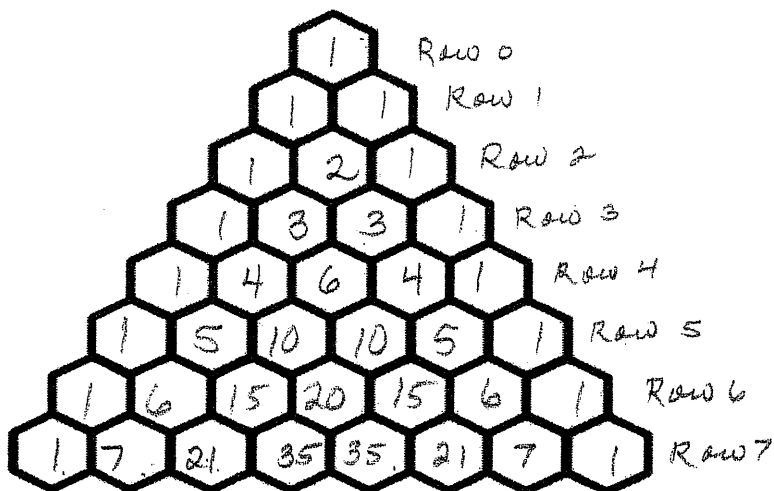


Do Everything On Your Own Paper- show your work

1. Simplify: $6(x-7) - 12(x-7)$ $-6x + 42$
2. Simplify: $(4x^3 + 2x^2 - 6x + 2) - (-11x^3 - 16x^2 + 8x - 3)$ $15x^3 + 18x^2 - 14x + 5$
3. Find the coefficient of 4th term in the binomial expansion: $(3x + y)^5$
 90
4. The number of computer sales from 1971 to 1989 (in millions) is modeled by the expression $y = -.99x^2 - 1.48x + 67.88$. The number of iPad sales from 1971 to 1989 (in millions) is modeled by the expression $y = 0.26x + 55.32$. Find an expression that models the total number of computer sales, n , since ~~1991~~ ¹⁹⁷¹. Show all steps. $-.99x^2 - 1.22x + 123.20$
5. Write the polynomial in standard form and name the polynomial based on degree and terms:
 $45x^3 - 400x - 77x^3 - 12$ $- 32x^3 - 400x - 12$ cubic
trinomial
6. Factor completely: $20x^5 - 70x^4 - 12x^3 + 42x^2$ $2x^2(x-7)(5x^2-3)$
7. Expand completely using Pascal's Triangle: $(3x-4)^4$
 $81x^4 - 432x^3 + 864x^2 - 768x + 256$

FACTOR EACH POLYNOMIAL COMPLETELY:

8. $100x^2 - 81$ $(10x-9)(10x+9)$
9. $54p^3 - 2r^3$ $2(3p-r)(9p^2 + 3pr + r^2)$
10. $2x^2 - x - 36$ $(2x-9)(x+4)$
11. $3x^2 - 57x + 264$ $3(x-8)(x-11)$
12. $125x^3 + 64$ $(5x+4)(25x^2 - 20x + 16)$
13. $GJ + GK - JH - KH$ $(J+K)(G-H)$
14. $30a^7b^2 - 40a^3b^3$ $10a^3b^2(3a^4 - 4b)$
15. $-25 + 16x^2$ $(4x+5)(4x-5)$



16. Complete Pascal's Triangle

17. Find the 5th term of: $(2x - y)^7$ $280x^3y^4$

18. Find the first term of: $(4p - 7q)^5$ $1024p^5$

19. Find the last term of: $(m - 6p)^4$ $1296p^4$

20. Expand completely: $(w + 5)^5$ $w^5 + 25w^4 + 250w^3 + 1250w^2 + 3125w + 3125$

Find the quotient and remainder using polynomial long division:

