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Warm-Up

This is a quick check-in to get you in a "learning math" mindset for the day.

Pause the video and complete the warm-up.

You should expect to spend ~5 minutes on this.

Warm-Up: What da FUNCTION!?

A business sells umbrellas on the streets of New York City.

The following functions represent their business:

$$C(x) = 1.50x + 40$$

$$R(x) = 5.00x$$

<u>Directions</u> : Answer each question below.

Use vocabulary from this word bank.

Fixed Costs	Variable Costs
Retail Price	per/each

1) What does their <u>cost function</u> tell you about their business?

2) What does their <u>revenue function</u> tell you about their business?

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Launch Activity

This is the teacher-guided part of the lesson.

Here, you'll be introduced to the concepts and skills you'll be learning today.

Pause the lesson video as needed to give yourself time to take notes.

You should expect to spend ~10 minutes on this.

Skill Drill: Creating Functions

___ **[Creating Cost and Revenue Functions]**

+ I can create a cost function by identifying variable and fixed costs of a business and creating an equation of the form:

C(x) = *(tot. variable costs)***x** + *(total fixed costs)*

+ I can create a revenue function by writing an equation of the form:

R(x) = *(consumer price)***x**

Directions:

Create a ***cost function*** and a ***revenue function*** for each business below

Business 1: Car Parts

Fixed Costs	Variable Costs
-Employee wages cost $1700 per month. -Rent/utilities for a warehouse cost $1,000 per month.	-Each car part costs $12 in materials to make. -Shipping each product costs the company $3.00

Cost Function

$C(x) = \underline{\qquad}\,x + \underline{\qquad}$

total variable cost — *total fixed costs*

The business plans to sell each car part for $105

Revenue Function

$R(x) = \frac{\qquad}{\text{consumer price}}\,x$

Business 2: Street Beverage Entrepreneur

Fixed Costs	Variable Costs
-Transportation costs $50 per week. -The business spends $30 on ice per week.	-Each beverage costs $1.15 to make -The bottle for each beverage costs $0.65

Cost Function

$C(x) =$

The business plans to sell each beverage for $5.00

Revenue Function

$R(x) =$

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Guided Practice

This is an opportunity for you try out a problem on your own.

Pause the lesson video and give it a shot! Once you've attempted the problem, get some feedback by resuming the video.

Expect to spend ~5 minutes on this.

Guided Practice: Graphing Cost/Revenue and Analyzing the Graph to think about Profit.

Learning Target: **(2C) I can graph revenue and cost functions on the same graph for the purpose of analyses.**

Skills to Look For:

____ **[Graphing Cost and Revenue]**

+ I can create a table of data by evaluating (plugging into) both cost and revenue functions.
+ I plot points to represent both functions on the same graph

____ **[Thinking about Profit by comparing Cost and Revenue]**

+ I can use the graph to see the "big picture" of what is happening for the business.
+ I can write sentences describing when the business will have positive profit, negative profit or zero profit!

Business 1: Car Parts

Fixed Costs	Variable Costs
-Employee wages cost $1700 per month.	-Each car part costs $12 in materials to make.
-Rent/utilities for a warehouse cost $1,000 per month.	-Shipping each product costs the company $3.00

Cost Function

$C(x) = \underset{\text{total variable cost}}{15}\ x + \underset{\text{total fixed costs}}{2{,}700}$

Revenue Function

The business plans to sell each car part for $105 → $R(x) = \underset{\text{consumer price}}{105}\ x$

1) Complete the table of values below to compare cost and revenue:

X (number of car parts sold)	R(x)	C(x)
10		
20		
30		
40		
50		

2) Open up the graph of both functions in Desmos. Use the graph to think about profit.

DESMOS LINK

Independent Practice

This is the part of the lesson you should complete on your own. When you've finished a first draft, submit the assignment on Google Classroom.

Post any questions you have in a comment and be prepared for your teacher to respond.

This is the part of the lesson where you should the most time each day.

Learning Target: (2C) I can graph revenue and cost functions on the same graph for the purpose of analyses.

Skills to Look For:

___ **[Graphing Cost and Revenue]**

+ I can create a table of data by evaluating (plugging into) both cost and revenue functions.
+ I plot points to represent both functions on the same graph

___ **[Thinking about Profit by comparing Cost and Revenue]**

+ I can use the graph to see the "big picture" of what is happening for the business.
+ I can write sentences describing when the business will have positive profit, negative profit or zero profit!

Business 2: Street Beverage Entrepreneur

Fixed Costs	Variable Costs
-Transportation costs $50 per week.	-Each beverage costs $1.15 to make
-The business spends $30 on ice per week.	-The bottle for each beverage costs $0.65

Cost Function

$C(x) = 1.80x + 80$

Revenue Function

The business plans to sell each beverage for $5.00 → $R(x) = 5x$

1) Complete the table of values below to compare cost and revenue:

X (number of bevs sold)	R(x)	C(x)
10		
20		
30		
40		
50		

2) Open up the graph of both functions in Desmos. Use the graph to think about profit.

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