تجميعة أسئلة جميع مخرجات الهيكل الوزاري الجديد منهج ريفيل

المزيد من الملفات بحسب الصف العاشر العام والمادة رياضيات في الفصل الأول	
1	تجميعة أسئلة مراجعة وفق الهيكل الوزاري الجديد منهج ريفيل
2	ملزمة الوحدة العاشرة Roots and Exponents مع الشرح وتدريبات منهج ريفيل
3	نموذج إجابة تجميعة شاملة وفق كامل الهيكل الوزاري منهج بريدج
4	تجميعة شاملة وفق كامل الهيكل الوزاري منهج بريدج بدون الحل
5	ملزمة شاملة وفق كامل الهيكل الوزاري منهج بريدج

Grade 10 General -Math Reveal - Coverage T1 Y2025-2026 Beda Al Mutawa School (D18-10-2025)

Student Name: Date:

Academic Year	2025-2026		Term	1		Subject	Math\Reveal
Grade\stream	10\General		Number Of MCQ	20		Marks Of MCQ	(2-4)
Maximum over Grade	100		Number Of FRQ	5		Marks Of FRQ	(7-12)
Exam Duration	150 min		Mode of Implementation		SwiftAssess & Paper-Based		
Calculator	Allowed		الآلة الحاسبة		مسموحة		

	Question السؤال	Lesson الدرس	Example/Exercise مثال/تمرين	Page الصفحة
الأسئلة الموضوعية - MCQ	1	Add and subtract polynomials	15-34	635-636
	2	Multiply binomials by using FOIL method	1-12, 24-41	649-650
	3	Find squares of sums and differences	1-10, 36-46	657-658
	4	Factor polynomials by using the Distributive property	7-10	665
	5	Factor trinomials of the form ax^2+bx+c	21-36	671
	6	Factorize binomials that are the difference of squares	1-14	679
	7	Find and interpret the maximum and minimum values of a quadratic function	23-26	697
	8	Transform graphs of quadratic functions of the form y=a(x-h)^2+k	21-32	707-708
	9	Solve quadratic equations by graphing	1-12	713
	10	Solve quadratic equations by factoring	27-30	722
	11	Solve quadratic equations by completing the square	1-9	729
	12	Solve quadratic equation by using the quadratic formula	16-19	735
	13	Use the discriminant to determine the number and type of roots of a quadratic equation	20-34	736
	14	solve systems of linear and quadratic equations by graphing	Example 1, Check, 1-4	739, 740. 743
	15	Simplify expressions using the multiplication properties of exponents	1-18 & 28-43	575-576
	16	Divide monomials using the properties of exponents	35-39	584
	17	Simplify expressions containing negative and zero exponents	1-18	591
	18	Evaluate and rewrite expressions involving rational exponents	33-40	600
	19	Multiply radical expressions	19-30	616
	20	Solve exponential equations	16-25	621
الأسئلة المقالية - FRQ	21	Multiply polynomials by using the Distributive Property	18-23, 42-49	650
	22	Factor trinomials of the form x^2 + bx + c	Example 5, 17-20, 18-20	669, 671, 686
	23	Graph quadratic functions	Example 3-4; 5-16	691-692; 695-696
	24	solve systems of linear and quadratic equations by using algebraic methods	5-10; 14-27	743-744
	25	Evaluate and rewrite expressions involving rational exponents	27-32	599-600
		Solve exponential equations	13-15; 26-28	621-622

"Attached are the Mathematics structure questions – Please ensure the correctness of the questions and page numbers from the structure guide in the LMS and the student textbook – I wish you all the best and success."

مرفق أسئلة هيكل الرياضيات - الرجاء التأكد من صحة الأسئلة وأرقام الصفحات من الهيكل في بوابة التعلم الذكي والكتاب المدرسي - أتمنى لكم التوفيق والنجاح.

Mr. Abdulkader Amro 0566028336

الأسئلة الموضوعية - MCQ			
1	Add and subtract polynomials	15-34	635-636

Lesson 11-1 Adding and Subtracting Polynomials

Find each sum or difference.

15. $(2x + 3y) + (4x + 9y)$

16. $(6s + 5t) + (4t + 8s)$

17. $(5a + 9b) - (2a + 4b)$

18. $(11m - 7n) - (2m + 6n)$

19. $(m^2 - m) + (2m + m^2)$

20. $(x^2 - 3x) - (2x^2 + 5x)$

21. $(d^2 - d + 5) - (2d + 5)$

Mr. Abdulkader Amro 0566028336

22. $(2h^2 - 5h) + (7h - 3h^2)$

23. $(5f + g - 2) + (-2f + 3)$

24. $(6k^2 + 2k + 9) + (4k^2 - 5k)$

25. $(2c^2 + 6c + 4) + (5c^2 - 7)$

26. $(2x + 3x^2) - (7 - 8x^2)$

Find each sum or difference.

27. $(3c^3 - c + 11) - (c^2 + 2c + 8)$

28. $(z^2 + z) + (z^2 - 11)$

29. $(2x - 2y + 1) - (3y + 4x)$

30. $(4a - 5b^2 + 3) + (6 - 2a + 3b^2)$

31. $(x^2y - 3x^2 + y) + (3y - 2x^2y)$

32. $(-8xy + 3x^2 - 5y) + (4x^2 - 2y + 6xy)$

33. $(5n - 2p^2 + 2np) - (4p^2 + 4n)$

34. $(4rxt - 8r^2x + x^2) - (6rx^2 + 5rxt - 2x^2)$

الأسئلة الموضوعية - MCQ			
2	Multiply binomials by using FOIL method	1-12, 24-41	649-650

Lesson 11-3 Multiplying Polynomials

Find each product.

