Algebra I
Unit 8 Review

Name Key

Remember, you must turn in a completed review in order to complete test corrections.

Factor each polynomial using the GCF.

1. $15nr^2 - 18m^2nr - 12mn^2r + 3nr$

$3nr(5r - 6m^2 - 4mn + 1)$

2. $32a^3b^2c^3 + 40a^2bc^3 - 16a^4b^2c^2$

2 a's
1 b
2 c's

A. $8a^2bc^2$
B. $8a^2bc^2(4abc + 5c - 2a^2b)$
C. $4a^2bc^2(8abc + 10c - 4ab)$
D. $8abc(4a^2bc^2 + 5ac^2 - 2a^3bc)$

3. $15x^2y - 5xy^3 + 110xy^2$

$5xy(3x - y^2 + 22y)$

4. $8y^7 + 5y^4 + y^2$

$y^2(8y^5 + 5y^2 + 1)$

A. $8y^2(y^5 + 5y^2 + 1)$
B. y^2
C. $y^2(8y^5 + 5y^2 + 1)$
D. $y^2(8y^5 + 5y^2)$

· Question in $y_1 =$
· Answer choice in $y_2 =$
· check table

Factor each trinomial. (Be sure to check for a GCF first!) Check your answers on the calculator.

5. $4x^2 - 12x + 9$ (a, b, c)

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

36: 4, 9; 6, 6 = 12; -6, -6 = -12

add to -12

$(2x-3)(2x-3)$

A. $x(4x-3) - 9(x-1)$
B. $(2x-3)(2x+3)$
C. $(2x-3)^2$
D. $(2x+3)^2$

6. $5x^2 + 12x + 7$

	x	+1
5x	$5x^2$	5x
+7	7x	7

35: 1, 35; 5, 7 = 12

add to 12

A. $x(5x+5) + 7(x+1)$
B. $(5x+7)(x+1)$
C. $(5x+12)(x+7)$
D. $(x+7)(5x+1)$

Factor each trinomial. (Be sure to check for a GCF first!) Check your answers on the calculator.

7. $3x^2 - 3x - 18 = 3(x+2)(x-3)$

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

try to factor parenthesis!

	x	2
x	x^2	2x
-3	-3x	-6

-6: 1, -6; 2, -3 = -1; -2, 3

add to -1

8. $4x^2 - 25 = 4x^2 + 0x - 25 = (2x-5)(2x+5)$

NO GCF

	2x	-5
2x	$4x^2$	-10x
+5	10x	-25

-100: -10, 10

add to 0!

9. $x^2 - 49$

NO GCF

a = 1
b = 0
c = -49

	x	-7
x	x^2	-7x
+7	7x	-49

-49: -7, 7

add to 0

$(x-7)(x+7)$

10. $x^3 - 3x^2 - 10x$

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

	x	+2
x	x^2	2x
-5	-5x	-10

-10: 1, -10; 2, -5 = -3; -2, 5

add to -3

A. x(x+2)(x+5)
B. (x+2)(x-5) ← no x!
C. x(x+2)(x-5)
D. x(x-2)(x-5)

11. The area of a rectangle is $3x^2 + 14x + 8$, and the width is $x + 4$. Which expression best describes the rectangle's length?

A. $2x + 2$
B. $2x + 4$
C. $3x + 2$
D. $3x - 2$

	x	$+4$
$3x$	$3x^2$	$12x$
$+2$	$2x$	8

$= 14x$ ✓

$A = L \cdot W$

12. The area of a rectangle is $x^2 + 2x - 3$. Which of the following could be length and width?

A. width $(x+1)$ and length $(x-3)$
B. width $(x+3)$ and length $(x-1)$
C. width $(x-1)$ and length $(x-3)$
D. width $(x+3)$ and length $(x+1)$

$A = L \cdot W$

$A = x^2 + 2x - 3$
FACTOR!

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

-3	
1	-3
-1	3

add to $+2$

$(x-1)(x+3)$

Area of square $= s \cdot s = s^2$

13. If the area of a square is $x^2 + 10x + 25$, what is the length of each side?

A. (x-5)
B. (x+5)
C. (x+10)
D. (x-10)

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

25	
1	25
5	5

add to 10

$(x+5)(x+5) = (x+5)^2$

14. Which binomial is a factor of $3x^2 + 5x + 2$?

A. $3x - 2$
B. $x - 1$
C. $x + 1$
D. $x + 2$

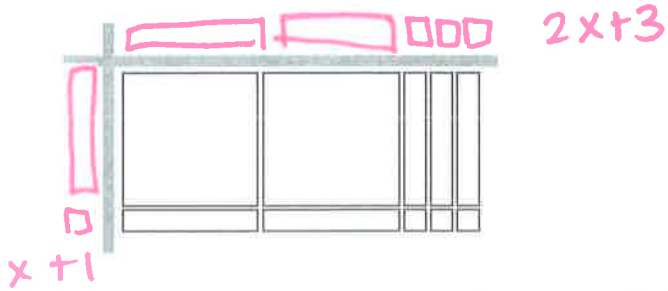
	$3x$	$+2$
x	$3x^2$	$2x$
$+1$	$3x$	$+2$

6	
1	6
2	3

add to 5

15. Using the algebra tiles, what are the factors of $2x^2 + 5x + 3$?

A. (2x-3)(x-1)
B. (2x+3)(x+1)
C. (2x+1)(x+3)
D. (x+3)(x+1)



Simplify each expression: Exponent Rules (unit 7 review!)

16. $(4x^3yz^2)(-5x^4y^{-6}) = -20x^7y^{-5}z^2 = \boxed{\frac{-20x^7z^2}{y^5}}$

multiply big #s
Add exponents of same bases

17. $\frac{2xy^4}{4x^3y^2z^0} = \frac{2xy^4}{4x^3y^2} = \frac{2\cancel{x}\cancel{y}\cancel{y}y}{4\cancel{x}\cancel{x}x\cancel{y}\cancel{y}} = \boxed{\frac{1y^2}{2x^2}}$

only $z^0 = 1$
DIVIDE big #s

18. $\left(\frac{23x^{23}y^{42}z^5}{469x^4y^{57}z^{10}}\right)^0$ $\boxed{1}$

Anything to zero power

19. $(4x^3 + 2x^2 - 3x) - (-5x^3 + x^2 + 2x)$

distribute negative, combine like terms

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

$\boxed{9x^3 + x^2 - 5x}$