

Notes

Simplifying Non-Perfect Roots

NON-PERFECT SQUARE ROOTS: Use the perfect square numbers below to break the problem apart:

PERFECT SQUARES:

____, _____, _____, _____, _____, _____, _____, _____, etc...

Put the following in simplest radical form:		
1. $\sqrt{24}$	2. $\sqrt{48}$	3. $\sqrt{72}$
4. $\sqrt{63}$	5. $\sqrt{90}$	6. $\sqrt{175}$
7. $\sqrt{162x^2y^3}$	8. $\sqrt{245m^4}$	9. $\sqrt{343r^3p^6}$
10. $\sqrt{117xy^5}$	11. $\sqrt{28x^3y^5}$	12. $\sqrt{450xy^5}$

NON-PERFECT CUBE ROOTS: Use the perfect cube numbers below to break the problem apart:

PERFECT CUBES:

____, _____, _____, _____, _____, _____, etc...

Put the following in simplest radical form:		
13. $\sqrt[3]{40}$	14. $\sqrt[3]{500}$	15. $\sqrt[3]{162}$
16. $\sqrt[3]{-16}$	17. $\sqrt[3]{432}$	18. $\sqrt[3]{-320}$
19. $\sqrt[3]{54x^5y^2}$	20. $\sqrt[3]{96m^4}$	21. $\sqrt[3]{-875r^8y^4}$
22. $\sqrt[3]{648x^4y^4}$	23. $\sqrt[3]{-297x^5y^8}$	24. $\sqrt[3]{686m^3p^4}$

WS #1

MONOMIAL SQUARE ROOTS

Simplify the following square roots:		
1. $\sqrt{x^2}$	2. $\sqrt{m^6}$	3. $\sqrt{9k^2}$
4. $\sqrt{64p^4}$	5. $\sqrt{100x^2y^2}$	6. $\sqrt{49a^2b^6c^4}$

**** NOTE:** It is only possible to take the square root of variables with _____ exponents!

Simplify the following non-perfect square roots:	
7. $\sqrt{y^5}$	8. $\sqrt{a^2b^3}$
9. $\sqrt{x^2y^3z^4}$	10. $\sqrt{45n^4}$
11. $\sqrt{144r^3}$	12. $\sqrt{81c^7d^4}$
13. $\sqrt{100x^5y^2}$	14. $\sqrt{49a^3b^6c^4}$
15. $\sqrt{8x^6}$	16. $\sqrt{50x^2}$

WS#2

17. $\sqrt{63x^2y^5z^2}$

18. $\sqrt{108r^2s^3t^6}$

19. $\sqrt{68p^3}$

20. $\sqrt{180x^3y^8}$

21. $\sqrt{72m^3n^8p^2}$

22. $\sqrt{27xy^4}$

23. $\sqrt{252xy^2z^3}$

24. $\sqrt{392a^2b^2c^3}$

WS #3

MONOMIAL SQUARE ROOT CONNECT FOUR!

DIRECTIONS: Work in pairs. Decide who will be "X" and who will be "O" Each partner chooses a problem to write down and simplify. Then, look for your answer on the board. Write your "X" or "O" in the box. Both partners choose new problems. First person to get four in a row, column, or diagonal wins!

$$\sqrt{36x^2y^2}$$

$$\sqrt{32x^3y}$$

$$\sqrt{24x^2y^4}$$

$$\sqrt{128x^7y^4z}$$

$$\sqrt{81x^4y^2}$$

$$\sqrt{300x^4y^4}$$

$$\sqrt{81x^2y}$$

$$\sqrt{150x^2y^2z}$$

$$\sqrt{4xy^2z^3}$$

$$\sqrt{84xy^6}$$

$$\sqrt{75x^5y^2}$$

$$\sqrt{45x^2y^5z^8}$$

$$\sqrt{25xy}$$

$$\sqrt{40x^4y^3}$$

$$\sqrt{100x^3y}$$

$$\sqrt{98x^4y^6z^2}$$

$2ya\sqrt{xz}$	$4x\sqrt{2xy}$	$8x^3y^2\sqrt{2xa}$	$2xy^2\sqrt{6}$
$2y^3\sqrt{21x}$	$10x\sqrt{xy}$	$7x^2y^3a\sqrt{2}$	$10x^2y^2\sqrt{3}$
$5x^2y\sqrt{3x}$	$3xy^2a^4\sqrt{5y}$	$6xy$	$5xy\sqrt{6a}$
$9x^2y$	$5\sqrt{xy}$	$9x\sqrt{y}$	$2x^2y\sqrt{10y}$

