

Name: _____

Student ID: _____

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
- I will not use any digital resources unless explicitly allowed by the instructor.
- I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
- B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
- C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
- D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable `remote` is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{years_experience} + \beta_2 \cdot \text{remote} + \varepsilon$$

b) Interpret the coefficient on `remote` in one sentence:

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$_____ per month

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$_____ per month

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: _____

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: _____

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

- A) Employees with degrees have 0.8 higher performance scores
- B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without
- C) Training is 0.8 times as effective for degree holders
- D) Employees with degrees complete 0.8 more training hours

Name: David Hargraves

Student ID: 4618322

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

β_1 is the base that can be improved depending on how many study hours its multiplied by while controlling for prior GPA.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{years} + \epsilon$$

b) Interpret the coefficient on **remote** in one sentence:

β_1 is the base productivity affected by whether the employee is remote or in-office.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

When we control for experience we're comparing two people rather than everybody.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 820 per month $250 + (900 \cdot 0.8) - 150 = 820$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1070 per month

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

On average, an apartment that allows pets will be \$150 more expensive than one that does not.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52 + ε $50 + 2.0 \cdot 1 + 10 \cdot 0 + 0.8 \cdot (1 \times 0) + \varepsilon$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 62.8 + ε

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

(B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Ethan Geltgen

Student ID: 454337

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

I will complete this MiniExam solely using my own work.

I will not use any digital resources unless explicitly allowed by the instructor.

I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

For each additional hour of studying, score changes by the amount β_1 when controlling for prior GPA.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

($\text{remote} = 1 \rightarrow \text{remote}$, $\text{remote} = 0 \rightarrow \text{office}$)

a) Write the regression model:

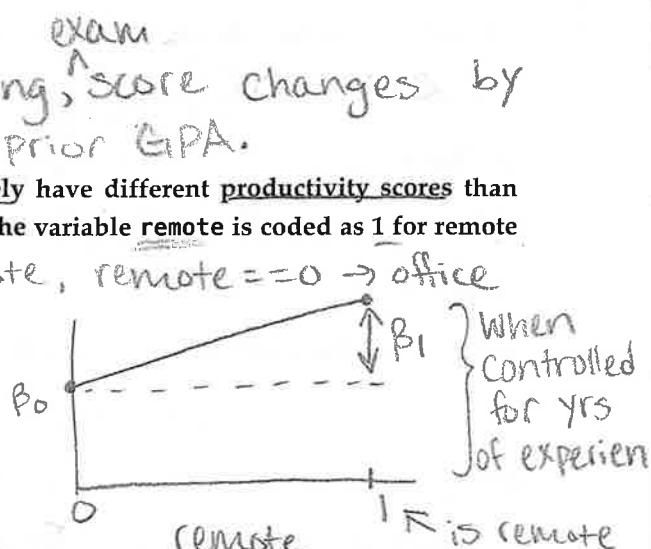
$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \epsilon$$

b) Interpret the coefficient on remote in one sentence:

When controlling for years of work experience, productivity changes by the amount β_1 when a worker is remote rather than in-office.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Those with more work experience might be more (or less) productive, so controlling for work experience allows the correlation between productivity and work environment (remote or in-office) to be isolated.



Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month

$$250 + (.8)(900) + 0 = \$970$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

$$250 + (.8)(900) + 150 = \$1120$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Apartments that allow pets are, on average, \$150 more per month rent-wise compared to those that prohibit pets.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

\uparrow base performance

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2

$$50 + 2(1) + 0 + 0 \quad \{ \quad 2(1) = 2$$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 2.8

$$2(1) + .8(1)(1) = 2.8$$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders - would mean it's less effective

D) Employees with degrees complete 0.8 more training hours

Name: Will Brubaker

Student ID: 4547937

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
- I will not use any digital resources unless explicitly allowed by the instructor.
- I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
- B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
- C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
- D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

The coefficient on hours determines the effect the amount of time spent studying has on the score.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{PS} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{years} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

The coefficient on remote is the data collected to determine the productivity score.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

We want to control years of experience because someone with more experience has better understanding of their tasks leading to higher productivity scores.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$_____ per month

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$_____ per month

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52.8 $\text{Performance} = 50 + 2.0 \times 1 + 10 \times 0 + 0.8(1 \times 0) + \varepsilon$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 53.6 $= 50 + 2.0 \times 1 + 0.8(1 \times 1) + \varepsilon$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

- A) Employees with degrees have 0.8 higher performance scores
- B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without
- C) Training is 0.8 times as effective for degree holders
- D) Employees with degrees complete 0.8 more training hours

Name: Chase Charles

Student ID: 4681746

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

How much exam score increases for every hour

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{remote in office} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

The productivity scores of remote workers

c) Why might we want to control for experience when studying the effect of remote work on productivity?

