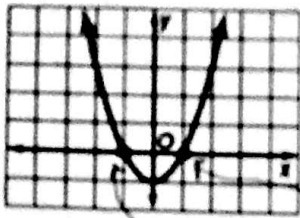


Math 1 Quadratics Test Review

Name: Answer Key

1. Which equation corresponds to the graph shown?



- A. $y = x^2 + 1$
 B. $y = -x^2 - 1$
 C. $y = x^2 - 1$ $(x+1)(x-1)$
 D. $y = x^2$ $x+1=0 \quad x-1=0$
 $x=-1 \quad x=1$

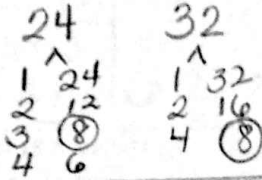
2. Factor $12x^3y$ completely.

- A. $2 \cdot 3 \cdot x \cdot y$
 B. $2 \cdot 2 \cdot 3 \cdot x \cdot x \cdot x \cdot y$
 C. $4 \cdot 3 \cdot x^3 \cdot y$
 D. $12 \cdot x \cdot x \cdot x \cdot y$

(omit)
 *did not go over this!

3. Find the greatest common factor of $24a$ and $32b$.

- A. 2
 B. $6ab$
 C. $4ab$
 D. 8



4. Which binomial is a factor of $2n^2 - 32n$?

- A. $2n - 8$
 B. $n + 16$
 C. $n - 16$
 D. $n + 4$

$2n^2 - 32n$
 $2n(n - 16)$

5. Factor $xy + 3x - 2x^2$ completely.

- A. $x(y + 3 - 2x)$
 B. $(2x - 3y)(y + x)$
 C. $x(y + 3) + 2x$
 D. $y(x + 3x - 2x^2)$

$x(y + 3 - 2x)$

6. Solve $b(b + 17) = 0$

- A. $\{0, \frac{1}{17}\}$
 B. $\{-17, 0\}$
 C. $\{0, 17\}$
 D. $\{17\}$

$b(b+17)=0$
 $b=0 \quad b+17=0$
 $\quad \quad -b \quad -17$
 $\quad \quad \quad \quad b=-17$
 $\{-17, 0\}$

7. Factor: $m^2 + 13m + 42$

- A. $(m + 1)(m + 13)$
 B. $(m + 6)(m + 7)$
 C. $(m + 10)(m + 3)$
 D. $(m - 6)(m - 7)$

add (13) | mult(42)
 $6+7=13 \quad 6 \cdot 7=42$

8. Factor: $y^2 - 8y + 15$

- A. $(y - 2)(y - 6)$
 B. $(y - 2)(y - 4)$
 C. $(y - 1)(y - 15)$
 D. $(y - 3)(y - 5)$

add(-8) | mult(15)
 $3+5=8 \quad 3 \cdot 5=15$
 $-3+5=-8 \quad -3 \cdot 5=15$

9. Factor: $3m^2 + 14m - 5$

- A. $(3m + 1)(m - 5)$
 B. $(3m - 1)(m + 5)$
 C. $(3m + 5)(m - 1)$
 D. $(3m - 5)(m + 1)$

$m^2+14m-15$
 add(14) | mult(-15)
 $-1+15=14 \quad -1 \cdot 15=-15$
 $(m-1)(m+15)$
 $(3m-1)(m+5)$

10. Which binomial is a factor of $4x^2 - 13x + 3$?

- A. $2x - 3$
 B. $2x - 1$
 C. $4x - 3$
 D. $4x - 1$

$x^2-13x+12$
 add(-13) | mult(12)
 $-1+-12 \quad -1 \cdot 12$
 $(x-1)(x-12)$
 $(4x-1)(x-3)$

11. Solve: $2x^2 - 5x - 3 = 0$.

- A. $\{-\frac{1}{2}, 3\}$
 B. $\{\frac{1}{2}, -3\}$
 C. $\{\frac{1}{2}, 3\}$
 D. $\{-\frac{1}{2}, -3\}$

$x^2-5x-6=0$ add(-5) | mult(-6)
 $(x-6)(x+1)=0$ $-6+1 \quad -6 \cdot 1$
 $(x-3)(2x+1)=0$
 $x-3=0 \quad 2x+1=0$
 $x=3 \quad \frac{2x}{2} = \frac{-1}{2}$
 $x = -\frac{1}{2}$
 $\{-\frac{1}{2}, 3\}$

Question 12 and 13, factor if possible, if not choose prime.