1. $(3c - 5)(c + 3)$

2. $(g + 10)(2g - 5)$

3. $(6a + 5)(5a + 3)$

4. $(4x + 1)(6x + 3)$

5. $(5y - 4)(3y - 1)$

6. $(6d - 5)(4d - 7)$

7. $(3m + 5)(2m + 3)$

8. $(7n - 6)(7n - 6)$

9. $(12t - 5)(12t + 5)$

10. $(5r + 7)(5r - 7)$

11. $(8w + 4x)(5w - 6x)$

12. $(11z - 5y)(3z + 2y)$

Find each product.

24. $(m + 4)(m + 1)$

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

26. $(b + 3)(b + 4)$

27. $(t + 4)(t - 3)$

28. $(r + 1)(r - 2)$

29. $(n - 5)(n + 1)$

30. $(3c + 1)(c - 2)$

31. $(2x - 6)(x + 3)$

32. $(d - 1)(5d - 4)$

33. $(2\ell + 5)(\ell - 4)$

34. $(3n - 7)(n + 3)$

35. $(q + 5)(5q - 1)$

36. $(3b + 3)(3b - 2)$

37. $(2m + 2)(3m - 3)$

38. $(4c + 1)(2c + 1)$

39. $(5a - 2)(2a - 3)$

40. $(4h - 2)(4h - 1)$

41. $(x - y)(2x - y)$

الأسئلة الموضوعية - MCQ			
3	Find squares of sums and differences	1-10, 36-46	657-658

Lesson 11-4 **Special Products**

Find each product.

1. $(a + 10)(a + 10)$

2. $(b - 6)(b - 6)$

3. $(h + 7)^2$

4. $(x + 6)^2$

5. $(8 - m)^2$

6. $(9 - 2y)^2$

7. $(2b + 3)^2$

8. $(5t - 2)^2$

9. $(8h - 4n)^2$

10. $(4m - 5n)^2$

Find each product.

36. $(c - d)^2$

37. $(2k - 2)^2$

38. $(w + 3h)^2$

39. $(3p - 4)(3p + 4)$

40. $(t + 2u)^2$

41. $(x - 4y)^2$

42. $(3b + 7)(3b - 7)$

43. $(3y - 3g)(3y + 3g)$

44. $(n^2 + r^2)^2$

45. $(2k + m^2)^2$

46. $(3t^2 - n)^2$

الأسئلة الموضوعية - MCQ			
4	Factor polynomials by using the Distributive property	7-10	665

Lesson 11-5 Using the Distributive Property

7. PHYSICS The distance d an object falls after t seconds is given by $d = 16t^2$ (ignoring air resistance). To find the height of an object launched upward from ground level at a rate of 32 feet per second, use the expression $32t - 16t^2$, where t is the time in seconds. Factor the expression.

8. SWIMMING POOL The area of a rectangular swimming pool is given by the expression $12w - w^2$, where w is the width of one side. Factor the expression.

9. VERTICAL JUMP Your vertical jump height is measured by subtracting your standing reach height from the height of the highest point you can reach by jumping without taking a running start. Typically, NBA players have vertical jump heights of up to 34 inches. If an NBA player jumps this high, his height in inches above his standing reach height after t seconds can be modeled by the expression $162t - 192t^2$. Factor the expression.

10. PETS Conner is playing with his dog. He tosses a treat upward with an initial velocity of 13.7 meters per second. His hand starts at the same height as the dog's mouth, so the height of the treat above the dog's mouth in meters after t seconds is given by the expression $13.7t - 4.9t^2$. Factor the expression.

الأسئلة الموضوعية - MCQ			
5	Factor trinomials of the form ax^2+bx+c	21-36	671

Lesson 11-6 Factoring Quadratic Trinomials

Factor each polynomial, if possible. If the polynomial cannot be factored using integers, write *prime*.

21. $5x^2 + 34x + 24$

22. $2x^2 + 19x + 24$

23. $4x^2 + 22x + 10$

24. $4x^2 + 38x + 70$

25. $2x^2 - 3x - 9$

26. $4x^2 - 13x + 10$

27. $2x^2 + 3x + 6$

28. $5x^2 + 3x + 4$

29. $12x^2 + 69x + 45$

30. $4x^2 - 5x + 7$

31. $3x^2 - 8x + 15$

32. $5x^2 + 23x + 24$

33. $2x^2 + 3x - 6$

34. $2t^2 + 9t - 5$

35. $2y^2 + y - 1$

36. $4h^2 + 8h - 5$

الأسئلة الموضوعية - MCQ			
6	Factorize binomials that are the difference of squares	1-14	679

Lesson 11-7 Factoring Special Products

Factor each polynomial.

