

Do Now #5

Name: key
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Date: _____
8A Period _____

Monomial/Polynomial & Factoring Review

Questions 1 through 3 refer to the following:

Simplify the given expression:

- 1) $7pq + 8qr - 9pq - 8qr$ *Add coeff. keep exponents the same*
- A) $2pq$
B) $-2pq$
C) $-2qr$
D) $2qr$

$-2pq$

- 2) $(5x^2 - 9x + 3) + (4x^2 + 4x - 12)$
- A) $9x^2 - 13x - 9$
B) $9x^2 + 5x - 9$
C) $9x^2 - 5x - 9$
D) $9x^2 - 13x + 9$

$(5x^2 - 9x + 3)$
 $+ (4x^2 + 4x - 12)$

 $9x^2 - 5x - 9$

Add coefficients
Keep exponents the same

- 3) $(3x^2 - 4xy + 7y^2) - (7x^2 - 6xy - 3y^2)$
- A) $-4x^2 - 10xy + 10y^2$
B) $4x^2 - 10xy + 10y^2$
C) $-4x^2 - 2xy + 10y^2$
D) $-4x^2 + 2xy + 10y^2$
- Distribute the negative*
(Skip, switch change)

$(3x^2 - 4xy + 7y^2)$
 $+ (-7x^2 + 6xy + 3y^2)$

 $-4x^2 + 2xy + 10y^2$

Questions 4 and 5 refer to the following:

Find the quotient of the given expression:

4) $\frac{7ab^2 - 5a^2b}{ab}$ *Divide coeff. Subtract the exponents*

$\frac{7ab^2}{ab} - \frac{5a^2b}{ab}$ *Subtract the exponents*

$7b - 5a$

5) $\frac{8x^3 - 12x^2 + 4x}{-4x}$ *Divide the coeff. Subtract the exponents.*

$\frac{8x^3}{-4x} - \frac{12x^2}{-4x} + \frac{4x}{-4x}$

$-2x^2 + 3x - 1$

Questions 6 and 7 refer to the following:

Find the product of the given expression:

6) $5x^3(2x^4 - x^3 + 3)$ *Distribute multiply coeff. Add exponents*

A) $7x^7 - 5x^6 + 15x^3$
B) $10x^7 - 5x^6 + 15x^3$
C) $10x^7 - x^3 + 3$
D) $10x^{12} - x^9 + 15x^3$

7) $6x^3y^2(4x^4 - 3xy)$ *Distribute multiply the coeff. Add the exponents.*

A) $24x^7y - 18x^4y^3$
B) $24x^{12}y^2 - 18x^4y^3$
C) $10x^7y^2 - 9x^4y^3$
D) $24x^7y^2 - 18x^4y^3$

$24x^7y^2 - 18x^4y^3$

8) Find the product of the given terms:

$(-2r^2s)(3rs)(-rs^3)$ *multiply the coeff*

$6r^4s^5$

Add exponents
Don't distribute

9) Find the quotient of the given terms:

$\frac{20y^5z}{-4y^5z} = -5$

Divide coeff
Sub. exponents

Sign trick: Drop the 1st sign, then multiply the 2 signs together the 2nd sign

10) What are the factors of $(2x^2 - 13x + 15)$?

- A) $(2x-3)(x-5)$
- B) $(2x-15)(x-1)$
- C) $(2x-5)(x-3)$
- D) $(2x-1)(x-15)$

$(2x-10)(2x-3)$
 $(x-5)(2x-3)$

Tricky Trinomial

Must simplify

$y = 30/x$
↑ get factors + go to table

Questions 11 through 15 refer to the following:

Expand and simplify the given polynomials:

multiply coeff *add the exponents*

11) $(2x^2 + 3x - 4)(2x + 5)$

- A) $4x^3 + 16x^2 + 7x + 20$
- B) $4x^3 + 16x^2 + 23x - 20$
- C) $4x^3 + 16x^2 + 7x - 20$
- D) $4x^3 + 16x^2 - 23x - 20$

$4x^3 + 10x^2 + 6x^2 + 15x - 8x - 20$

Double distribute

12) $(z-7)(z-1)$

multiply the coeff
add the exponents

$z^2 - z - 7z + 7$

$z^2 - 8z + 7$

Box Method

13) $(y+3)(5y+1)$

	y	$+3$
$5y$	$5y^2$	$15y$
$+1$	$5y$	3

$5y^2 + 15y + 5y + 3$

$5y^2 + 20y + 3$

multiply the coeff
Add exponents
Double Distribute

14) $(13-2x)(13-2x)$

$169 - 26x - 26x + 4x^2$

$4x^2 - 52x + 169$

must write in descending power order!

