2 + 2d^4 - 2)$ degree: 5 or quintic $d^3 + 2d^5 - 2d$	1. $x^{-3} + 2x - 5$ ← NO NEGATIVE EXP 2. $2^x + 3x - 5$ ← NO VARIABLES IN THE EXPONENT.
Polynomial (one or more terms)	1. $3x^4 + 2x^3 - 5x + 1$ degree: 4 or quartic 2. $5y^6$ degree: 6 or sextic 3. $\frac{1}{2}x^2 + \sqrt{3}x^3 - 6x^4 + 1x - 3$ degree: 4 or quartic	1. $3q^3 + \frac{p}{q}$ ← NO VARIABLES IN THE DENOMINATOR 2. $2^x + 3\sqrt{x}$ ← NO RADICALS OF VARIABLES

1. EXPAND and SIMPLIFY

a. $(7x+3)-(2-2x)$

$$\begin{array}{r} 7x+3-2+2x \\ \hline 9x+1 \end{array}$$

$9x+1$ | DEGREE: 1
LEAD COEFFICIENT: 9

b. $(5x^3 - 3x^4 - 2x - 9x^2 - 2) + (3x^3 + 2x^2 - 5x - 7)$

$$\begin{array}{r} 5x^3 - 3x^4 - 2x - 9x^2 - 2 + 3x^3 + 2x^2 - 5x - 7 \\ \hline -3x^4 + 8x^3 - 7x^2 - 7x - 9 \end{array}$$

$-3x^4 + 8x^3 - 7x^2 - 7x - 9$ | DEG: 4
LEAD COEFF: -3

c. $3(x+5)+8x$

$$\begin{array}{r} 3x+15+8x \\ \hline 11x+15 \end{array}$$

$11x+15$ | DEG: 1
LC: 11

d. $-2(3x+2y)-(5x-6y)+2x-7$

$$\begin{array}{r} -6x-4y-5x+6y+2x-7 \\ \hline -9x+2y-7 \end{array}$$

$-9x+2y-7$ | DEG: 1

e. $(2x^2+5x)-(6x^2-2x)$

$$\begin{array}{r} 2x^2+5x-6x^2+2x \\ \hline -4x^2+7x \end{array}$$

$-4x^2+7x$ | DEG: 2
LC: -4

f. $(2x^3+5x-8)+(5x^3-9x^2-11x+5)$

$$\begin{array}{r} 2x^3+5x-8+5x^3-9x^2-11x+5 \\ \hline 7x^3-9x^2-6x-3 \end{array}$$

$7x^3-9x^2-6x-3$ | DEG: 3
LC: 7

g. $(x+3)(x+5)$

DISTRIBUTION METHOD

$$\begin{array}{l} x(x+3) + 5(x+3) \\ x^2+3x+5x+15 \\ \hline x^2+8x+15 \end{array}$$

F.O.I.L. METHOD

$$\begin{array}{l} (x+3)(x+5) \\ x^2+5x+3x+15 \\ \hline x^2+8x+15 \end{array}$$

$x^2+8x+15$ | DEG: 2
LC: 1

h. $(2x-5)^2$

$$\begin{array}{l} (2x-5)(2x-5) \\ 4x^2-10x-10x+25 \\ \hline 4x^2-20x+25 \end{array}$$

$4x^2-20x+25$ | DEG: 2
LC: 4

(1 Continued). EXPAND and SIMPLIFY

i. $4y^2(y^2 + 2y)$

$$4y^4 + 8y^3$$

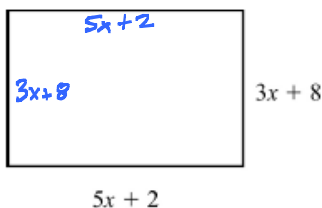
$4y^4 + 8y^3$	DEG: 4 LC: 4
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l. $(2a+3)(a^2+2a-4)$

$$\begin{array}{r} 2a^3 + 4a^2 - 8a \\ + 3a^2 + 6a - 12 \\ \hline 2a^3 + 7a^2 - 2a - 12 \end{array}$$

$2a^3 + 7a^2 - 2a - 12$	DEG: 3 LC: 2
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n.



$$\text{Perim.} = (5x+2) + (3x+8) + (5x+2) + (3x+8)$$

$$16x + 20$$

$$\text{Area: } (5x+2)(3x+8)$$

$$\begin{array}{r} 15x^2 + 40x + 6x + 16 \\ \hline 15x^2 + 46x + 16 \end{array}$$

Determine an expression that represents:

Perimeter = $16x + 20$ UNITS

Area = $15x^2 + 46x + 16$ sq units

j. $-6y^2(3y^2 - 2y - 7)$

$$-18y^4 + 12y^3 + 42y^2$$

$-18y^4 + 12y^3 + 42y^2$	DEG: 4 LC: -18
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k. $(2x+3)(3x-5)$

$$\begin{array}{r} 6x^2 - 10x + 9x - 15 \\ \hline 6x^2 - 1x - 15 \end{array}$$

$6x^2 - x - 15$	DEG: 2 LC: 6
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m. $(x-2)(x^2+4)(2x+3)$

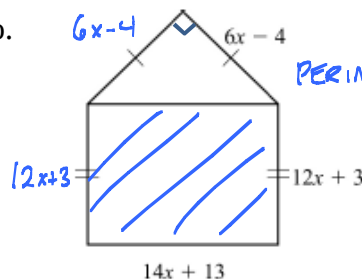
$$(x-2)(2x^3 + 3x^2 + 8x + 12)$$

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

$$\begin{array}{r} 2x^4 + 3x^3 + 8x^2 + 12x \\ - 4x^3 - 6x^2 - 16x - 24 \\ \hline 2x^4 - x^3 + 2x^2 - 4x - 24 \end{array}$$

$2x^4 - x^3 + 2x^2 - 4x - 24$	DEG: 4 LC: 2
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o.



$$\text{PERIM} = (6x-4) + (6x-4) + (12x+3) + (14x+13) + (12x+3)$$

$$50x + 11$$

$$\begin{aligned} \text{Area } \triangle &= \frac{(6x-4)(6x-4)}{2} \\ &= \frac{36x^2 - 24x - 24x + 16}{2} \\ &= 18x^2 - 12x - 12x + 8 \\ &= 18x^2 - 24x + 8 \end{aligned}$$

$$\begin{aligned} \text{Area } \square &= (14x+13)(12x+3) \\ &= 168x^2 + 42x + 156x + 39 \\ &= 168x^2 + 198x + 39 \end{aligned}$$

$$\begin{aligned} \text{COMBINED AREAS } \text{house} &= 168x^2 + 198x + 39 \\ &+ 18x^2 - 24x + 8 \\ \hline &186x^2 + 174x + 47 \end{aligned}$$

Determine an expression that represents:

Perimeter = $50x + 11$ units

Area = $186x^2 + 174x + 47$ sq units.