

8.1 Adding & Subtracting Polynomials

monomial $2x$

binomial $2x+4$

trinomial $2x^2+3x+4$

Polynomial

degree of monomial is the sum of the exponents of all variables

Ex 4 has no degree

x has one degree

$$5x^3y^2z$$

$$\text{degree} = 3+2+1 \\ = 6$$

degree of polynomial is the greatest degree of any term in the

$$x^5 + 4x^3 + 2x^4 + 6x^6$$

polynomial

degree = 6

See chart p. 465

Standard Form of a polynomial

is highest exponent \rightarrow lowest exponent

1st term is called leading coefficient

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

Ex)

$$2x^4 - 3x^2 + 5x^5 + 2x - 4$$

$$4 \quad 2 \quad 5 \quad 1 \quad 0$$

$$5x^5 + 2x^4 - 3x^2 + 2x - 4 \quad \text{SF}$$

$$\text{Ex) } \begin{array}{r} 9x^2 + 3x^6 - 4x \\ \\ \\ \\ \end{array}$$

$$3x^6 + 9x^2 - 4x$$

CHT demo

+

$$\text{Ex } (7y^2 + 2y - 3) + (2 - 4y + 5y^2)$$

$$7y^2 + 5y^2 = 12y^2$$

$$12y^2 - 2y = 1$$

$$2y - 4y = -2y$$

$$-3 + 2 = -1$$

$$\text{Ex) } (4x^2 - 2x + 7) + (3x - 7x^2 - 9)$$

$$4x^2 + 7x^2 = -3x^2$$

$$-3x^2 + x - 2$$

$$-2x + 3x = x$$

$$7 - 9 = -2$$

$$- \text{Ex) } (6y^2 + 8y^4 - 5y) - (9y^4 - 7y + 2y^2)$$

$$6y^2 + 8y^4 - 5y - 9y^4 - 7y - 2y^2 \quad \text{Dist 1st!}$$

$$-y^4 + 4y^2 + 2y$$

$$\text{Ex) } (6n^2 + 11n^3 + 2n) - (4n - 3 + 5n^2)$$

$$6n^2 + 11n^3 + 2n - 4n + 3 - 5n^2$$

$$11n^3 + n^2 - 2n + 3$$

CDP. 468 7-17 odd

CWP. 468 8-18 even

HWP. 468 21-43 odd

13-17 odd

20-24

Day 2 CD 14-18 even

CWP. 468 26-42 even

challenge. P. 468

35-57.

HW 8-15 P. 468

8.2 Day 1 Multiplying a polynomial by a monomial.

FIVE STAR.
★★★★★

Dist 1st

Ex) $6y(4y^2 - 9y - 7)$

$X^m \cdot X^n = X^{m+n}$

$24y^3 - 54y^2 - 42y$

FIVE STAR.
★★★★★

Ex) $5a^2(-4a^2 + 2a - 7)$

$-20a^4 + 10a^3 - 35a^2$

Ex) $-6d^3(3d^4 - 2d^3 - d + 9)$

$-18d^7 + 12d^6 + 6d^4 - 54d$

odd
even
odd
even
odd
even
odd
even

FIVE STAR.
★★★★★

Dist 1st & then C&T

Ex) $3(2t^2 - 4t - 15) + 6t(5t + 2)$

$6t^2 - 12t - 45 + 30t^2 + 12t$

$36t^2 - 45$

FIVE STAR.
★★★★★

Ex) $3(5x^2 + 2x - 4) - x(7x^2 + 2x - 3)$

$15x^2 + 6x - 12 - 7x^3 - 2x^2 + 3x$

$-7x^3 + 13x^2 + 9x - 12$

Ex) $15t(10y^3t^5 + 5y^2t) - 2y(yt^2 + 4y^2)$

$150ty^3t^5 + 75y^2t^2 - 2y^2t^2 - 8y^3 = 150y^3t^6 + 73y^2t^2 - 8y^3$

8.2 Day 2 Solve!

FIVE STAR
★★★★★

$$\text{Ex) } b(12+b) - 7 = 2b + b(-4+b)$$

Dist
CLT
Solve

$$12b + b^2 - 7 = 2b - 4b + b^2$$

FIVE STAR
★★★★★

$$12b + b^2 - 7 = -2b + b^2$$

$$\begin{array}{r} 12b - 7 = -2b \\ -12b \quad -12b \\ \hline -7 = -14b \quad b = 1/2 \\ -7 \quad -14 \end{array}$$

