

	MONDAY (A) 11:10-12:40	TUESDAY (B) 11:10-12:40	WEDNESDAY (A) 11:10-12:40	THURSDAY (B) 11:10-12:40	FRIDAY (A) 11:10-12:40
	Objective(s): SWBAT *Identify characteristics of exponential functions (growth vs. decay, asymptote, domain/range) Evaluate exponential functions from tables, graphs, and equations Describe basic transformations of exponential functions	Objective(s): SWBAT *Identify characteristics of exponential functions (growth vs. decay, asymptote, domain/range) Evaluate exponential functions from tables, graphs, and equations Describe basic transformations of exponential functions	Objective(s): SWBAT *Describe and apply transformations of exponential functions (vertical stretch/compression, shifts, reflections) Write equations of transformed exponential functions from graphs Compare multiple exponential functions and justify differences	Objective(s): SWBAT *Describe and apply transformations of exponential functions (vertical stretch/compression, shifts, reflections) Write equations of transformed exponential functions from graphs Compare multiple exponential functions and justify differences	Objective(s): SWBAT *Apply exponential concepts (growth, decay, transformations) to real-world situations Write and interpret exponential models. Justify reasoning using graphs, tables, and equations
P	Engage Display the cookie question from the slides (Option A vs. Option B) Students vote: Which would you choose? Why? Turn & Talk, quick discussion Reveal the answer and connect to exponential growth (doubling)	Engage Display the cookie question from the slides (Option A vs. Option B) Students vote: Which would you choose? Why? Turn & Talk, quick discussion Reveal the answer and connect to exponential growth (doubling)	Engage Show two graphs $y = 2^x$ vs. a shifted graph Ask what changed and how do you know Students can turn and talk Activate prior knowledge from last class.	Engage Show two graphs $y = 2^x$ vs. a shifted graph Ask what changed and how do you know Students can turn and talk Activate prior knowledge from last class.	Engage Ask growth or decay about different transformations Describe transformations: $g(x) = 2^x + 4$ Which grows faster? 2^x or 3^x

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Explore

Students will complete the guided notes/video sheet

Explain

Whole class discussion to figure out all the main ideas, they will be assigned a problem and will present this to the class.

Elaborate

Blend Notes and Practice
Students will complete the guided notes and begin on the practice problems.

Explore

Students will complete the guided notes/video sheet

Explain

Whole class discussion to figure out all the main ideas, they will be assigned a problem and will present this to the class.

Elaborate

Blend Notes and Practice
Students will complete the guided notes and begin on the practice problems.

Explore

Students revisit their anchor $f(x)=a(b)^x$
They will investigate what happens when a changes, and when b changes.
Give each group a different graph
Students describe:

Growth or decay and Value of a and b

Explain

Transformations of exponentials:

- a: vertical stretch/compression, reflection
- b: growth vs. decay rate
- +k: vertical shift
- x-h: horizontal shift

Connect back to Monday:

- Still has an asymptote
- Still exponential behavior

Elaborate

Students work in groups:

Match:

Equation ↔ Graph ↔ Description

Then explain “How do you know this is a vertical shift up 2?” “Why is this decay instead of growth?”

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Transformations of exponentials:

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- Still has an asymptote
- Still exponential behavior

Elaborate

Students work in groups:

Match:

Equation ↔ Graph ↔ Description

Explore

Students work in pairs:
Real World Scenario Questions:
Population growth: doubles every year
Money: increases by 5%
Depreciation: loses by 20% each year
Students will identify:
Is it growth or decay? What is a?
What is b?

Explain

The teacher explains using Desmos and interprets initial values, growth/decay, and connects it to the previous classes, characteristics, and transformations.

Elaborate

Stations: there are 4 tasks

- Graph It (graph an exponential and describe transformations)
- Write the Model (write an equation from a word problem)
- Compare (compare two functions and justify which grows faster)
- Create your own (make a real-world exponential scenario and solve it)

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				Then explain “How do you know this is a vertical shift up 2?” “Why is this decay instead of growth?”	
N	Evaluate and Summary Relay Race Review Two teams will compete to solve exponential questions at the board.	Evaluate and Summary Relay Race Review Two teams will compete to solve exponential questions at the board.	Evaluate and Summary Exit ticket: “How are exponential transformations similar to quadratic transformations?”	Evaluate and Summary Exit ticket: “How are exponential transformations similar to quadratic transformations?”	Evaluate and Summary Use mixed questions about growth vs. decay, transformations, evaluate expressions, and interpret models
Resources:	https://canva.link/bgwux8zv0lnxqp4  9.1a Exponentials ...	https://canva.link/bgwux8zv0lnxqp4  9.1a Exponentials Warm Up			