

# envision Algebra I Day by Day –Semester 2 | 2024–2025

## TOPIC 6: Exponents and Exponential Functions

### Higher Order Questions:

1. How can you identify and apply the appropriate property to simplify exponent expressions?
2. Explain the connection between radicals and exponents.
3. How can you write an exponential equation to represent a real-world situation?
4. Why will an exponential decay situation never equal zero?
5. How do you apply the geometric sequence to find a term in the sequence?

**Vocabulary:** exponents, growth, decay, geometric sequence, common ratio, exponential functions, constant ratio, growth or decay factor, asymptote, rational exponent, radical

### Skills Previously Taught:

- Properties of Exponents

1	A: 1/7 B: 1/8	Flex Day for Winter MAP Testing			
2	A: 1/9 B: 1/10	6.0	Properties of Exponents (supplement)	8.EE.1, N.1	
3	A: 1/13 B: 1/14	6.0	Properties of Exponents (supplement)	8.EE.1, N.1	
4	A: 1/15 B: 1/16	6.1	Rational Expressions/STEM	N.1, N.2	
5	A: 1/17 B: 1/21	6.2	Exponential Functions	F.5b, F.6, F.14, A.15	<b>ADD AVERAGE RATE OF CHANGE</b>
6	A: 1/22 B: 1/23	6.3	Exponential Growth and Decay	N.6, F.5b, F.11c, A.15	3 ACT Math Task (one per unit) <a href="#">3 ACT Math Task Dan Meyer</a>
7	A: 1/24 B: 1/27	6.4	Geometric Sequences	F.6a, F.7, F.12	
8	A: 1/28 B: 1/29		Review Topic 6		

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9	A: 1/30 B: 1/31	Topic 6 Test (Exponents and Exponential Functions)			
<b>Higher Order Questions:</b> 1. Explain how to name a polynomial. 2. How can the distributive property be applied to polynomial multiplication 3. What is the relationship between factoring and multiplying? 4. How can the signs of the numbers help you to factor the quadratic trinomial?  5. How can you use factoring by grouping to factor a quadratic trinomial?				<b>Vocabulary:</b> polynomials, terms, degrees, factor, greatest common factor, trinomial, quadratic, standard form	<b>Skills Previously Taught:</b>
10	A: 2/3 B: 2/4	7.1	Adding and Subtracting Polynomials	A.1, A.3, A.5	Algebra-Tiles and continue Cover vocab in new standard <a href="#">7.1 Doodle Notes</a>
11	A: 2/5 B: 2/6	7.2/7.3	Multiplying Polynomials/Multiplying Special Cases	A.2, A.5	
12	A: 2/7 B: 2/10	7.4	Factoring Polynomials (Factoring out the GCF)	A.10(+), A.11(+)	
13	A: 2/11 B: 2/12	7.4	Factoring by Grouping (supplement)	A.10(+), A.11(+)	
14	A: 2/13 B: 2/14	7.5	Factoring $x^2 + bx + c$	A.10(+), A.11(+)	7.5, 7.6, 7.7 and 3ACT can be taught in any order per teacher discretion.  3 ACT Math Task (one per unit)
15	A: 2/18 B: 2/19	7.6	Factoring $ax^2 + bx + c$	A.10(+), A.11(+)	
16	A: 2/20 B: 2/21	7.7	Factoring Special Cases	A.10(+), A.11(+)	
17	A: 2/24 B: 2/25		Review Topic 7		

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18	A: 2/26 B: 2/27	Topic 7 Test (Polynomials and Factoring)			
19	A: 2/28 B: 3/3	Flex Day			
Higher Order Questions: 1. How can you tell if a function is linear, exponential and quadratic by looking at a graph, equation, or table? 2. How can you determine if a quadratic function has a maximum or minimum by looking at the equation? 3. Explain how to find the vertex from standard form of a quadratic. 4. How can you tell if a square root is simplified?				Vocabulary: axis of symmetry, quadratic function, vertex, vertex form, parabola, standard form	Skills Previously Taught:
20	A: 3/4 B: 3/5	8.5	Linear, Exponential, and Quadratic Models	F.11a, b, F.13	(can teach at the beginning or end of unit) ADD AVERAGE RATE OF CHANGE
21	A: 3/6 B: 3/7	8.1	Key Features of a Quadratic Function	F.5, F.8	STEM (one per semester)
22	A: 3/10 B: 3/11	8.2/8.3	Quadratic Functions in Vertex Form and in Standard Form	F.4, F.8	3 ACT Math Task (one per unit)
23	A: 3/12 B: 3/13		Topic 8 Review		
24	A: 3/17 B: 3/18	Topic 8 Test (Quadratic Functions)			
25	A: 3/19 B: 3/20	FLEX Day for ACT			
Higher Order Questions: 1. Explain when each method of solving quadratic equations would be best.				Vocabulary: quadratic equation, zeros of a function, zero-product property, product property of square	Skills Previously Taught:

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2.	Given the graph of a quadratic, explain how to write the equation in factored form	roots, completing the square (8 <sup>th</sup> grade), discriminant, quadratic formula, root, linear-quadratic system	<ul style="list-style-type: none"> <li>simplifying square roots when the radicand is a perfect square</li> <li>solving quadratics by taking the square root when the radicand is a perfect square</li> </ul>
3.	What is the relationship between factoring and multiplying?		
4.	How many solutions can a quadratic have? How can this be determined from the discriminant?		
5.	How can you write a quadratic equation that models a situation?		

26	A: 3/21 B: 3/24	FLEX Day for Spring MAP			
27	A: 3/25 B: 3/26	9.2	Solving Quadratic Equations by Factoring	A.3, A.7, A.19	STEM (one per semester) T-shirt Launcher Suggested Note: Relate every method back to 9.1 where the x-intercepts
28	A: 3/27 B: 3/28	9.3	Rewriting Radicals	N.2	Can be taught in Topic 8 or 9 (teacher preference)
29	A: 3/31 B: 4/1	9.4	Solving Quadratic Equations Using Square Roots	A.19	(+) Middle School add completing the square
30	A: 4/2 B: 4/3		Quadratics FAL		Can be done at any time in unit
31	A: 4/4 B: 4/14	Review for Benchmark Standard Assessment/FLEX DAY			
32	A: 4/15 B: 4/16	APRIL – Benchmark Standard Assessments			
33	A: 4/17 B: 4/18	9.6	The Quadratic Formula and the Discriminant	A.19, N.6	
34	A: 4/21 B: 4/22	9.6	The Quadratic Formula and the Discriminant	A.12	
35	A: 4/23 B: 4/24	9.7	Solving Systems of Linear and Quadratic Equations	A.21, A.24	3 ACT Math Task (one per unit)

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36	A: 4/25 B: 4/28	Topic 9 Review			
37	A: 4/29 B: 4/30	Topic 9 Test (Solving Quadratic Equations)			
TOPIC 11: Statistics					
Higher Order Questions: 1. How can you determine the best plot for the data? 2. Can you compare different types of data displays together? 3. How can a model help me represent and investigate relationships between varying quantities? 4. Why is it important interpret standard deviation with a set of data in real world situation?		Vocabulary: normal distribution, standard deviation, stem plot, dot plot, histogram, box plot, measure of center, spread, outlier, variance, mean, median, interquartile range, range, mode, skew		Skills Previously Taught: • Finding mean, median, mode (quantitative measures of center) • Construct stem and leaf plots, box plots, dot plots and histograms	
38	A: 5/1 B: 5/2	11.0	Measures of Center and Spread	SP.1	Creating stem plots, dot plots, histograms and box plots (review from 6 <sup>th</sup> grade)
39	A: 5/5 B: 5/6	11.1/11.2	Analyzing Data Displays/ Comparing Data Sets	SP.2	STEM (one per semester)
40	A: 5/7 B: 5/8	11.3/11.4	Interpreting the Shapes of Data Displays Standard Deviation	SP.3	
41	A: 5/9 B: 5/12	11.5	Two-Way Frequency Tables	SP. 5	3 ACT Math Task (one per unit)
42	A: 5/13 B: 5/14	Topic 11 Test (Statistics)			
43	A: 5/15 B: 5/16	Final Review			
44	A: 5/19	Final Review			

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	B:	5/21		
45	A:	5/22	FINALS	
	B:	5/23		
46	A:	5/27	FINALS	
	B:	5/28		

\*Bold Section Number – enduring skill to be reinforced throughout the course  
BENCHMARK STANDARDS ASSESSMENT (April)

Quizzes are at teacher discretion, some schools are giving lesson quizzes instead of unit quizzes

FAL (Formative Assessment Lesson) – 1 per semester

STEM Project – 1 per semester

3 ACT Math Task – 1 per unit

(+) Solving Quadratics by Completing the Square is ONLY taught in Middle School