FIVE STAR
★★★★★

$$\text{Ex) } 2x(x+4) + 7 = (x+8) + 2x(x+1) + 12$$

$$2x^2 + 8x + 7 = x + 8 + 2x^2 + 2x + 12$$

$$\cancel{2x^2} + 8x + 7 = \cancel{2x^2} + 3x + 20$$

$$\begin{array}{r} 8x + 7 = 3x + 20 \\ -3x \quad -3x \\ \hline 5x + 7 = 20 \\ -7 \quad -7 \end{array}$$

$$\frac{5x}{5} = \frac{13}{5} \quad x = 13/5$$

FIVE STAR
★★★★★

$$\text{Ex) } d(d+3) - d(d-4) = 9d - 16$$

CD p. 474, 12-15
Cwp. 475, 31-36

$$d^2 + 3d - d^2 + 4d = 9d - 16$$

Hw 8.2 SPAP

$$\begin{array}{r} 7d = 9d - 16 \\ -9d \quad -9d \\ \hline -2d = -16 \end{array}$$

$$\frac{-2d}{-2} = \frac{-16}{-2} \quad d = 8$$

8.3 Multiplying Polynomials

F.O.I.L

First - Outer - Inner - Last

Ex) $(y+8)(y-4)$

F $y \cdot y = y^2$

O $y \cdot -4 = -4y$

I $8 \cdot y = 8y$

L $8 \cdot (-4) = -32$

$y^2 - 4y + 8y - 32$

$y^2 + 4y - 32$

Ex) $(2x+1)(x+6)$

$2x^2 + 12x + x + 6$

$2x^2 + 13x + 6$

Ex) $(2x+4)^2 = (2x+4)(2x+4)$

$4x^2 + 8x + 8x + 16$

$4x^2 + 16x + 16$

Ex) $(3x+2)(3x-2)$

$9x^2 - 6x + 6x - 4$

$9x^2 - 4$

Difference of 2 squares

DCT's

CD p. 483, 1-6

WB p. 483, 12-23 WB

HW w/ ch 9.3 + 9.3 PMA old book

8.5 Using Dist Prop

GCF, Product of 2.

$$(x+4)(x+3) = x^2 + 7x + 12 \quad \text{FOIL} \rightarrow \text{mult.}$$

$$x^2 + 7x + 12 = (x+4)(x+3) \quad \text{Factoring} \rightarrow \text{Simplify}$$

GCF 1st.

Ex) 24

16

GCF = 8.

1-24

1-16

2-12

2-8

3-8

4-4

4-6

x^3

x^4

GCF = x^2

xxx

xx

to factor using GCF

$$\text{GCF} \left(\frac{\text{original}}{\text{GCF}} \right)$$

Ex) $24x^3 + 16x^2$

GCF = $8x^2$

$$8x^2 \left(\frac{24x^3 + 16x^2}{8x^2} \right)$$

$$8x^2 \left(\frac{24x^3}{8x^2} + \frac{16x^2}{8x^2} \right)$$

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

Dist to x

$$\text{Ex) } 27x^3 + 9x^2 + 3x$$

$$\text{GCF} = 3x$$

$$3x \cdot \left(\frac{27x^3 + 9x^2 + 3x}{3x} \right)$$

$$3x \cdot \left(\frac{27x^3}{3x} + \frac{9x^2}{3x} + \frac{3x}{3x} \right) = 3x(9x^2 + 3x + 1)$$

Distrib.