12. $4m^2 - 25$

- A. $(2m + 5)(2m + 5)$
 B. $(2m + 5)(2m - 5)$
 C. $(2m - 5)(2m - 5)$
 D. prime

m^2-100
 $a=1 \quad b=0 \quad c=-100$
 add(0) | mult(-100)
 $-10+10 \quad -10 \cdot 10$
 $(m-10)(m+10)$
 $(2m-5)(2m+5)$

13. $x^2 + 16$ $a=1$ $b=0$ $c=16$

- A. $(x+4)(x+4)$
- B. $(x+4)(x-4)$
- C. $(x-4)(x-4)$
- D. Prime**

add(0)	mult(16)
None!	1 · 16 = 16
	4 · 4 = 16
	2 · 8 = 16

even if both negative, none add to zero

14. Solve $64y^2 = 25$ by factoring.

- A. $\{\frac{8}{5}\}$
- B. $\{\frac{5}{8}\}$
- C. $\{-\frac{8}{5}, \frac{8}{5}\}$
- D. $\{-\frac{5}{8}, \frac{5}{8}\}$**

$64y^2 - 25 = 0$
 $8 \cdot 8$ $5 \cdot 5$
 both perfect squares!

$(8y+5)(8y-5)$	
$8y+5=0$ $-5-5$ $\frac{8y}{8} = \frac{-5}{8}$ $y = -5/8$	$8y-5=0$ $+5+5$ $\frac{8y}{8} = \frac{5}{8}$ $y = 5/8$

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

- A. $3x - 1$
- B. $x - 1$**
- C. $3x - 5$
- D. $x - 5$

$x^2 + 2x - 15$
 add(2) | mult.(-15)

5+3	5 · 3
-----	-------

 $(x+5)(x-3) \rightarrow (3x+5)(x-1)$

16. Which expression is a factor of $(6x^3 - 13x^2 - 28x)$?

- A. $x - 4$**
- B. $2x - 7$
- C. $2x + 7$
- D. $3x - 4$

$x(x^2 - 13x - 168)$
 $x(6x^2 - 13x - 28)$
 add(-13) | mult(-168)

-24+7	-24 · 7
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 $(x-24)(x+7)$
 $(x-4)(6x+7)$

17. What is the equation of the axis of symmetry of the graph of $y = x^2 + 6x - 7$?

- A. $x = 6$
- B. $x = -3$**
- C. $x = 3$
- D. $x = -6$

graph in calc find vertex and look at x-value!
 $(-3, -16)$

18. A city planner in Gastonia wants to build a rectangular playground at a park. If $2x^2 + 5x + 2$ represents the area of the playground and $2x + 1$ represents the length, which represents the width of the playground?

- A. $x + 1$

Factor $2x^2 + 5x + 2$
 $x^2 + 5x + 4$
 $(x+1)(x+4)$
 already given $\rightarrow (2x+1)(x+2)$ ← missing factor is width!

- B. $x + 2$**
- C. $4x^3 + 12x^2 + 9x + 2$
- D. $2x + 1$

19. Find the coordinates of the vertex of the graph of $y = 4 - x^2$. Identify the vertex as a maximum or a minimum.

- A. (2, 0); maximum
- B. (0, 4); minimum
- C. (0, 4); maximum**
- D. (2, 0); minimum

plug into calc. find vertex
 $(0, 4)$ ← max not min!

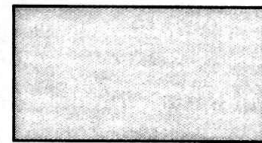
20. Solve: $x^2 + 7x + 12 = 0$.