1. $q^2 - 121$

2. $r^4 - k^4$

3. $w^4 - 625$

4. $r^2 - 9t^2$

5. $h^4 - 256$

6. $2x^3 - x^2 - 162x + 81$

7. $x^2 - 4y^2$

8. $3c^3 + 2c^2 - 147c - 98$

9. $f^3 + 2f^2 - 64f - 128$

10. $r^3 - 5r^2 - 100r + 500$

11. $3t^3 - 7t^2 - 3t + 7$

12. $a^2 - 49$

13. $4m^3 + 9m^2 - 36m - 81$

14. $3x^3 + x^2 - 75x - 25$

الأسئلة الموضوعية - MCQ			
7	Find and interpret the maximum and minimum values of a quadratic function	23-26	697

Lesson 12-1 Graphing Quadratic Functions

23. STRUCTURE Consider the quadratic function $y = -x^2 - 2x + 2$.

a. Find the equation for the axis of symmetry.

b. Find the coordinates of the vertex and determine if it is a maximum or minimum.

c. Graph the function.

Identify the axis of symmetry, the vertex, and the *y*-intercept of each graph. Then describe the end behavior.

24. $y = 2x^2 - 8x + 6$

25. $y = x^2 + 4x + 6$

26. $y = -3x^2 - 12x + 3$

الأسئلة الموضوعية - MCQ			
8	Transform graphs of quadratic functions of the form y=a(x-h)^2+k	21-32	707-708

Lesson 12-2 Transformations of Quadratic Functions

Describe how the graph of each function is related to the graph of the parent function.

21. $g(x) = -6x^2$

22. $g(x) = (-9x)^2$

23. $g(x) = -\frac{1}{3}x^2$

24. $g(x) = \left(-\frac{2}{3}x\right)^2$

25. $g(x) = -2x^2$

26. $g(x) = \left(-\frac{6}{5}x\right)^2$

Describe how the graph of each function is related to the graph of the parent function.

27. $h(x) = -7 - x^2$

28. $g(x) = 2(x - 3)^2 + 8$

29. $h(x) = 6 + \frac{2}{3}x^2$

30. $g(x) = -5 - \frac{4}{3}x^2$

31. $h(x) = 3 + \frac{5}{2}x^2$

32. $g(x) = -x^2 + 3$

الأسئلة الموضوعية - MCQ			
9	Solve quadratic equations by graphing	1-12	713

Lesson 12-3 Solving Quadratic Equations by Graphing

Solve each equation by graphing.

1. $x^2 + 7x + 14 = 0$

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

3. $x^2 + 16x + 64 = 0$

4. $x^2 - 5x + 12 = 0$

5. $x^2 + 14x = -49$

6. $x^2 = 2x - 1$

7. $x^2 - 10x = -16$

8. $-2x^2 - 8x = 13$

9. $2x^2 - 16x = -30$

10. $2x^2 = -24x - 72$

11. $-3x^2 + 2x = 15$

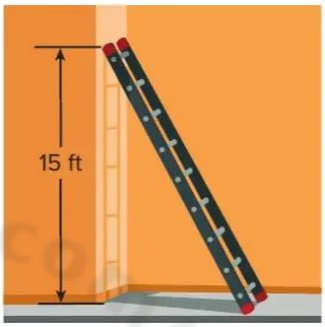
12. $x^2 = -2x + 80$

الأسئلة الموضوعية - MCQ			
10	Solve quadratic equations by factoring	27-30	722

Lesson 12-4 Solving Quadratic Equations by Factoring

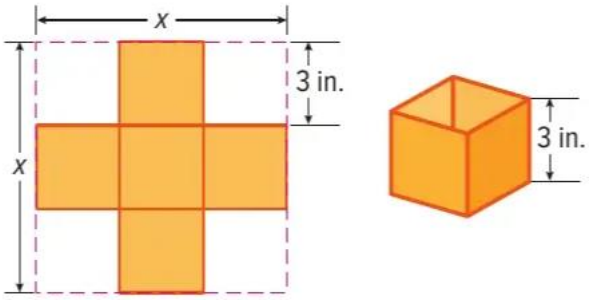
27. NUMBER THEORY The product of the two consecutive positive integers is 11 more than their sum. What are the numbers?

28. LADDERS A ladder is resting against a wall. The top of the ladder touches the wall at a height of 15 feet, and the length of the ladder is one foot more than twice its distance from the wall. Find the distance from the wall to the bottom of the ladder. (*Hint*: Use the Pythagorean Theorem to solve the problem.)



29. FREE FALL The function $f(t) = -16t^2 + 576$ represents the height of a freely falling ballast bag that was accidentally dropped from a hot-air balloon 576 feet above the ground. After how many seconds t does the ballast bag hit the ground?

30. VOLUME Catalina can make an open-topped box out of a square piece of cardboard by cutting 3-inch squares from the corners and folding up the sides to meet. The volume of the resulting box is $V = 3x^2 - 36x + 108$, where x is the original length and width of the cardboard.



a. Factor the polynomial expression from the volume equation.

b. What is the volume of the box if the original length of each side of the cardboard was 9 inches?

الأسئلة الموضوعية - MCQ			
11	Solve quadratic equations by completing the square	1-9	729

Lesson 12-5 Solving Quadratic Equations by Completing the Square

Find the value of c that makes each trinomial a perfect square.