Product of 2 \Rightarrow GCF

Special type of GCF

$$\text{Ex) } 2x(x+3) + 4(x+3)$$

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

$$\text{Ex) } 5y(y-2) + 6(y-2)$$

$$(y-2)(5y+6)$$

CD w/ sent 9.5 old book 7-24

CC w/ w/ sent 9.5 PMA old book 11-24

HW p. 497, 1-4

p. 498, 15-20

8.5 Day 2

Grouping + Solving

GCF

Product of 2

$$\text{Ex) } (x^2 + x) + (2x + 2)$$

→ Note 41

Grouping

GCF

Product of 2

$$x(x+1) + 2(x+1)$$

$$(x+1)(x+2)$$

$$\text{Ex) } (ax + bx) + (cy + by)$$

$$x(ax+b) + y(c+by)$$

$$(a+b)(x+y)$$

$$\text{Ex) } ax + bx - cy - by$$

$$(ax + bx) + (-cy - by)$$

$$x(a+b) - y(c+b)$$

$$(a+b)(x-y)$$

rewrites + -

ac + b not want -

between 2

groups

$$\text{Ex) } y^2 - y - 2y + 2$$

$$(y^2 - y) + (-2y + 2)$$

$$y(y-1) - 2(y-1)$$

$$(y-1)(y-2)$$

$$ab=0 \quad a=0 \text{ or } b=0$$

Once factored now I can solve
but only if = 0!

$$x(x+2)=0 \quad (x+3)(x+2)=0$$

$$x=0$$

$$x+2=0$$

$$x=-2$$

$$x+3=0$$

$$x=-3$$

$$x+2=0$$

$$x=-2$$

$$(2x+3)(x-4)=0$$

$$2x+3=0$$

$$2x=-3$$

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

$$x-4=0$$

$$x=4$$

CD p. 497, 5-12

CW p. 498, 21-43 odd

HW p. 498, 22-44 even

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

Day 3 CD Wkst 9.5 (old) 25-36) CWB

CW 8.5 SP

HW 8.5 P.

$$2x^2 = 3x$$

$$2x^2 - 3x = 0$$

$$x(2x-3)=0$$

$$x=0 \quad 2x-3=0$$

$$2x=3$$

8.7 $ax^2 + bx + c$

before $a=1$

$(x \quad)(x \quad)$

$a \neq 1$

$ax^2 + bx + c$

1) Multiply ac

2) Factor that.

3) Replace middle

4) Grouping

L+	M+	P+
+	+	++
+	-	--
-	-	+-

GCF

Product of

$ax^2 + bx + c$

Ex) $5x^2 + 27x + 10$

1) $5(10) = 50$

or

$5x^2 + 25x + 2x + 10$

2) 1-50

2-25

5-10

$(5x^2 + 25x) + (2x + 10)$

$5x(x+5) + 2(x+5)$

3) $(5x^2 + 2x) + (25x + 10)$

$x(5x+2) + 5(5x+2)$

$(x+5)(5x+2)$

$(5x+2)(x+5)$

Ex) $24x^2 - 22x + 3$

1) 72 --

1-72

2-36

3-24

4-18

6-12

8-9

$24x^2 - 4x - 18x + 3$

$(24x^2 - 4x) + (-18x + 3)$

$4x(6x-1) - 3(6x-1)$

$(6x-1)(4x-3)$

8.7 Day 2

$$a \neq 1.$$

FIVE STAR.
★★★★★

Ex) $4x^2 + 24x + 32$

GCF 15%

$$4(x^2 + 6x + 8)$$

$$a=1$$

$$4(x+2)(x+4)$$

$$1-8$$

$$2-4$$

FIVE STAR.
★★★★★

Ex) $3x^2 + 7x - 5$

$$15$$

$$1-15$$

$$+-$$

Prime.

$$3-5$$

Day 2 CW w/last 8.7a

HW w/last 8.7b

FIVE STAR.
★★★★★

Day 3 CW 8.7 SP

HW 8.7 P.