Objectives - Algebra

1. To arrange the terms of a polynomial in ascending or descending order.
2. To add and subtract polynomials, algebraically and with algebra blocks A11
3. To multiply and divide monomials. A11
4. To express numbers in scientific and decimal notation. A10
5. To find products and quotients of numbers expressed in scientific notation. A10
6. To multiply a polynomial by a monomial. A11
7. To use the FOIL method, an array, and algebra blocks to multiply two binomials. A11
8. To multiply any two polynomials by using the distributive property or an array. A11
9. To use the patterns for $(a + b)^2$, $(a - b)^2$ and $(a + b)(a - b)$ A11

1. A **monomial** is a number, a variable or the product of numbers and variables.

If the monomial is a real number it is called a **constant** 7

A **binomial** is the sum of two monomials. $2a + 5$

A **trinomial** is the sum of three monomials. $3a^2 + 6a + 1$

A **polynomial** is a monomial or the sum of monomials

2. **Addition & Subtraction of Polynomials**

Arrange terms in ascending (going up) or descending (going down) first.

Addition - Combine like terms. $(2a^2 + 5a + 3) + (3a^2 + a + 4) = 5a^2 + 6a + 7$

Subtraction - Use parenthesis to group terms to be subtracted and then change to addition.

$$(6a^2 + 3a + 3) - (3a^2 + a - 6) = 3a^2 + 2a + 9$$

3. **Product of Powers**

For any number a and all integers m and n , $a^m \cdot a^n = a^{m+n}$ $2^3 \cdot 2^4 = 2^7$

When you multiply powers (numbers with exponents) that have the same base, **add the exponents.**

4. **Power of a Power**

For any number a and all integers m and n , $(a^m)^n = a^{m \cdot n}$ $(2^4)^2 = 2^8$

When you take the power of a power (numbers with exponents), you **multiply the exponents.**

5. **Zero Exponent**

For any nonzero number $a^0 = 1$. Any number to the zero power is 1. $2^0 = 1$

6. **Negative Exponents**

For any nonzero numbers a and any integer n , $a^{-n} = 1/a^n$. $2^{-4} = \frac{1}{2^4}$ $\frac{1}{3} = 3^{-2}$

When you move a power to the other side of the fraction bar,
change the sign of the exponent.

7. **Quotient of Powers**

For any nonzero number a and all integers m and n , $a^m/a^n = a^{m-n}$

$$\frac{3^5}{3^2} = 3^3 \qquad \frac{3^4}{3^9} = \frac{1}{3^5}$$

When you divide powers that have the same base, subtract the smaller exponent from the larger exponent and place the answer where the larger exponent was found.

8. **Scientific Notation** is a way to write very large or very small numbers.

The number is 1) a product of a number greater than or equal to 1 and less than 10 and 2) a power of 10. The exponent of 10 is determined by the number of steps from the slash mark (where the decimal point is placed) to the end of the number.

$$2|46,000,000 = 2.46 \times 10^8$$

9. **Multiplying a Polynomial by a Monomial**

Apply the distributive property.

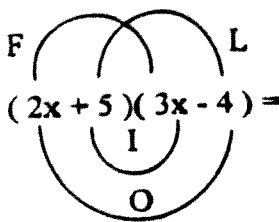
$$2a^2(3a^2 - 4a + 1) = 6a^4 - 8a^3 + 2a^2$$

10. **Dividing a Polynomial by a Monomial** $\frac{6a^4 - 8a^3 + 2a^2}{2a^2} = 3a^2 - 4a + 1$

Rewrite the problem so that each term in the numerator is divided by the monomial.
Note - The number of terms (in the numerator) you start with, you must have at the end.