1. $x^2 + 26x + c$

2. $x^2 - 24x + c$

3. $x^2 - 19x + c$

4. $x^2 + 17x + c$

5. $x^2 + 5x + c$

6. $x^2 - 13x + c$

7. $x^2 - 22x + c$

8. $x^2 - 15x + c$

9. $x^2 + 24x + c$

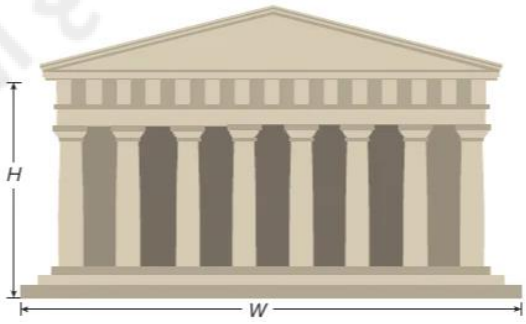
الأسئلة الموضوعية - MCQ			
12	Solve quadratic equation by using the quadratic formula	16-19	735

Lesson 12-6 Solving Quadratic Equations by Using the Quadratic Formula

16. BUSINESS Tanya runs a catering business. Based on her records, her weekly profit can be approximated by the function $f(x) = x^2 + 2x - 37$, where x is the number of meals she caters. If $f(x)$ is negative, it means that the business has lost money. What is the least number of meals that Tanya needs to cater in order to make a profit?

17. AERONAUTICS At liftoff, the space shuttle *Discovery* has a constant acceleration of 16.4 feet per second squared and an initial velocity of 1341 feet per second due to the rotation of Earth. If the distance *Discovery* has traveled t seconds after liftoff is given by the equation $d(t) = 1341t + 8.2t^2$, how long after liftoff has *Discovery* traveled 40,000 feet? Round your answer to the nearest tenth.

18. ARCHITECTURE The Golden Ratio appears in the design of the Greek Parthenon because the width and height of the façade are related by the equation $\frac{W+H}{W} = \frac{W}{H}$. If the height of a model of the Parthenon is 16 inches, what is its width? Round your answer to the nearest tenth.



19. CRAFTS Ariadna cut a 60-inch chenille stem into two unequal pieces, and then she used each piece to make a square. The sum of the areas of the squares was 117 square inches. Let x be the length of one piece. Write and solve an equation to represent the situation and find the lengths of the two original pieces.

الأسئلة الموضوعية - MCQ			
13	Use the discriminant to determine the number and type of roots of a quadratic equation	20-34	736

Lesson 12-6 Solving Quadratic Equations by Using the Quadratic Formula

State the value of the discriminant for each equation. Then determine the number of real solutions of the equation.

20. $0.2x^2 - 1.5x + 2.9 = 0$

21. $2x^2 - 5x + 20 = 0$

22. $x^2 - \frac{4}{5}x = 3$

23. $0.5x^2 - 2x = -2$

24. $2.25x^2 - 3x = -1$

25. $2x^2 = \frac{5}{2}x + \frac{3}{2}$

26. $x^2 + 2x + 1 = 0$

27. $x^2 - 4x + 10 = 0$

28. $x^2 - 6x + 7 = 0$

29. $x^2 - 2x - 7 = 0$

30. $x^2 - 10x + 25 = 0$

31. $2x^2 + 5x - 8 = 0$

32. $2x^2 + 6x + 12 = 0$

33. $2x^2 - 4x + 10 = 0$

34. $3x^2 + 7x + 3 = 0$

الأسئلة الموضوعية - MCQ			
14	solve systems of linear and quadratic equations by graphing	Example 1, Check, 1-4	739, 740. 743

Lesson 12-7 Solving Systems of Linear and Quadratic Equations

Example 1 Solve a System of Linear and Quadratic Equations Graphically

Solve the system of equations by graphing.

$y = x^2 + 4x - 1$

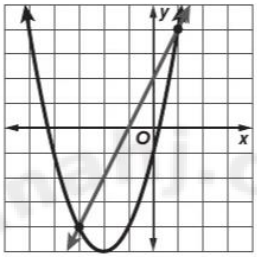
$y = 2x + 2$

Step 1 Graph $y = x^2 + 4x - 1$.

Step 2 Graph $y = 2x + 2$.

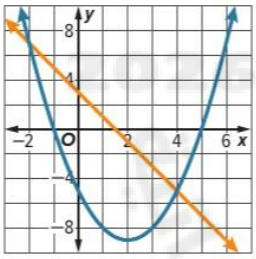
Step 3 Find the points of intersection.

The graphs appear to intersect at (−3, −4) and (1, 4)



Check

The graphs of $f(x) = -2x + 3$ and $g(x) = x^2 - 4x - 5$ are shown.



Complete the ordered pair(s) to represent each situation.

$f(x) = 0$ (? , ?)

$g(x) = 0$ (? , ?) (? , ?)

$f(x) = g(x)$ (? , ?) (? , ?)

Solve each system of equations by graphing.

1. $y = x^2 - 4$
$y = -3$

2. $y = x^2 + x - 2$
$y = -x + 1$

3. $y = 2x^2 + 1$
$y = 1$

4. $y = x^2 + 3x + 1$
$y = x + 1$

الأسئلة الموضوعية - MCQ			
15	Simplify expressions using the multiplication properties of exponents	1-18 & 28-43	575-576

Lesson 10-1 Multiplication Properties of Exponents

Simplify each expression.

