Name: Key Date: _____ Period: _____

Unit 9—Factoring Quadratics Review

Find the GCF of the set of monomials.

1. $30x^2y^3$, $25x^3y$, $40x^3z^3$

$30x^2y^3 \rightarrow 5 \cdot 6 \cdot x \cdot x \cdot y \cdot y \cdot y$
$25x^3y \rightarrow 5 \cdot 5 \cdot x \cdot x \cdot x \cdot y$
$40x^3z^3 \rightarrow 5 \cdot 8 \cdot x \cdot x \cdot x \cdot z \cdot z \cdot z$

$5x^2$

Factor the polynomials.

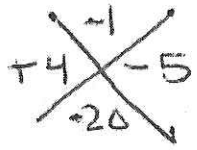
2. $32x^3y - 48xy^2$ $16xy(2x^2 - 3y)$

GCF: $16xy$

3. $8x^2 - 8x$ $8x(x-1)$

GCF: $8x$

4. $x^2 - x - 20$ $(x+4)(x-5)$ — Check on calc

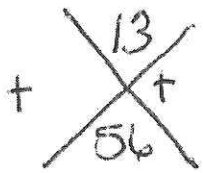


$y_1 =$
$y_2 =$
2nd table
$y_1 = y_2$?

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

difference of squares

6. $14x^2 + 13x + 4$ prime



Solve the following equations.

① GCF
② Factor (X or X-Box method)
③ Solve using ZPP - set each factor equal to zero & solve

7. $2z(z+6)=0$

① ② ③

① $\frac{2z}{2}=\frac{0}{2}$ → $\boxed{z=0}$

② $z+6=0$, $-6\ \ -6$ → $\boxed{z=-6}$

8. $x^2-10x=-24$

$+24\ \ +24$

$x^2-10x+24=0$

-10, -6, -4, 24

① ②

$(x-6)(x-4)$

① $x-6=0$, $+6\ \ +6$ → $\boxed{x=6}$

② $x-4=0$, $+4\ \ +4$ → $\boxed{x=4}$

*must be in standard form

9. $3t^2-7t-20=0$

-7, +5, -12, -60

	t	-4
3t	$3t^2$	-12t
+5	5t	-20

$(t-4)(3t+5)$

$t-4=0$ → $\boxed{t=4}$

$\frac{3t}{3}=\frac{-5}{3}$ → $\boxed{t=-\frac{5}{3}}$

10. Use the table to find the solution or solutions to the following quadratic.

$x^2+6x+5=0$

find where $y=0$

x	y
-6	5
-5	0
-4	-3
-2	-3
-1	0
0	5

$\boxed{x=-5 \text{ and } x=-1}$

$\boxed{\{-5,-1\}}$

11. Find the value of the discriminant for $2x^2+10x+11=0$.

b^2-4ac ← $a=2\ b=10\ c=11$

$(10)^2-4(2)(11)=12$

positive means 2 solutions

12. The area of a square is $4x^2+12x+9$. What is the length of one side?

$A=s^2$

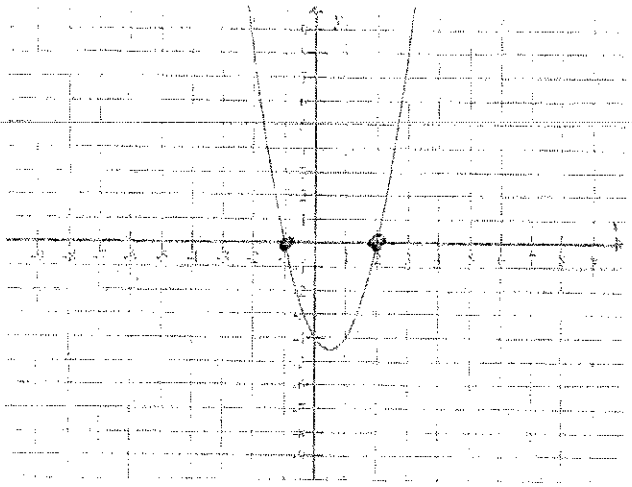
s

12, 6, 6, 36

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

$\boxed{s=2x+3}$

13. $y = 2x^2 - 2x - 4$



What are the zeros of $0 = 2x^2 - 2x - 4$?