11. **Multiplying Polynomials ***

FOIL - First, Outer, Inner, Last



•	$2x$	$+ 5$
$3x$	$6x^2$	$+15x$
$- 4$	$- 8x$	$- 20$

$$6x^2 + 15x - 8x - 20$$

$$6x^2 + 7x - 20$$

12. **Special Products**

Square of a Sum $(a + b)^2 = a^2 + 2ab + b^2$

Square of a Difference $(a - b)^2 = a^2 - 2ab + b^2$

Product of a Sum and a Difference $(a + b)(a - b) = a^2 - b^2$

13. **Practical Problems - area problems**

Laws of Exponents

Properties of Exponents

PRODUCT OF POWERS

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

$$x^5 \cdot x^7 = x^{5+7} = x^{12}$$

POWER OF A POWER

$$(a^m)^n = a^{mn}$$

$$(2^3)^2 = 2^{3 \cdot 2} = 2^6 = 64$$

POWER OF A PRODUCT

$$(ab)^m = a^m b^m$$

$$(-2x^2)^5 = (-2)^5 (x^2)^5 = -32x^{10}$$

QUOTIENT RULE

$$\frac{a^m}{a^n} = a^{m-n}$$

$$\frac{-10a^7b^4}{2ab} = -5a^{7-1}b^{4-1} = -5a^6b^3$$

ZERO EXPONENT

$$a^0 = 1$$

$$\frac{y^6}{y^6} = y^{6-6} = y^0 = 1$$

NEGATIVE EXPONENT

$$a^{-n} = \frac{1}{a^n}$$

$$-5a^{-3} = \frac{-5}{a^3}$$

POWER OF A QUOTIENT RULE

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$$

$$\left(\frac{3}{10}\right)^3 = \frac{3^3}{10^3} = \frac{27}{1000}$$

EXPONENT RULES

GRAPHIC ORGANIZER

Name	Rule	Examples
ADDING & SUBTRACTING MONOMIALS	COMBINE LIKE TERMS!!! (Do NOT change common variables and exponents!)	1. $9x^2y - 10x^2y =$ 2. Subtract $6w$ from $8w$
PRODUCT RULE	$X^a \cdot X^b =$	1. $h^2 \cdot h^6 =$ 2. $(-2a^2b) \cdot (7a^3b) =$
POWER RULE	$(X^a)^b =$	1. $(x^2)^3 =$ 2. $(-2m^5)^2 \cdot m^3 =$
QUOTIENT RULE	$\frac{X^a}{X^b} =$	1. $\frac{27x^5}{42x} =$ 2. $\frac{(y^2)^2}{y^4} =$
NEGATIVE EXPONENT RULE	$X^{-a} =$	1. $-5x^{-2} =$ 2. $\frac{4k^2}{8k^5} =$

Worksheet 4

Simplify. Your answer should contain only positive exponents.

1) $3x^3y^4z^3 \cdot 4zx^{-2}$

2) $4zx^3 \cdot 4x^{-4}y^3z^3$

3) $2x^{-1}y^2z^0 \cdot 4x^3y^3z^{-1}$

4) $p^{-3}r^4 \cdot 3p^{-3}q^3r^4$

5) $3y^{-2}z^{-4} \cdot 2zx^0 \cdot 4x^{-3}y^4z^{-4}$

6) $4m^0n^{-4}p^0 \cdot m^2n^3p^2$

7) $(2y^2)^0$

8) $(-3nm^3p^{-2})^2$

9) $(3a^4b^2c^{-3})^3$

10) $(4m^3p^{-2}q^3)^2$

11) $(-3ca^4b^4)^{-2}$

12) $(-m^{-3}p^{-1}q^2)^3$

13) $(m^3n^{-3})^{-4} \cdot n$

14) $(-x^0 \cdot (x^4y^3)^2)^4$

WS#5

$$15) (-2x^4y^{-4} - 2yx^2)^4$$

$$16) (x^{-1}y^4 \cdot -2x^2)^2$$

$$17) (-y)^0 \cdot -2x^2y^3$$

$$18) x^3 \cdot (2yx^{-2})^2$$

$$19) (-yx^{-4} \cdot -2yx^3)^3$$

$$20) -xy^{-2} \cdot (-y^{-3})^{-2}$$

$$21) (x^4)^4 \cdot (2x^3y^{-2})^4$$

$$22) (2m^4n^3)^{-1} \cdot (-2m^2)^{-1}$$

WS #6

Name: _____

Unit 6: Exponents & Exponential Functions



Date: _____ Bell: _____

Directions: Simplify the following monomials. SHOW ALL STEPS!		
1. $\frac{y^4}{y^2}$	2. $\frac{k^6}{k^6}$	3. $\frac{x^4y^5}{x^3y^2}$
4. $\frac{mn^3}{n^2}$	5. $\frac{15a^3}{3a}$	6. $\frac{8x^5y^4}{4x^2y^2}$
7. $\frac{6a^5b^7}{-2a^3b^7}$	8. $\frac{-20x^3y^2}{-5x^3y}$	9. $\frac{-16ab^4}{4b^3}$
10. $\frac{21m^8n^5}{27m^5n^4}$	11. $\frac{-15x^5y^4}{45xy^3}$	12. $\frac{7p^2q^2}{14p^2q^2}$
13. $\frac{(-2m^4)^2}{8m^2}$	14. $\frac{(2a^3b^4)^3}{(2ab^2)^5}$	15. $\frac{(3x^5y^3)^5}{(6x^{10}y^7)^2}$
16. $\left(\frac{4x^7}{6x}\right)^2$	17. $\left(\frac{2y^5}{3y^2}\right)^3$	18. $\left(\frac{5x^6y^2}{10x^4y}\right)^2$
19. $\frac{(-4a^2b)(-3a^7b)}{6a^7b^2} + 16a^2$	20. $\frac{(2x^3)^2(3y^4)^3}{12x^4y^5} - 4x^2y^7$	

WS #7

NEGATIVE EXPONENTS

NEGATIVE EXPONENT RULE:

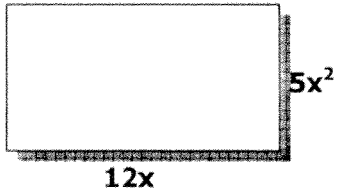
Simplify each of the following. Your answer should contain positive exponents only!