1. $(q^2)(2q^4)$

2. $(-2u^2)(6u^6)$

3. $(9w^2x^8)(w^6x^4)$

4. $(y^6z^9)(6y^4z^2)$

5. $(b^8c^6d^5)(7b^6c^2d)$

6. $(14fg^2h^2)(3f^4g^2h^2)$

7. $(j^5k^7)^4$

8. $(n^3p)^4$

9. $[(2^2)^2]^2$

10. $[(3^2)^2]^4$

11. $[(4r^2t)^3]^2$

12. $[(-2xy^2)^3]^2$

13. $(y^2z)(yz^2)$

14. $(\ell^2k^2)(\ell^3k)$

15. $(-5m^3)(3m^8)$

16. $(-2c^4d)(-4cd)$

17. $(3pr^2)^2$

18. $(2b^3c^4)^2$

Simplify each expression.

28. $(2a^3)^4(a^3)^3$

29. $(c^3)^2(-3c^5)^2$

30. $(2gh^4)^3[(-2g^4h)^3]^2$

31. $(5k^2m)^3[(4km^4)^2]^2$

32. $(p^5r^2)^4(-7p^3r^4)(6pr^3)$

33. $(5x^2y)^2(2xy^3z)^3(4xyz)$

34. $(5a^2b^3c^4)^4(6a^3b^4c^2)$

35. $(10xy^5z^3)(3x^4y^6z^3)$

36. $(0.5x^3)^2$

37. $(0.4h^5)^3$

38. $\left(-\frac{3}{4c}\right)^3$

39. $\left(\frac{4}{5}a^2\right)^2$

40. $(8y^3)(-3x^2y^2)\left(\frac{3}{8}xy^4\right)$

41. $\left(\frac{4}{7}m\right)^2(49m)(17p)\left(\frac{1}{34}p^5\right)$

42. $(-3r^3w^4)^3(2rw)^2(-3r^2)^3(4rw^2)^3(2r^2w^3)$

43. $(3ab^2c)^2(-2a^2b^4)^2(a^4c^2)^3(a^2b^4c^5)^2(2a^3b^2c^4)^3$

الأسئلة الموضوعية - MCQ			
16	Divide monomials using the properties of exponents	35-39	584

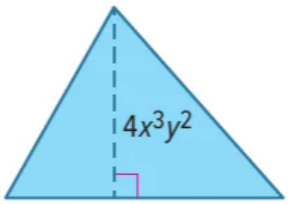
Lesson 10-2 Division Properties of Exponents

35. SOUND Decibels are used to measure sound. The softest sound that can be heard is rated at 0 decibels, or a relative loudness of 1. Ordinary conversation is rated at about 60 decibels, or a relative loudness of 10^6. A stock car race is rated at about 130 decibels, or a relative loudness of 10^{13}. How many times greater is the relative loudness of a stock car race than the relative loudness of ordinary conversation?

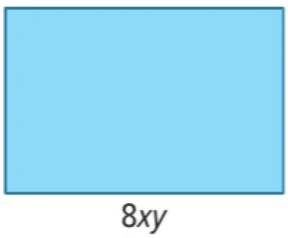
36. COMPUTERS The byte is the fundamental unit of computer processing. Almost all aspects of a computer's performance and specifications are measured in bytes or multiples of bytes. The byte is based on powers of 2, as shown in the table. How many times greater is a megabyte than a kilobyte?

Memory Term	Number of Bytes
byte	2^0 or 1
kilobyte	2^{10}
megabyte	2^{20}
gigabyte	2^{30}

37. AREA The area of the triangle shown is $6x^5y^3$. Find the base of the triangle.



38. AREA The area of the rectangle in the figure is $32xy^3$ square units. Find the width of the rectangle.



39. USE A MODEL An investment is expected to increase in value by 4% every year.

a. Write an expression that represents the value of the investment after t years if the initial value was n dollars.

b. By what percent does the value of the investment change between the end of year 2 and the end of year 8? Round your answer to the nearest tenth of a percent, and show your work.

الأسئلة الموضوعية - MCQ			
17	Simplify expressions containing negative and zero exponents	1-18	591

Lesson 10-3 Negative Exponents

Simplify each expression. Assume that no denominator equals zero.

1. $\frac{r^6n^{-7}}{r^4n^2}$

2. $\frac{h^3}{h^{-6}}$

3. $\frac{f^{-7}}{f^4}$

4. $\left(\frac{16p^5w^2}{2p^3w^3}\right)^0$

5. $\frac{f^{-5}g^4}{h^{-2}}$

6. $\frac{15x^6y^{-9}}{5xy^{-11}}$

7. $\frac{-15t^0u^{-1}}{5u^3}$

8. $\frac{(z^2w^{-1})^3}{(z^3w^2)^2}$

9. $\frac{-10m^{-1}y^0r}{-14m^{-7}y^{-3}r^{-4}}$

10. $\frac{51x^{-1}y^3}{17x^2y}$

11. $\frac{3m^{-3}r^4p^2}{12t^4}$

12. $\left(\frac{3t^6u^2v^5}{9tuv^{21}}\right)^0$

13. $\frac{x^{-4}y^9}{z^{-2}}$

14. $\left(-\frac{5f^9g^4h^2}{fg^2h^3}\right)^0$

15. $\frac{p^4t^{-3}}{r^{-2}}$

16. $-\frac{5c^2d^5}{8cd^5f^0}$

17. $\frac{-2f^3g^2h^0}{8f^2g^2}$

18. $\frac{g^0h^7j^{-2}}{g^{-5}h^0j^{-2}}$

الأسئلة الموضوعية - MCQ			
18	Evaluate and rewrite expressions involving rational exponents	33-40	600

Lesson 10-4 Rational Exponents

Write each expression in radical form, or write each radical in exponential form.