We want to control for factors that differ between remote and in office such as time travel to office.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \epsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month $\text{Price} = 250 + 0.800 \cdot 900 - 150$
 $250 + 720 - 150$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $\text{Price} = 250 + 0.800 \cdot 900 + 150$
 $250 + 720 + 150$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

A house with pets allowed is \$150 more expensive than without pets

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \epsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52.8 $50 + 2.0 \cdot 1 + 10 \cdot 0 + 0.8$
 52.8

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 64.8 $50 + 2 \cdot 2 + 10 \cdot 1 + 0.8$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Alyssa Bisram

Student ID: 4565158

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
- I will not use any digital resources unless explicitly allowed by the instructor.
- I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
- B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
- C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
- D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

The increase in score / grade for each additional hour of study

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$$

b) Interpret the coefficient on **remote** in one sentence:

the additional productivity for those working remotely

c) Why might we want to control for experience when studying the effect of remote work on productivity?

to compare two people with the same experience but one's remote and the other's in office, because before we compared everyone (it would negatively impact results/findings by not being a fair/true comparison)

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

$$\begin{array}{r} 250 \\ 720 \\ \hline 970 \end{array}$$

$$\frac{80}{100} \times \frac{900}{1}$$

$$\frac{720}{100}$$

$$\begin{array}{r} 170 \\ 150 \\ \hline 1120 \end{array}$$

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$970 per month $= 250 + 0.800 \times 900 + 150 \times 0$
 $= 250 + 720 + 0$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$1120 per month $= 250 + 0.800 \times 900 + 150 \times 1$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

the cost/charge associated with having a pet
 in the apartment

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

50	2.0	10	0.8
----	-----	----	-----

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2.0

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 10

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Kayla Onyango

Student ID: 4688161

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- YO I will complete this MiniExam solely using my own work.
KO I will not use any digital resources unless explicitly allowed by the instructor.
KO I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

The change in score for a 1 unit change in hours (holding GPA constant)

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable `remote` is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{experience}} + \varepsilon$$

b) Interpret the coefficient on `remote` in one sentence:

The change in productivity for a 1 unit change in remote (holding experience constant)

c) Why might we want to control for experience when studying the effect of remote work on productivity?

to evaluate the effect of remote work on productivity for individuals with the same work experience

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

$$250 + 0.8(900) + 150(0)$$

Answer: \$ 970 per month

$$= 970$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

$$250 + 0.8(900) + 150(1)$$

Answer: \$ 1120 per month

$$= 1120$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

apartments with pets allowed are 150 units larger

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

$$50 + 2(1) + 10(0) + 0.8(1 \times 0)$$

Answer: 52

$$= 52$$

b) What is the effect of one additional hour of training on performance for employees with a degree?

$$50 + 2(1) + 10(1) + 0.8(1 \times 1)$$

Answer: 62.8

$$= 62.8$$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Part 5 Notes

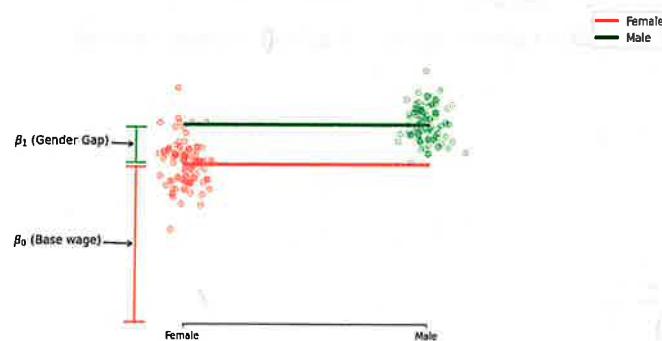
When $p < \text{significance level}$ (typically 0.05) it means that the result is statistically significant and we can reject the null hypothesis