1. x^{-5}	2. $3m^{-2}$	3. $-7a^{-4}b^3$
4. $6x^8 \cdot -3x^{-7}$	5. $(3x^3)^{-2}$	6. $(5y^2)^{-2}$
7. $(-8x^5y^{-4})^{-2}$	8. $(a^{-5}b^8c^{-12})(a^7b^{-3}c^7)$	9. $(x^2y^3)^{-2} \cdot (x^5y^4)^{-3}$
10. $(4x^3y^6)^{-2} + (2x^2y^4)^{-3}$	11. $\frac{h^4}{h^6}$	12. $\frac{k^{-2}}{k^7}$
13. $\frac{14w^4}{7w^{-2}}$	14. $\frac{-24x^5}{3x^{-2}}$	15. $\frac{b^2c}{b^2c^5}$
16. $\frac{x^4y^{-3}}{x^2y^2}$	17. $\frac{32a^5b^{-3}}{8a^{-2}b^6}$	18. $\frac{36x^{-4}y^8}{12y^7}$
19. $\frac{15ab^5c^8}{18ab^3c^9}$	20. $\frac{-4pq^5r^3}{8p^2q^2r^{10}}$	21. $\frac{-9r^2s^6t^4}{54r^5s^2t^8}$

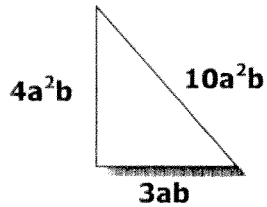
Geometric Applications

WS#8

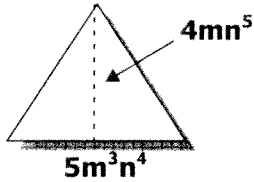
1. Find the **perimeter** and **area**:



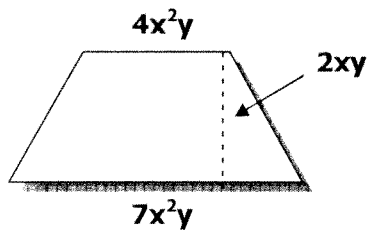
2. Find the **perimeter** and **area**:



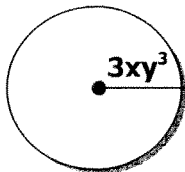
3. Find the **perimeter** and **area**:



4. Find the **area**:



5. Find the **area**:



Name: _____

Unit 6: Exponents & Exponential Functions



Date: _____ Bell: _____

Simplify the following monomials. Your answer should contain positive exponents only.		
1. $3a^3b^2 - 5a^3b^2$	2. $5xy - 2x^2y + 2xy$	3. Subtract $-2w$ from $-6w$
4. $a^4 \cdot a^3$	5. $(-x^5)^2$	6. $\frac{k^9}{k^5}$
7. $-5x^3 \cdot (-3x^4)$	8. $(-2x^2y)^2 \cdot (-3xy^3)$	9. $2a^{-5}b^6 \cdot 5a^2b^2$
10. $(-4y^4)^2$	11. $(a^2bc^3)^4 \cdot (b^2c)^3$	12. $(6cd^{-1})^{-3}$
13. $(4a)^{-3} \cdot a^{-4}$	14. $(3xy)^2 \cdot (-4x^3y^2)^3$	15. $(4a^{-1}b^5c^{-3})^3$
16. $\frac{9d^8}{3d^{10}}$	17. $\frac{6a^5b^2}{4ab^3}$	18. $\frac{32x^3y^2z^5}{-8xyz^2}$
19. $\frac{(2y^5)^4}{10y^{15}}$	20. $\left(\frac{3x^5y^3}{x^3y^6}\right)^4$	21. $\frac{(-6a^5b)^2}{12a^7b} - 8a^3b$

EXPONENTS FIND SOMEONE WHO!!

Directions: Trade papers with 12 different people to simplify the following expressions.