33. $17^{\frac{1}{3}}$

34. $q^{\frac{1}{4}}$

35. $7b^{\frac{1}{3}}$

36. $m^{\frac{2}{3}}$

37. $\sqrt[3]{29}$

38. $\sqrt[5]{h}$

39. $2\sqrt[3]{a}$

40. $\sqrt[3]{xy^2}$

الأسئلة الموضوعية - MCQ			
19	Multiply radical expressions	19-30	616

Lesson 10-6 Operations With Radical Expressions

Simplify.

19. $2\sqrt{3} \cdot 3\sqrt{15}$

20. $5\sqrt{3} \cdot 2\sqrt{21}$

21. $6\sqrt{7} \cdot 2\sqrt{8}$

22. $7\sqrt{10} \cdot 4\sqrt{10}$

23. $11\sqrt{6} \cdot 3\sqrt{12}$

24. $10\sqrt{5} \cdot 5\sqrt{11}$

25. $\sqrt{2}(\sqrt{8} + \sqrt{6})$

26. $\sqrt{5}(\sqrt{10} - \sqrt{3})$

27. $\sqrt{5}(\sqrt{2} + 4\sqrt{2})$

28. $\sqrt{6}(2\sqrt{10} + 3\sqrt{2})$

29. $4\sqrt{5}(3\sqrt{5} + 8\sqrt{2})$

30. $5\sqrt{3}(6\sqrt{10} - 6\sqrt{3})$

الأسئلة الموضوعية - MCQ			
20	Solve exponential equations	16-25	621

Lesson 10-7 Exponential Equations

Solve each equation.

16. $2^{5x} = 8^{2x-4}$

17. $81^{2x-3} = 9^{x+3}$

18. $2^{4x} = 32^{x+1}$

19. $16^{x} = \frac{1}{2}$

20. $25^{x} = \frac{1}{125}$

21. $6^{8-x} = \frac{1}{216}$

22. $5^{x} = 125$

23. $2^{5x-4} = 64$

24. $4^{x+1} = 256$

25. $3^{4x-2} = 729$

الأسئلة المقالية - FRQ			
21	Multiply polynomials by using the Distributive Property	18-23, 42-49	650

Lesson 11-3 Multiplying Polynomials

Find each product.

18. $(2y - 11)(y^2 - 3y + 2)$

19. $(4a + 7)(9a^2 + 2a - 7)$

20. $(m^2 - 5m + 4)(m^2 + 7m - 3)$

21. $(x^2 + 5x - 1)(5x^2 - 6x + 1)$

22. $(3b^3 - 4b - 7)(2b^2 - b - 9)$

23. $(6z^2 - 5z - 2)(3z^3 - 2z - 4)$

Find each product.

42. $(w + 4)(w^2 + 3w - 6)$

43. $(t + 1)(t^2 + 2t + 4)$

44. $(k - 4)(k^2 + 5k - 2)$

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

46. $(2x + 1)(x^2 - 3x - 4)$

47. $(3b + 4)(2b^2 - b + 4)$

Simplify.

48. $(m + 2)[(m^2 + 3m - 6) + (m^2 - 2m + 4)]$

49. $[(t^2 + 3t - 8) - (t^2 - 2t + 6)](t - 4)$

الأسئلة المقالية - FRQ			
22	Factor trinomials of the form x^2 + bx + c	Example 5, 17-20, 18-20	669, 671, 686

Lesson 11-6 Factoring Quadratic Trinomials

Example 5 Solve a Problem by Factoring

FLAG DESIGN Switzerland's flag has a very unique shape; it is a square. However, the flag used by the country's naval vessels is rectangular, as shown. If the area of the square flag is $x^2 - 6x + 9$ square feet, and the length is increased by 4 feet, then what is the area of the naval flag in terms of x?

Step 1 Factor $x^2 - 6x + 9$. In this trinomial, $b = -6$ and $c = 9$. Because c is positive and b is negative, you need to find two negative factors with a sum of -6 and a product of 9.

Factors of 9	Sum of Factors
$-1, -9$	-10
$-3, -3$	-6

The correct factors are -3 and -3.

$x^2 - 6x + 9 = (x + m)(x + p)$ Write the pattern.

$= (x - 3)(x - 3)$ $m = -3$ and $p = -3$

Step 2 Increase length and multiply. The length is increased by 4 feet, so the factor representing the length must be increased by 4.

$(x - 3 + 4)(x - 3) = (x + 1)(x - 3)$ Add 4 to the length.

$= x^2 - 3x + x - 3$ FOIL

$= x^2 - 2x - 3$ Simplify.

The new area is $x^2 - 2x - 3$ square feet.

17. COSMETICS CASE The top of a cosmetics case is a rectangle in which the width is 2 centimeters greater than the length. The expression $x^2 + 26x - 168$ represents the area of the top of the case. Factor the expression.