FIVE STAR.
★★★★★

0k2018

8.8 DOTS

$x^2 - y^2 = (x+y)(x-y)$ Difference of 2 Squares
DOTS

Ex) $m^2 - 64 = (m+8)(m-8)$

Ex) $16y^2 - 81z^2 = (4y+9z)(4y-9z)$

Ex) $3b^3 - 27b = 3b(b^2 - 9) = 3b(b+3)(b-3)$

Ex) $y^4 - 625 = (y^2 + 25)(y^2 - 25) = (y^2 + 25)(y+5)(y-5)$

Ex) $9x^5 - 36x = 9x(x^4 - 4) = 9x(x^2 + 2)(x^2 - 2)$

Ex) $6x^3 + 30x^2 - 24x - 120$ GCF

$6(x^3 + 5x^2 - 4x - 20)$ Grouping
 $6[(x^3 + 5x^2) + (-4x - 20)]$ Product
DOTS

$6[x(x+5) - 4(x+5)]$

$6(x^2 - 4)(x+5)$

$6(x+2)(x-2)(x+5)$

Solving as before

$$(\quad) = 0 \quad (\quad) = 0$$

$$x^2 = 25$$

$$x^2 - 25 = 0$$

$$(x+5)(x-5) = 0$$

$$x = -5, x = 5$$

$$x^2 = 64$$

$$x^2 - 64 = 0$$

$$(x+8)(x-8) = 0$$

$$x = -8, x = 8$$

$$x^2 = 8$$

$$x = \pm\sqrt{8}$$

$$x^2 = 18$$

$$x = \pm\sqrt{18}$$

$$= \pm$$

$$\sqrt{(x-7)^2} = \sqrt{36}$$

$$x-7 = \pm 6$$

$$x-7 = 6 \quad x-7 = -6$$

$$x = 13 \quad x = 1$$

$$\sqrt{(x+9)^2} = \sqrt{8}$$

$$x+9 = \pm\sqrt{8}$$

$$x+9 = \sqrt{8} \quad x+9 = -\sqrt{8}$$

$$x = 9 + \sqrt{8} \quad x = -9 - \sqrt{8}$$

CD p. 518

H=11 odd

CW p. 519, 15-43 odd

HW p. 519, 16-42 even

Day 2

CD p. 518, 2-12 even

CW wkstn 8, 8SP

HW wkstn 8, 8P

8.9 PST's

$$(a+b)^2 = (a+b)(a+b) \\ = a^2 + 2ab + b^2$$

$$(a-b)^2 = (a-b)(a-b) \\ = a^2 - 2ab + b^2$$

Perfect Square
Trinomials
PST's!

Ex)

$$25x^2 - 30x + 9$$

a ≠ 1

25(9) Replace middle

Before you do that - check to see if it's a PST!

$$(5x-3)^2 \text{ yes!}$$

Ex) $49y^2 + 42y + 36$

Solve as before

$$(7y+6)^2 \text{ No!}$$

$$(\quad) = 0 \quad (\quad) = 0$$

x =

CID Dots ≠ PST wksht

CW wksht 9.6 old book

HW wksht 9.6 PMA old book

Quiz DOT's + PST's

8.9 Day 2

Steps for Factoring

1) GCF Always try this 1st!

2) Product of 2

3) Grouping \rightarrow GCF \rightarrow PoF 2

4) $a=1$	$(x \quad) (x \quad)$	LT	MT	FD
ax^2+bx+c	"	+	+	++
		+	-	--

5) $a \neq 1$	Replace middle	-		+ -
ax^2+bx+c	Grouping			
	GCF			
	Prod of 2			

6) DCT's $(x+y) (x-y)$ 7) PST's $(x+y)^2$
 $(x-y)^2$

8) Check to make sure you went all the way!

9) FOIL + or -

10) to solve - as before Partner

$$(\quad) = 0 \quad (\quad) = 0$$

Solve!

$$x =$$