1

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

Name: _____

2

$$(-xy^5)^2$$

Name: _____

3

$$(2x^2)(x^2)^6(3x^2)^3$$

Name: _____

4

$$(-3a^6b^2)^3 + 12a^{18}b^6$$

Name: _____

5

$$\frac{5x^8}{20x^4}$$

Name: _____

6

$$\frac{63a^2b^4c^7}{-7a^2b^3c^5}$$

Name: _____

7

$$\frac{(-x^5y^7)^2}{(2x^2y^3)^4}$$

Name: _____

8

$$\left(\frac{4m^5n^2}{6m^2n}\right)^3$$

Name: _____

9

$$\frac{(-2x^2y^5)^3 \cdot 5x^4}{10x^7y^{13}}$$

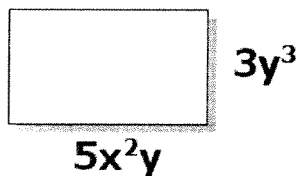
Name: _____

10

$$(-3x^4y)^2 \cdot (5x^2y^6) - (7x^5y^4)^2$$

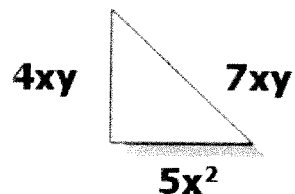
Name: _____

11

Find the perimeter and area of the following.

Name: _____

12

Find the perimeter and area of the following.

Name: _____

$$13. \frac{12x^9y^4}{(4xy)^2}$$

$$14. \frac{(2xy^4)^4}{(2x^2y^3)^2}$$

$$15. \left(\frac{12x^5}{15x}\right)^2$$

$$16. \left(\frac{4ab^2}{5ab}\right)^2$$

$$17. \frac{(9x^5y^6)(4xy)}{6x^2y^4}$$

$$18. \frac{(10ab)^2(2a^4b^3)}{4a^5b}$$

$$19. \frac{(8cd^3)(-3c^4)}{6c^2d} - 9c^3d^2$$

$$20. \frac{(-6x^4y^6)^2}{(-3x^3y^5)^2} - 7x^2y^2$$

WS#10

Name _____

Date _____

Adding and Subtracting Polynomials

Simplify each expression.

1) $(4v^3 + 5v^2) - (v^3 + v^2)$

2) $(1 - 3b) - (2 - 3b)$

3) $(3n^2 - 5n^4) + (4n^4 + 4n^2)$

4) $(5x^3 + 1) + (3 + 2x^3)$

5) $(3n + 4n^3) - (3n^3 - 2n)$

6) $(1 + p^4) - (5p^4 + 5)$

7) $(-13x^2 + 12x^4 - 6x) - (-13x + 3x^4 - 10x^2)$

8) $(-12r^3 + 2r - 4r^2) - (7r^4 - 2r - 2r^2)$

9) $(-1 + 13x^4 + 2x^5) - (10x^4 + 12x^5 + 7)$

10) $(-5b^4 - 4b^2 - 6b) + (8b^2 - 13b^4 - 11b)$

11) $(-2x - 2x^2 + 12x^3) + (4x^3 - 14x - 3x^2)$

12) $(-13b + 4b^3 + 13b^5) - (13b + 9b^5 - 14b^3)$

13) $(-5n^4 - n - 7n^3) - (-4n^3 + 9n^2 + 5n^4)$

14) $(4x^4 - 5x^2 - 12x^5) - (-14x^3 + 14x^4 + x^5)$

15) $(3 - 9a - 7a^4) + (-8a^2 + 11a + 5a^4)$

16) $(-8 - 6r^3 + 2r) + (9r^5 + 13r - 2)$

WS #11

Adding/Subtracting Polynomials

Example 1: $(18x - 2x^2 + 15) + (3x^2 - 10 - 8x)$

Example 2: $(6x^2 + 7x) - (10x + 3x^2 + 2)$

Directions: Solve the following problems. Match that answer to the correct letter of the alphabet. Enter that letter of the alphabet on the blank corresponding to the problem number.

7 12 12 7 14 12 9 1 2 15 8 7 6 15

16 11 13 5 15 5 8 10 9 4 14 16 3

A	B	C	D	E	F	G	H	I
$5x - 2y$	$4x + 11$	-4	$-5x^2 - 3x + 2$	0	$3x^2 + 11$	4	$3x^2 - 16$	$-3x - 8$
J	K	L	M	N	O	P		
$9x - 10y$	$2x^2 + 12x + 10$	$x^2 + 2$	$5x - 5y$	$3x^3 + 10x^2 - 42x + 8$	$2x + 4y$	$2x - 4y$		
Q	R	S	T	U	V	W	X	Y
-12	$2x^2 + 5x - 8$	$2x^2$	12	$5x^2 + 10x + 6$	$13x^2 + 16x - 10$	$x^2 - 2$	1	$x^3 + 5x^2 + 2$

SIMPLIFY:

- $(2x^2 + 4x + 1) + (3x^2 + 6x + 5)$
- $(x + 6) + (3x + 5)$
- $(x^3 + 2x^2 - 4) + (3x^2 + 6)$
- $(4x - 2y) - (2x - 6y)$
- $(x^2 + 6x - 4) - (x^2 + 6x - 4)$
- $6x - 4 - 6x$
- $3x + 6y - 8y + 2x$
- Find the difference of $(6x^2 + 3x - 5)$ and $(4x^2 - 2x + 3)$
- $(x^2 + 6) - (6 - x^2)$
- $(3x - 6y) + (2x + y)$
- $(5x - 6) - (8x + 2)$
- $(3x^2 + x - 4) - (4x - 6 + 8x^2)$
- $(x^2 + 6x + 5) + (x^2 + 6x + 5)$
- $(3x^3 + 6x^2 - 18x) + (4x^2 - 24x + 8)$
- $(3x + 6) - (3x - 6)$
- Subtract $(6x^2 + 8x - 6)$ from $(7x^2 + 8x - 4)$

IXL 2.2 and 2.4 work (50)

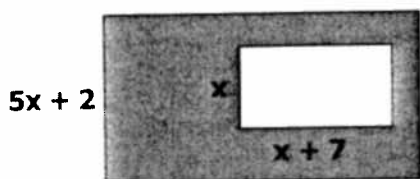
Monomial x Polynomial

Recall the Product Rule: $x^a \cdot x^b =$

Directions: Find each product. Final answers must be in standard form.		
1. $h(h + 4)$	2. $k(k - 9)$	3. $9a(a + 1)$
4. $6p(p - 8)$	5. $3c(-2c - 5)$	6. $-4g^2(2g + 7)$
7. $x(x^2 - x + 3)$	8. $5m^2(3m^2 - m - 7)$	9. $-3n(n^2 - 2n + 8)$
10. $-2x(6x^2 - 12x + 18)$	11. $3xy(x^2 + xy + y^2)$	12. $5r^2s^2(-2r^2 + 3rs - 4s^2)$
13. $3ab(4a^2 - 7b^3)$	14. $-4c^3d^2(9c^2d^2 - 4cd^5)$	15. $10m^4n(-2mn^3 + 3n)$

Directions: Distribute, then simplify the remaining expression. Final answer must be in standard form.	
16. $-2x(3x - 4) + 7x$	17. $5w(-7w + 3) + 2w(-2w^2 + 19w + 2)$
18. $y(y + 4) - y(y - 3) - 9y$	19. $6x(2x - 3) - 5(2x^2 + 9x - 3)$

20. Write an expression to represent the area of the shaded region in simplest form.



$3x - 1$

MULTIPLYING BINOMIALS

We use the "FOIL" Method:

First **O**uter, **I**nner **L**ast

Directions: Find each product using the FOIL method. Simplify your answer.

1. $(x + 2)(x + 4)$

2. $(y + 5)(y + 1)$

3. $(k + 6)(k + 3)$

4. $(x + 5)(x - 2)$

5. $(m + 3)(m - 7)$

6. $(x - 1)(x + 8)$

7. $(w - 2)(w - 3)$

8. $(x - 10)(x - 4)$

9. $(2x + 1)(x - 5)$

10. $(4x - 7)(x + 3)$

11. $(2a + 5b)(a - 4b)$

12. $(x - 1)(5x - 4)$

13. $(3y + 1)(3y + 2)$

14. $(6a + 2)(2a + 3)$

15. $(4x + y)(7x - 2y)$

MULTIPLYING BINOMIAL x TRINOMIAL

Directions: Find each product using the FOIL method. Simplify your answer.

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

2. $(y + 1)(y^2 + 2y + 4)$

3. $(k - 5)(k^2 - k - 8)$

4. $(m + 3)(m^2 + 3m + 5)$

5. $(x + 1)(x^2 + 2x + 1)$

6. $(z + 3)(z^2 - 4z + 2)$

WS # 14

**Dividing Polynomials
by a Monomial**

Recall the Quotient Rule: $\frac{x^a}{x^b} =$

*To divide a polynomial by a monomial,
divide each term of the numerator by the term in the denominator.*

1. $\frac{36x^5}{4x^3}$	2. $\frac{18y^3}{6y^7}$	3. $\frac{20a^2b^4c^6}{24a^3b^4c^3}$
4. $\frac{6x+9}{3}$	5. $\frac{40x^2-8x}{8}$	6. $\frac{7n^2+4n}{n}$
7. $\frac{12x^3+15x}{3x^2}$	8. $\frac{10v^2+5v-15}{5}$	9. $\frac{18c^3-21c^2+3c}{3c}$
10. $\frac{8a^3-2a^2+5a}{a}$	11. $\frac{6a^2b-12ab^2}{-2ab}$	12. $\frac{-20x^2-5x}{5x}$
13. $\frac{14x^6y^3-49x^5y^9}{-7x^4y}$	14. $\frac{-25x^4y^3+30x^2y^5}{-5x^2y}$	15. $\frac{20a^7b^3c^2-5abc}{5abc}$
16. $\frac{16x^6-12x^4+4x^2}{4x^2}$	17. $\frac{12c^5d^4+18c^4d^3}{3c^2d^3}$	18. $\frac{-24x^7+9x^3-15x}{3x^5}$
19. $\frac{15x^5-25x^3+5x^2}{5x^4}$	20. $\frac{28x^5y^4z^3+8x^4y^3z^2}{4x^2y^2z^2}$	21. $\frac{30c^5d^9-12c^4d^8+3c^3d^7}{3c^2d^2}$