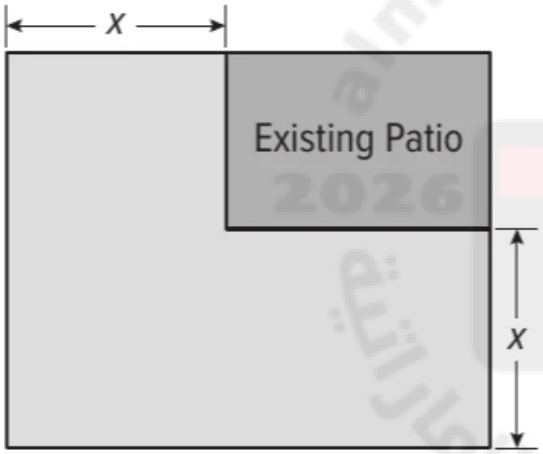
18. CARPENTRY Miko wants to build a crate to hold record albums. The expression $2x^2 - 6x - 80$ represents the volume of the crate. Factor the expression.

19. BRIDGE ENGINEERING A suspension bridge is a bridge in which the deck is supported by cables with towers spaced throughout the span of the bridge. The height of a cable n inches above the deck measured at distance d in yards from the first tower is given by $d^2 - 36d + 324$. Factor the expression.

20. FINANCE The break-even point for a business occurs when the revenues equal the cost. A local children's museum studied their costs and revenues from paid admission. They found that their break-even point is given by the expression $2h^2 - 2h - 24$, where h is the number of hours the museum is open per day. Factor the expression.

18. OPEN RESPONSE Factor $x^2 + 8x + 15$.

19. MULTIPLE CHOICE Mrs. Torres wants to add x feet onto the length and width of an existing rectangular patio. The new patio would have an area of $x^2 + 14x + 48$ square feet. (Lesson 11-6)



What are the dimensions of the existing patio?

A. 14 ft by 48 ft

B. 6 ft by 8 ft

C. 7 ft by 24 ft

D. 4 ft by 12 ft

20. OPEN RESPONSE Factor $9x^2 + 9x + 2$.

الأسئلة المقالية - FRQ			
23	Graph quadratic functions	Example 3-4; 5-16	691-692; 695-696

Lesson 12-1 **Graphing Quadratic Functions**

Example 3 Graph a Quadratic Function by Using Key Features

Graph $f(x) = x^2 + 2x - 6$.

Step 1 Find the axis of symmetry.

Use the formula to find the equation of the axis of symmetry.

$x = -\frac{b}{2a}$ Equation of the axis of symmetry

$x = -\frac{2}{2(1)} = -1$ $a = 1$ and $b = 2$

Step 2 Find the vertex.

Use the value for the axis of symmetry as the x-coordinate of the vertex. Find the y-coordinate using the original equation.

$f(x) = x^2 + 2x - 6$ Original Equation

$= (-1)^2 + 2(-1) - 6$ $x = -1$

$= -7$ Simplify.

The vertex lies at $(-1, -7)$. Because a is positive, the graph opens up. So the vertex is a minimum.

Step 3 Find the y-intercept.

$f(x) = x^2 + 2x - 6$ Original equation

$= (0)^2 + 2(0) - 6$ $x = 0$

$= -6$ Simplify.

The y-intercept is -6.

Step 4 Find additional points.

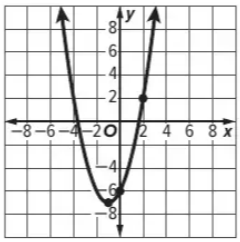
Let $x = 2$.

$f(x) = x^2 + 2x - 6$ Original equation

$= (2)^2 + 2(2) - 6$ $x = 2$

$= 2$ Simplify.

Step 5 Connect the points.



Example 4 Graph a Quadratic Function by Using a Table

Use a table of values to graph $y = 2x^2 - 8x + 2$.

First find the x-coordinate of the vertex by using the equation for the axis of symmetry.

$x = -\frac{b}{2a}$ Equation of the axis of symmetry

$x = -\frac{-8}{2(2)} = 2$ $a = 2, b = -8$

Complete the table.

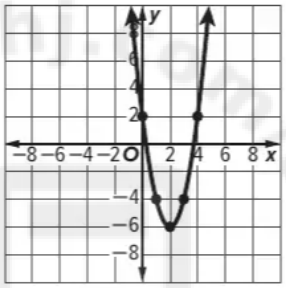
x	0	1	2	3	4
y	2	−4	−6	−4	2

y-intercept (0, 2)

The vertex of this function is a minimum.

Graph the function.

The parabola extends to infinity, so the domain is all real numbers. The range is $\{y \mid y \geq -6\}$.



Graph each function.

5. $y = -3x^2 + 6x - 4$

6. $y = -2x^2 - 4x - 3$

Mr. Abdulkader Amro 0566028336

7. $y = -2x^2 - 8x + 2$

8. $y = x^2 + 6x - 6$

9. $y = x^2 - 2x + 2$

10. $y = 3x^2 - 12x + 5$

Use a table of values to graph each function. State the domain and range.

11. $y = x^2 + 4x + 6$

12. $y = 2x^2 + 4x + 7$

13. $y = 2x^2 - 8x - 5$

14. $y = 3x^2 + 12x + 5$

15. $y = 3x^2 - 6x - 2$

16. $y = x^2 - 2x - 1$

الأسئلة المقالية - FRQ			
24	solve systems of linear and quadratic equations by using algebraic methods	5-10; 14-27	743-744

Lesson 12-7 Solving Systems of Linear and Quadratic Equations

Solve each system of equations algebraically.

