

EQUATIONS

Learning Goal:
Expand and Solve Simple Equations

Collecting Like Terms

- add or subtract the coefficient of
the terms that have the same
variable and exponent

$$3a + 5a = 8a$$

$$3a^2 + 4a + 5a^2 + 7a = 8a^2 + 11a$$

$$2ab + 3a^2b + 5ab - 7ab^2 = 7ab + 3a^2b - 7ab^2$$

what about a^2b ba^2 ✓

Multiplying Powers- add exponents

$$a^2(a^3) = a^5$$

Dividing Exponents- subtract the exponents

$$(3a^4b^7)(5a^2b^3)$$

$$= 15a^6b^{10}$$

$$\frac{18a^4b^2}{9a^2b^5}$$

$$= 2a^2b^{-3}$$

Distributive Property

- rainbow

- multiply everything in one bracket with everything in the other bracket

$$(3a)(5a^2 + b^3)$$

$$= 15a^3 + 3ab^3$$

$$(3a + 2b)(5a + b)$$

$$= 15a^2 + 3ab$$

$$+ 10ab + 2b^2$$

$$= 15a^2 + 13ab + 2b^2$$

Solving Equations

1. Eliminate fractions by multiplying everything by the common denominator.
2. Eliminate brackets by using rainbow
3. Move all variables to one side.
 - a. identify operations
 - b. identify order (backwards BEDMAS)
 - c. do the opposite
 - d. do it to both sides

$$\begin{array}{c} \downarrow \\ x+5=7 \end{array}$$

$$\begin{array}{l} x+5-5 = 7-5 \\ x = 2 \quad \checkmark \end{array}$$

$$\begin{array}{c} \textcircled{2} \quad \textcircled{1} \\ \downarrow \downarrow \\ 2x+5=7 \end{array}$$

$$\begin{array}{l} 2x+5-5 = 7-5 \\ 2x = 2 \quad \checkmark \end{array}$$

$$\begin{array}{l} \frac{2x}{2} = \frac{2}{2} \\ x = 1 \quad \checkmark \end{array}$$

On the Boards...

$$2x+5=3x-2$$

$$2x+5-5=3x-2-5$$

$$2x=3x-7$$

$$-x=-7$$

$$x=7$$

$$2x^2+5=23$$

$$2x^2=18$$

$$x^2=9$$

$$x=\pm 3$$

$$2x+5=5x-7$$

$$5=3x-7$$

$$12=3x$$

$$4=x$$

Homework

Handout

Handout

MBF3C - Diagnostic Review Date: _____

Expanding and Solving Equations Practice

1. Simplify

a) $3x - 2y - 7x + 5y$
 $= -4x + 3y$

b) $3x^3 - 4x^2 + 2x - x^3 + 2x^2 - x$

c) $(4x - 5y) - (6x + 3y) - (7x + 2y)$
 $= 4x - 5y - 6x - 3y - 7x - 2y$
 $= -9x - 10y$

d) $m^2n + p - (2p - 3m^2n)$

2. Expand

a) $3(2x + 5y - 2)$
 $= 6x + 15y - 6$

b) $5x(x^2 - x + y)$

c) $m^2(3m^2 - 2n)$
 $= 3m^4 - 2m^2n$

d) $x^5y^3(4x^2y^4 - 2xy^5)$

3. Expand and Simplify

a) $3x(x + 2) + 5x(x - 2)$
 $= 3x^2 + 6x + 5x^2 - 10x$
 $= 8x^2 - 4x$

b) $-7h(2h + 5) - 4h(5h - 3)$

c) $2m^2n(m^3 - n) - 5m^2n(3m^3 + 4n)$
 $= 2m^5n - 2m^2n^2 - 15m^5n - 20m^2n^2$
 $= -13m^5n - 22m^2n^2$

d) $-3xy^3(5x + 2y + 1) + 2xy^3(-3y - 2 + 7x)$

e) $(3x - 2)(4x + 5)$
 $= 12x^2 + 15x - 8x - 10$
 $= 12x^2 + 7x - 10$

f) $(7 - 3y)(2 + 4y)$

g) $(5x - 7y)(4x + y)$
 $= 20x^2 + 5xy - 28xy - 7y^2$
 $= 20x^2 - 23xy - 7y^2$

h) $(3x^3 - 4y^2)(5x^3 + 2y^2)$

Date: _____

MBF3C - Diagnostic Review

4. Solve

a) $6x - 8 = 4x + 10$
 $2x - 8 = 10$
 $2x = 18$
 $x = 9$

b) $2x + 7.8 = 9.4$

c) $13 = 5m - 2$
 $15 = 5m$
 $3 = m$

d) $13.5 - 2m = 5m + 41.5$

e) $8(y - 1) = 4(y + 4)$
 $8y - 8 = 4y + 16$
 $4y - 8 = 16$
 $4y = 24$
 $y = 6$

f) $4(5 - r) = 3(2r - 1)$

g) $\frac{x}{5} = 20$
 $x = 100$

h) $\frac{2}{5}x = 8$

i) $3y - \frac{1}{2} = \frac{2}{3}$
 $3y = \frac{2}{3} + \frac{1}{2}$ x6
 $18y = 4 + 3$
 $18y = 7$
 $y = \frac{7}{18}$

j) $4 - \frac{m}{3} = 5 + \frac{m}{2}$

k) $\frac{2x + 4}{5} = \frac{2x - 3}{3}$
 $y = \frac{7}{18}$

l) $\frac{2x + 4}{x} = \frac{x - 1}{2x}$
 cross multiply
 $2x(2x + 4) = x(x - 1)$
 $4x^2 + 8x = x^2 - x$
 $3x^2 + 7x = 0$ factor
 $x(3x + 7) = 0$
 $x = 0$ or $3x + 7 = 0$
 $3x = -7$
 $x = -\frac{7}{3}$



Attachments

0.5.5 Expanding & Solving Equations Review.doc

0.5.5 Pythagorean Theorem Review.doc

Expanding & Solving Equations Practice.doc

Expanding & Solving Equations Review.pdf

Pythagorean Theorem Practice.doc

Pythagorean Theorem Review.pdf

Fractions Practice Solutions.pdf

Operations Practice Solutions.pdf