Name: _____

Unit 7: Polynomials & Factoring



Date: _____ Bell: _____

Homework 4: Dividing Polynomials by Monomial

Directions: Simplify the following polynomials.		
1. $\frac{25x^5}{5x^2}$	2. $\frac{48m^3}{3m^4}$	3. $\frac{-5x^2y^3z^4}{15x^4y^2z^4}$
4. $\frac{15x-12}{3}$	5. $\frac{12x^2-20x}{4x}$	6. $\frac{6a^2+21a}{3a^2}$
7. $\frac{2x^3-18x^2}{2x^2}$	8. $\frac{4x^3-3x^2+x}{x}$	9. $\frac{6a^2p-14ap^2+2p^3}{2}$
10. $\frac{a^2p+ap^2}{ap}$	11. $\frac{18c^2d-4cd^2}{-2cd}$	12. $\frac{14x^6y^3-49x^5y^9}{-7x^4y}$
13. $\frac{9c^2d^9-27c^6d^5-3cd^3}{3cd^3}$	14. $\frac{-25x^4y^3+30x^2y^5}{-5x^2y}$	15. $\frac{32s^5w^2-24s^2w^3}{8s^2w^2}$
16. $\frac{3x^3y+5x^2y^2-2xy}{xy}$	17. $\frac{28x^5-8x^4+40x^2}{4x^3}$	18. $\frac{27x^4-9x^3+63x^2}{9x}$
19. $\frac{9x^3y^2+15x^2y-6x^2}{3x^2}$	20. $\frac{24x^4+14x^3-4x^2+10x}{2x}$	21. $\frac{-10x^3y^2+25x^2y^5-5x^2y}{-5x^2y^3}$
22. $\frac{12x^3y^5-18x^2y^2+3xy}{3xy}$	23. $\frac{56x^4y^5-49x^3y^6-35x^2y^3}{7x^2y^2}$	24. $\frac{45x^5y^4-60x^3y^2-15x^2y^3}{15x^2y^3}$

Spiraling Review #2

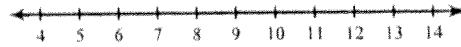
Name _____

Solve each inequality and graph its solution.

1) $-5 - 6(1 + 2m) \geq -83$



2) $7(3n + 7) < 196$



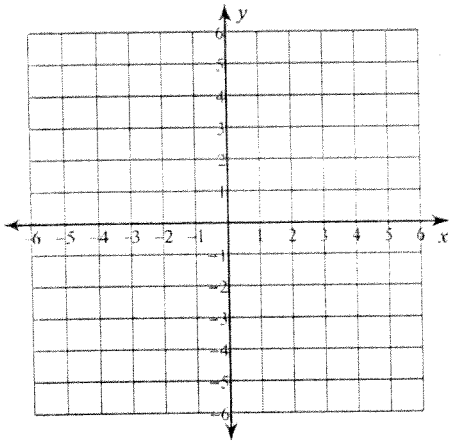
Find the slope of a line perpendicular to each given line.

3) $-20 + x + 5y = 0$

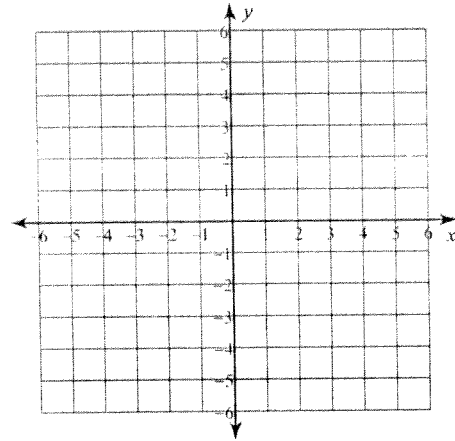
4) $-y = 2 + \frac{4}{5}x$

Sketch the graph of each linear inequality.

5) $y < -4$



6) $y \geq -5$



Write the slope-intercept form of the equation of the line through the given points.

7) through: $(-2, -5)$ and $(0, -4)$

8) through: $(2, 4)$ and $(1, -1)$

We will celebrate Thurs Mar 16 A and
Friday Mar 17 B due to Writing SOL

HAPPY PI DAY

MARCH 14th 3/14/17

Join us and celebrate PI Day by doing one of the following events.