21. $(3x^3 + 32x^2 - 10x - 24) \div (3x + 2)$ $x^2 + 10x - 10$ $\frac{-4}{3x+2}$

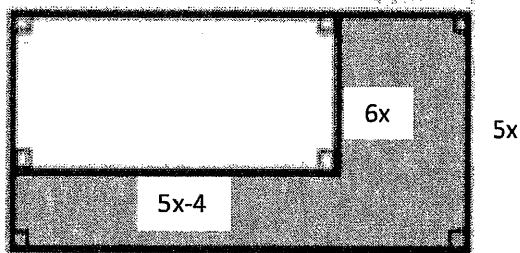
22. $(3n^3 - 30n^2 + 73n - 70) \div (n - 7)$ $3n^2 - 9n + 10$

23. Rewrite the polynomial in standard form and identify the degree, the leading coefficient, and the constant.

$f(x) = 10x^3 - 16x^2 + 49x^6 - 11 + 14x^4$
 $49x^6 + 14x^4 + 10x^3 - 16x^2 - 11$

degree = 6 L.C. = 49 constant = -11

24. Write a polynomial expression in standard form that represents the shaded area of the diagram.
 Show all steps. $45x^3 - 15x^2 - 16x$



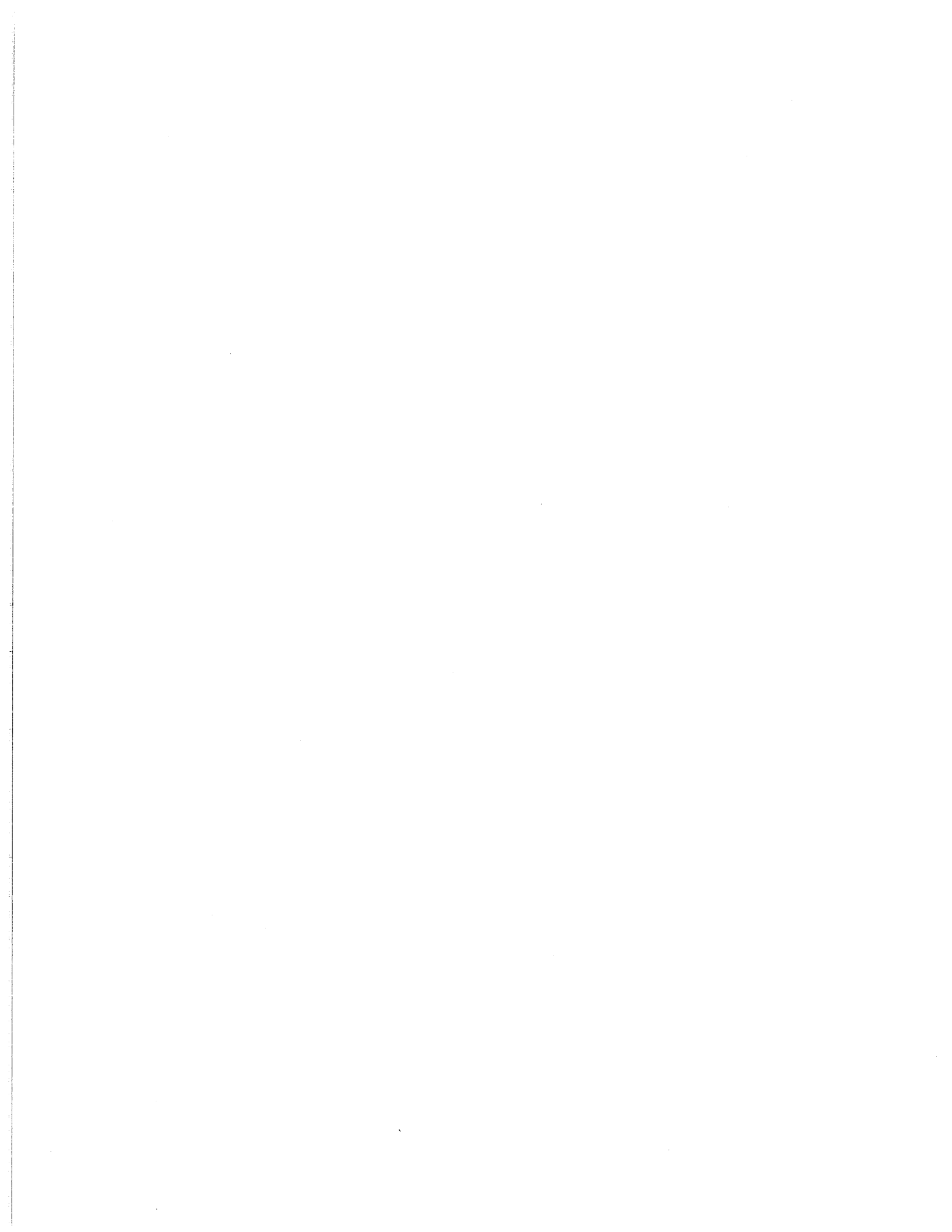
$$9x^2 + 3x - 8$$

25. Create: a linear monomial, a quartic binomial, a cubic binomial, quadratic trinomial

EX $2x$ EX $3x^4 + 7$ EX $x^3 - 5$ EX $2x^2 + 6x - 2$



there are infinitely possible answers
 many



$$1. \quad 6(x-7) - 12(x-7)$$

$$6x - 42 - 12x + 84$$

$$-6x + 42$$

$$2. \quad (4x^3 + 2x^2 - 6x + 2) - (-11x^3 - 16x^2 + 8x - 3)$$

$$4x^3 + 2x^2 - 6x + 2 + 11x^3 + 16x^2 - 8x + 3$$