- A. {3, 4}
- B. {-3, 4}
- C. {-4, 3}
- D. {-3, -4}**

add(7)	mult(12)
3+4	3 · 4

$(x+3)(x+4)$
 $x+3=0$ $x+4=0$
 $x = -3$ $x = -4$

21. The area of the rectangle shown below is $2x^2 - x - 15$ square units. What is the width of the rectangle? Factor!



$2x + 5$

- A. $x - 5$
- B. $x + 3$
- C. $x - 3$**
- D. $2x - 3$

$2x^2 - x - 15$
 $x^2 - x - 30$
 add(-1) | mult(-30)

-6+5	-6 · 5
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 $(x-6)(x+5)$
 $(x-3)(2x+5)$
 width (missing factor) already given!

22. Chantel is carpeting a room that has an area of $x^2 - 100$ square feet. If the width of the room is $x - 10$ feet, what is the length of the room?

- A. $x - 10$ ft
- B. $x + 10$ ft**
- C. $x - 100$ ft
- D. 10ft

$x^2 - 100$ $a=1$ $b=0$ $c=-100$
 add(0) | mult(-100)

-10+10	-10 · 10
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 $(x+10)(x-10)$
 length (missing factor) already given

23. Which of the following is a solution to $x^2 + 6x - 112 = 0$? Quad formula

A. -14 = $\frac{-6 \pm \sqrt{6^2 - 4(1)(-112)}}{2(1)}$
 B. 6 = $\frac{-6 \pm \sqrt{36 - (-448)}}{2}$
 C. -8 = $\frac{-6 \pm \sqrt{484}}{2}$
 D. 12 = $\frac{-6 \pm 22}{2}$

$\frac{-6+22}{2}, \frac{-6-22}{2}$
 $= \{8, -14\}$

24. Which polynomials have $w + 5$ as a factor?

A. $3w^2n + 6w^2 - 75n - 150$
 B. Both do.
 C. $2w^2 + 50$
 D. Neither do.

$3w^2n - 75n + 6w^2 - 150$
 $3n(w^2 - 25) + 6(w^2 - 25)$
 $(3n + 6)(w^2 - 25)$
 $(w + 5)(w - 5)$

25. If $2a^3 + 16a^2 + 30a$ is factored completely, one of the factors is

A. $a + 5$
 B. $2a + 6$
 C. $a + 6$
 D. $2a + 25$

$2a(a^2 + 8a + 15)$
 $2a(a + 3)(a + 5)$

26. What are the solutions of $18x^2 - 27x + 4 = 0$? Graph or Quad Formula

B. $\frac{1}{6}$ and $\frac{4}{3}$
 A. $-\frac{1}{6}$ and $-\frac{4}{3}$
 C. -6 and $-\frac{3}{4}$
 D. 6 and $\frac{3}{4}$

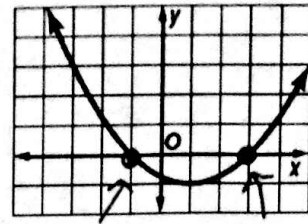
* plugged into calculator and found zeros
 * convert decimals to fractions!

27. Nick's height in meters above the water t seconds after diving from a diving board into a pool can be modeled by $f(t) = -4.9t^2 + 4.9t + 5$. What is Nick's maximum height above the water?

- B. 6.225 meters
 A. 9.9 meters
 C. 5.5 meters
 D. 5 meters

plug into calc and find max vertex
 $(0.5, 6.225)$
 height is y-value from vertex

28. What are the roots of the quadratic equation whose related function is graphed below?



roots are also zeros! where graph crosses x-axis!

- A. -1, 3
 B. -1, 1
 C. -3, 1
 D. 1, 3

29. When $5x^2 - 5$ is completely factored, which is one of its factors?

- A. $x + 1$
 B. $x - 5$
 C. $5x + 1$
 D. $5x - 1$

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

add (+) mult (-)
 1 + -1 | 1 - -1
 can break down more!

30. At a festival, pumpkins are launched with large catapults and air cannons. On one launch, the height of a pumpkin in feet above the ground after t seconds is modeled by $f(t) = -16t^2 + 100t + 12$. How can you use $f(t)$ to find the height from which the pumpkin is launched?

- C. Find the value of $f(t)$ when $t = 0$.
 A. Find the value of t when $f(t) = 0$
 B. Find the greatest value of $f(t)$.
 D. Graph the function for $t > 0$ and find the value of $f(t)$ where the graph crosses the horizontal axis.

* when the pumpkin is first launched, the time has yet to start.

Therefore, time = 0 seconds
 $t = 0$