1) DESIGN A T-SHIRT ABOUT π .

Design a T-shirt that has information about π on it. **BE CREATIVE!**

Your design cannot be drawn on paper nor taped or pinned to the shirt.

Your design must be a part of the shirt that you have created yourself. For example, your design may be ironed on, written on, painted on, glued on, or sewn on.

Students must wear it to school all day on Friday, Mar 13th (A-day) or Monday, Mar 16th (B-day)



2) BRING A FOOD RELATED TO π .

Bring a food related to or decorated with information about π .

On an index card, 1) write your name, 2) state the type of food you brought in,

3) list the radius and diameter of the item, and 4) show the steps used to determine the circumference of the "Pie".

Students will bring food to class on Friday, Mar 13th (A-day) or Monday, Mar 16th (B-day)

Plates, plastic forks, and napkins will be needed.

3) CREATE A STORY, POEM, SONG, POSTER, OR CARTOON.

Write a short story about pi. Limit the story to 1 page. Make a colorful cover page.

Write a poem about pi and paste it to decorated construction paper. Decorations should be related to the poem.

Create a cartoon and paste it to decorated construction paper.

Make a poster to show information about pi. Related decorations required.

A-day students will turn in this project on Friday, Mar 13th or Monday, Mar 16th (B-day)

4) CREATE JEWELRY USING THE VALUE OF π .

Make a necklace or bracelet using the number in pi. Assign a color to each digit (including 0) and then string beads of those colors into a necklace or bracelet. The first bead, represents the number three and should be a larger bead than the others. List the color/number code used.

5) CREATE A PAPER CHAIN

Create a paper chain with each link representing a number of pi. On each link, list a fact about pi or show and solve a problem using pi. List the color/number code used.

Name _____

Bell _____



Test Study Guide

Exponents and Exponential Functions

Exponent Rules

PRODUCT RULE	POWER RULE	QUOTIENT RULE	NEGATIVE EXPONENT RULE
$x^a \cdot x^b =$	$(x^a)^b =$	$\frac{x^a}{x^b} =$	$x^{-a} =$
WHAT ABOUT ADDING AND SUBTRACTING MONOMIALS?			

Simplifying Monomials

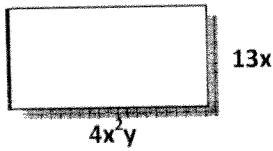
Final answers must have positive exponents only!

1. $6ab - 8ab$	2. $-2xy^2 - 4xy + 6xy^2$
3. Subtract $-6b$ from $8b$	4. $7n^4 \cdot n^2$
5. $8x^5 \cdot -3x^4$	6. $v^4 \cdot 7v^3 \cdot 5v$
7. $(2y^3)^2$	8. $(-4x^4)^3$
9. $(-a^6b)^2$	10. $(-2y^4) \cdot (xy^3)^2 - 13x^2y^{10}$
11. $\frac{a^6b^7c^2}{a^5b^4c^2}$	12. $\frac{(-3x^6)^2}{5x^3 \cdot 3x^3}$
13. $\left(\frac{4x^4y^2}{6xy}\right)^2$	14. $\frac{7b^{-3} \cdot 3b^{-2}}{6b^2}$
15. $\frac{-9n^8}{27n^{10}}$	16. $\frac{a^{12}b^{-3}}{(ab)^{-4}}$

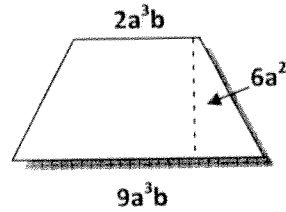
Review

Geometric Applications

17. Find the perimeter and area of the following:



18. Find the area of the following:



Polynomials

19. $\frac{24x^3 - 42x^2 - 6x}{6x}$

20. $\frac{30a^6b^3 + 12a^4b^2 - 15a^2b}{3a^2b}$

21. $(y^2 + 4y - 1) + (5y^2 + 2)$

22. $(5k^2 - 9k + 1) - (8k + 13)$

23. $(7x^3 + 2x^2 - x - 4) - (4x^3 - 3x^2 + 8)$

24. $(7m^4 + 6m^2 + 7) + (2m^4 - 3m^2 + 1)$

25. $(x + 3)(2x + 3)$

26. $(9w - 1)(7w + 4)$

27. $(2a + 7)^2$

28. $(x - 6)(4x^2 + x - 7)$

29. $(2y + 17)(y + 1)$

30. $(n + 2)(n - 2)$

31. $(x - 5)^2 - 3(x + 8)$

32. $7x^3y(x^2y - 3x + 2) + 5x^4y$