$$15x^3 + 18x^2 - 14x + 5$$

3. 4th term of $(3x + y)^5$ ← go to Row 5
 count 4 spaces from left
 the number there is 10

← terms become factors

$10(3x)^4(y)$

the 4th term
 takes the exponents
 shown here:

Row 5:

	1	5	10	10	5	1
exponents:	5,0	4,1	3,2	2,3	1,4	0,5
				↑		

∴ the 4th term of $(3x + y)^5$ is

$$10(3x)^2(y)^3$$

$$\text{or } 10(9x^2)(y^3)$$

$$90x^2y^3$$

4. To find total sales, add the polynomials

$$-.99x^2 - 1.48x + 67.88$$

$$+ 0.26x + 55.32$$

$$\boxed{-.99x^2 - 1.22x + 123.20}$$

$$6. \quad 20x^5 - 70x^4 - 12x^3 + 42x^2$$

$$\text{ACF: } 2x^2 (10x^3 - 35x^2 - 6x + 21)$$

$$\begin{array}{c} \swarrow \quad \searrow \\ 5x^2(2x-7) \quad -3(2x-7) \end{array}$$

$$\boxed{2x^2 (2x-7)(5x^2-3)}$$

$$7. \quad (3x-4)^4$$

$$1 \binom{4}{0} (3x)^4 (-4)^0 \quad 4 \binom{3}{1} (3x)^3 (-4)^1 \quad 6 \binom{2}{2} (3x)^2 (-4)^2 \quad 4 \binom{1}{3} (3x)^1 (-4)^3 \quad 1 \binom{0}{4} (3x)^0 (-4)^4$$

$$1(81x^4)(1) \quad 4(27x^3)(-4) \quad 6(9x^2)(16) \quad 4(3x)(-64) \quad 1(1)(256)$$