5. $y = x^2 - 2x - 5$
$y = 3$

6. $y = x^2 + 4x - 1$
$y = 3x + 1$

7. $y = x^2 - 6x + 5$
$x + y = -1$

8. $y = x^2 + x + 1$
$y - 1 = x$

9. $y + 3x = x^2 - 3$
$y = -2x + 3$

10. $y - 1 = 2x^2 - x$
$-2x + y = 3$

Solve each system of equations.

14. $y = x^2$
$y = 2x$

15. $y = -2x^2 + 7x - 2$
$y = 3 - 4x$

16. $y = -x^2 + 4$
$y = \frac{1}{5}x + 5$

17. $y = -x^2 + 4x - 4$
$y = 2x - 3$

18. $y = -x^2 - 5x - 6$
$y = -3x - 1$

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

20. $y = x^2 + 7x + 12$
$y = 2x + 8$

21. $y = x^2 - x - 20$
$y = 3x + 12$

22. $y = 3x^2 - x - 2$
$y = -2x + 2$

23. $y = x^2 - x - 18$
$y = x - 3$

24. $y = x^2 - 3x + 1$
$y = x + 1$

25. $y = x^2 - 4x + 6$
$y = 2x - 3$

26. $y = -x^2 + 2x + 3$
$y = x + 2$

27. $y = x^2 + 4x - 1$
$y = 3x$

الأسئلة المقالية - FRQ			
25	Evaluate and rewrite expressions involving rational exponents	27-32	599-600
	Solve exponential equations	13-15; 26-28	621-622

Lesson 10-4 Rational Exponents

27. VELOCITY The velocity v in feet per second of a freely falling object that has fallen h feet can be represented by $v = 8h^{\frac{1}{2}}$. Find the velocity of an object if it has fallen a distance of 144 feet.

28. GEOMETRY The surface area S of a cube in square inches can be determined by $S = 6V^{\frac{2}{3}}$, where V is the volume of the cube in cubic inches. Find the surface area of a cube that has a volume of 4096 cubic inches.

29. **PLANETS** The average distance d in astronomical units that a planet is from the Sun can be modeled by $d = t^{\frac{2}{3}}$, where t is the number of Earth years that it takes for the planet to orbit the Sun. Find the average distance a planet is from the Sun if the planet has an orbit of 27 Earth years.

30. **BIOLOGY** The relationship between the mass m in kilograms of an organism and its metabolism P in Calories per day can be represented by $P = 73.3\sqrt[4]{m^3}$. Find the metabolism of an organism that has a mass of 16 kilograms.

31. **PROFIT** The profit P of a company, in thousands of dollars, can be modeled by $P = 12.75\sqrt[5]{c^2}$, where c is the number of customers in hundreds. What is the profit of the company if the company has 3200 customers?

32. **TIRE MARKS** When a driver applies the brakes, the tires lock but the car will continue to slide, leaving skid marks on the road. You can approximate the speed at which a car was traveling on a dry road based on the length of a skid mark left by the car using the formula $\text{Speed} = (30 \cdot \text{length} \cdot 0.75)^{\frac{1}{2}}$, where speed is measured in miles per hour and length is measured in feet. At approximately what speed was a car traveling if it left a 50-foot long skid mark? Round to the nearest tenth.

Lesson 10-7 Exponential Equations

13. ELECTRICITY The relationship of the current, power, and resistance of an appliance can be modeled by $I\sqrt{R} = \sqrt{P}$, where I is the current in amperes, P is the power in watts, and R is the resistance in ohms. Find the resistance that an appliance is using if the current is 2.5 amps and the power is 100 watts.

14. VIDEO Felipe uploaded a funny video of his dog. The relationship between the elapsed time in days, d, since the video was first uploaded and the total number of views, v, that the video received is modeled by $v = 4^{1.25d}$. Find the number of days it took Felipe's video to get 1024 views.

15. CONSTRUCTION A large plot of land has been purchased by developers. They roll out a schedule of construction. The relationship between the area of the undeveloped land in hectares, A, and the elapsed time in months, t, since the construction began is modeled by the function $A = 6250 \cdot 10^{-0.1t}$. How many months of construction will there be before the area of the undeveloped land decreases to 62.5 hectares?

26. USE A MODEL Without advertising, a Web site had 96 total visits. Today, the owners of the site are starting a new promotion, which is expected to double the total number of visits to their Web site every 5 days.

a. Write an equation that relates the total number of visits, v, to the number of days the promotion has been running, d.

b. Use your equation from part **a** to find how many days the promotion should be run in order to increase the traffic to the Web site to 12,288 total visits.

27. PHYSICS The velocity v of an object dropped from a tall building is given by the formula $v = \sqrt{64d}$, where d is the distance the object has dropped. What distance was the object dropped from if it has a velocity of 49 feet per second? Round your answer to the nearest hundredth.

28. FENCING Representatives from the neighborhood have requested that the city install a fence around a newly-built playground. The equation $f = 4\sqrt{A}$ represents the amount of fence f needed based on the area A of the playground. If the playground has 324 feet of fencing, find the area of the playground.