$x =$ -1

$x =$ 2

- Find x-values where the graph crosses the x-axis (x-intercepts/zeros/solutions/roots)

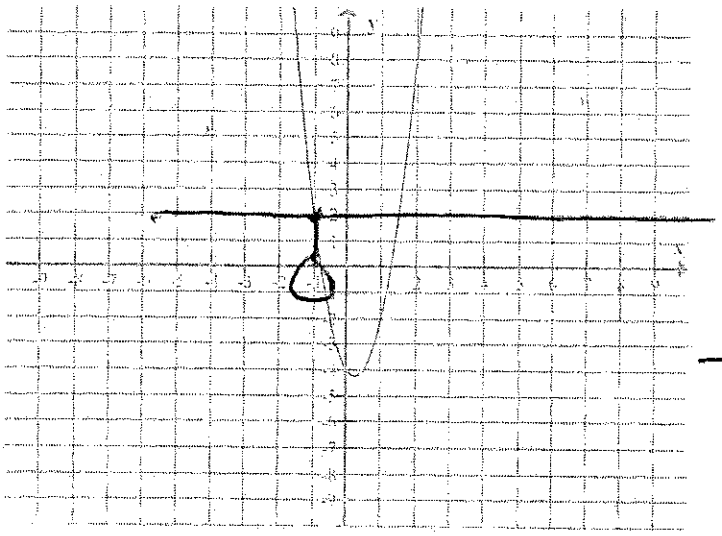
14. Complete the table below to show what the value of the discriminant tells you about the number of roots in a quadratic equation.

Discriminant	Positive	Negative	Zero
Number of Real Roots	2	0	1

15. Use your calculator and locate the solutions. Between which two numbers is there a solution to the equation - Graph it and see where it crosses x-axis $3x^2 - 2x - 4 = 0$

Between -1 and 0 Between 1 and 2

16.



Look at the graph on the left. What is the best estimate of the negative value of x for which this function equals 2?

X = -1

17. $x^2 - 3x - c = 0$; let $x = -4$. Solve for the constant, c:

function substitution solve

f: $x^2 - 3x - c = 0$

S: $(-4)^2 - 3(-4) - c = 0$

S: $16 + 12 - c = 0$

$28 - c = 0$

$+c \quad +c$

$28 = c$

$c = 28$

18. Find the solutions of $\sqrt{(5x-3)^2} = \sqrt{49}$.

$5x - 3 = \pm 7$

① $5x - 3 = 7$

$+3 \quad +3$

$\frac{5x}{5} = \frac{10}{5}$

$x = 2$

② $5x - 3 = -7$

$+3 \quad +3$

$\frac{5x}{5} = \frac{-4}{5}$

$x = -\frac{4}{5}$

$x = 2$ and $x = -\frac{4}{5}$

* Take $\sqrt{}$ of both sides since both are perfect squares - consider both $+\sqrt{}$ & $-\sqrt{}$

19. Given the quadratic equation $x^2 - 4 = 0$, explain two different ways that you could determine if the two x-intercepts were the coordinate pairs (-2, 0) and (2, 0).

① factor the equation $(x+2)(x-2) = 0$

② Enter equation into $y_1 =$ Look in table to find values where $y = 0$

20. Solve using the quadratic formula. (Hint: rewrite in the form $ax^2 + bx + c = 0$)

$24x^2 - 14x = 6$

$-6 \quad -6$

$24x^2 - 14x - 6 = 0$

$x = \frac{-(-14) \pm \sqrt{(-14)^2 - 4(24)(-6)}}{2(24)}$

$x = \frac{14 \pm \sqrt{772}}{48}$

2 solutions

① $x = \frac{14 + \sqrt{772}}{48}$ $x \approx 0.87$

② $x = \frac{14 - \sqrt{772}}{48}$ $x \approx -0.29$