$$\boxed{81x^4 - 432x^3 + 864x^2 - 768x + 256}$$

$$8. \quad 100x^2 - 81$$

$$(10x-9)(10x+9)$$

$$9. \quad 54p^3 - 2r^3$$

$$2(27p^3 - r^3)$$

$$2(3p-r)(9p^2 + 3pr + r^2)$$

$$10. \quad 2x^2 - x - 36$$

$$\begin{array}{r} -72 \\ -9 \quad +8 \\ \hline 2 \quad -1 \quad 2 \end{array}$$

$$(2x-9)(x+4)$$

$$11. 3x^2 - 57x + 264$$

$$3(x^2 - 19x + 88)$$

$$3(x-8)(x-11)$$

$$\begin{array}{r} 88 \\ -8 \quad -11 \\ \hline -19 \end{array}$$

$$12. 125x^3 + 64$$

$$(5x+4)(25x^2-20x+16)$$

$$13. \underbrace{GJ + aK} - \underbrace{JH - KH}$$

$$a(J+K) - H(J+K)$$

$$(J+K)(a-H)$$

$$14. 30a^7b^2 - 40a^3b^3$$

$$10a^3b^2(3a^4 - 4b)$$

$$15. -25 + 16x^2$$

same as $16x^2 - 25$

$$(4x+5)(4x-5)$$

$$17. 35(2x)^3(-y)^4$$

$$35(8x^3)(y^4)$$

$$280x^3y^4$$

$$18. 1(4p)^5(-7q)^0$$

$$1(1024p^5)(1)$$

$$1024p^5$$

~~1. $-6(x-7) - 12(x-7)$~~

19. $1 \binom{0}{m} (-6p)^4$
 $1 (1) (1296 p^4)$
 $1296 p^4$

21. $1 \binom{5}{w} (5)^0$ $5 \binom{4}{w} (5)^1$ $10 \binom{3}{w} (5)^2$ $10 \binom{2}{w} (5)^3$ $5 \binom{1}{w} (5)^4$ $1 \binom{0}{w} (5)^5$
 $1 (w^5) (1)$ $5 (w^4) (5)$ $10 (w^3) (25)$ \uparrow \uparrow \uparrow
 $10 (w^2) (125)$ $5 (w) (625)$ $1 (1) (3125)$

$w^5 + 25w^4 + 250w^3 + 1250w^2 + 3125w + 3125$

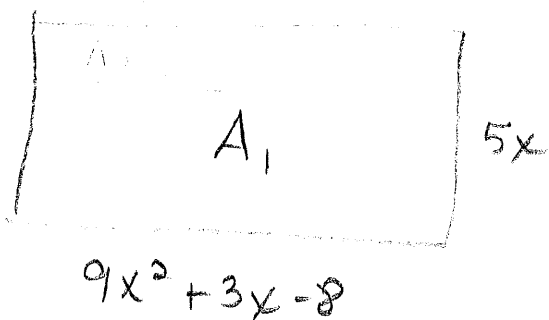
21. $3x + 2 \overline{) 3x^3 + 32x^2 - 10x - 24}$
 $\overline{-(3x^3 + 2x^2)}$
 $30x^2 - 10x - 24$
 $\overline{-(30x^2 + 20x)}$
 $-30x - 24$
 $\overline{-(-30x - 20)}$
 -4

$\frac{3x^3}{3x} = x^2$

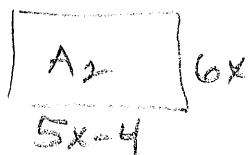
$\frac{30x^2}{3x} = 10x$

$$\begin{array}{r}
 22. \quad n-7 \quad \overline{) \begin{array}{l} 3n^2 - 9n + 10 \\ 3n^3 - 30n^2 + 73n - 70 \\ \underline{-(3n^3 - 21n^2)} \\ -9n^2 + 73n - 70 \\ \underline{-(-9n^2 + 63n)} \\ 10n - 70 \\ \underline{-(10n - 70)} \\ 0 \end{array} } \\
 \frac{3n^3}{n} = 3n^2
 \end{array}$$

24. FIND THE AREA OF THE LARGE RECTANGLE AND SUBTRACT THE AREA OF THE SMALL RECTANGLE



$$\begin{aligned}
 A_1 &= 5x(9x^2 + 3x - 8) \\
 &= 45x^3 + 15x^2 - 40x
 \end{aligned}$$



$$\begin{aligned}
 A_2 &= 6x(5x - 4) \\
 &= 30x^2 - 24x
 \end{aligned}$$

shaded area = $A_1 - A_2$

$$\begin{aligned}
 &(45x^3 + 15x^2 - 40x) - (30x^2 - 24x) \\
 &45x^3 + 15x^2 - 40x - 30x^2 + 24x \\
 &45x^3 - 15x^2 - 16x
 \end{aligned}$$