Double Distribute
multiply the coeff
add the exponents

15) $(3x+y)^2 = (3x+y)(3x+y)$

$9x^2 + 3xy + 3xy + y^2$

$9x^2 + 6xy + y^2$

must write twice

Double Distribute

multiply the coeff *add the exponents*

Questions 16 through 20 refer to the following:

Factor the given polynomial:

must be 1) a binomial
2) be subtract
3) have P.S. terms

DUPS

Diff of perfect squares

16) $y^2 - 25$

- A) $(y+5)(y-5)$
- B) $(5-y)(5+y)$
- C) $(y-5)(y-5)$
- D) $(y+5)(y+5)$

steps 1) Take the sqrt of each term
2) put one + and one -
you are making conjugates!

DOPS squares
iff f perfect

17) $81 - 4x^2$

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

take the $\sqrt{\quad}$ of the terms

one + and one -
you are making conjugates

18) $6x^3 + 21x$ GCMF: must have common terms

- A) $3x(x^2 + 7)$
- B) $3x(2x^2 - 7)$
- C) $6x^2(2x + 7)$
- D) $3x(2x^2 + 7)$

Don't show the division

GCMF: biggest # + smallest exponent

19) $30y + 15y^3$

$15y(2 + y^2)$

GCMF: biggest # + smallest exponent
Don't show division

GCMF: greatest common monomial factoring

20) $-12r^2 - 20rv$

$-4rv(3r + 5)$

Don't show division
GCMF
Biggest # + smallest exponent

21) Expressed in factored form, the binomial $4a^2 - 9b^2$ is equivalent to

- A) $(2a - 9b)(2a + b)$
- B) $(2a - 3b)(2a - 3b)$
- C) $(4a - 3b)(a + 3b)$
- D) $(2a + 3b)(2a - 3b)$

Diff of perfect square

take the $\sqrt{\quad}$ of each term
+ ac + o ac -
making conjugates

M A M start
multiply do multiply

22) What are the factors of $x^2 + 7x + 12$?

- A) $(x + 12)(x + 1)$
- B) $(x + 4)(x + 3)$
- C) $(x + 2)(x + 6)$
- D) $(x + 7)(x + 5)$

Trinomial factor

$\frac{012}{1 \cdot 12}$ $\frac{7}{1 \cdot 7}$
 $\frac{216}{3 \cdot 4}$ $\frac{2 \cdot 3}{3 \cdot 4}$
 $4 \cdot 3 = 12$ $4 + 3 = 7$

23) What are the factors of $5x^2 + 6xy - 8y^2$?

- A) $(5x - 4y)(x + 2y)$
- B) $(5x + 4y)(x - 2y)$
- C) $(5x + 2y)(x - 4y)$
- D) $(5x - 2y)(x + 4y)$

must write 5x twice!

$\frac{5x + 10y}{5} \frac{5x - 4y}{5}$
 $(x + 2y)(5x - 4y)$

Trinomial
must simplify

24) Which of the following represents $9x^2 + 36x + 36$ after it has been factored completely?

- A) $9(x^2 + 4x + 4)$
- B) $9(x + 2)^2$
- C) $(9x + 18)(x + 2)$
- D) $3(3x + 2)(x + 6)$

factor twice
1) GCMF
2) Tri/DOPS

$9x^2 + 36x + 36$
GCMF $9(x^2 + 4x + 4)$
MARS $9(x + 2)(x + 2) = 9(x + 2)^2$

25) Factor completely: $3x^2 + 15x - 42$
factor twice

$3(x^2 + 5x - 14)$ GCMF

$3(x + 7)(x - 2)$ Tri