5.1 Categorical Controls

| Fixed Effect

Example. Gender Wage Gap

Q. Is there a gender wage gap?



- β_0 is the average wage for females
- β_1 represents the gender wage gap (the additional wage for males)
- $\beta_0 + \beta_1$ represents the average wage for males
- The model ignores education entirely as a variable and instead simply compares average wages by gender

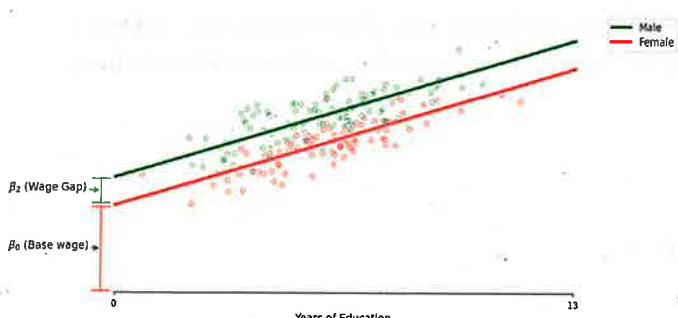
```
1 import statsmodels.formula.api as smf
2
3 # Fit the model with just the male indicator
4 model1 = smf.ols('INCLOG10 ~ MALE', data=df).fit()
5 print(model1.summary())
```

A. With a Beta 1 value of 0.3669 we can conclude that men make 36.7% more than women

| Fixed Effect with Control

Example. Education + Gender Wage Gap

Q. Is there a gender wage gap, controlling for education?



- Includes education as a control variable
- β_0 is the base wage for those with no post-middle school education
- β_2 represents the gender wage gap added to the intercept for males only

- This model is assuming parallel lines and that there are the same returns to education β_1 for everyone

```

1 import statsmodels.formula.api as smf
2
3 # Fit the model with male indicator
4 model1 = smf.ols('INCLOG10 ~ EDU + MALE', data=df).fit()
5 print(model1.summary())

```

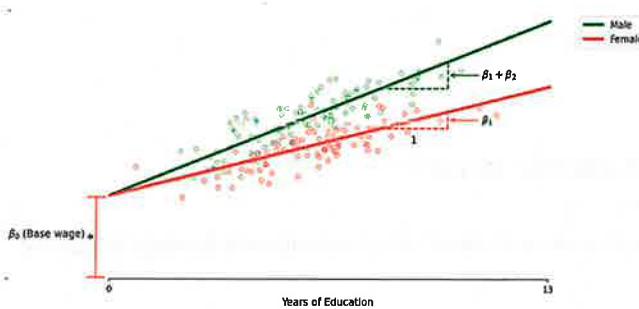
A. With an EDU coefficient of 0.2272, we can conclude that for each additional year of education, total income increases by an estimated 22.72%, holding gender constant.

With a MALE coefficient of 0.4771, we can conclude that after controlling for education, males make an estimated 47.71% more than females.

| Interaction Only

Example. Different Returns to Education

Q. Are there differences in returns to education?



- β_1 represents the female return to education
- β_2 represents the additional male return to education
 - The male education effect is $\beta_1 + \beta_2$
- This model assumes the same intercept for both sexes

```

1 # Fit model with interaction between education and sex
2 model2 = smf.ols('INCLOG10 ~ EDU + EDU:MALE', data=df).fit()
3 print(model2.summary())

```

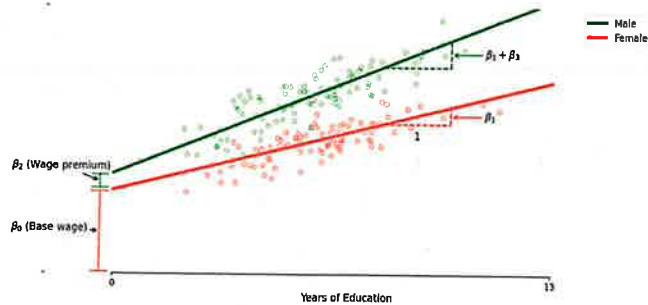
A. With an EDU coefficient of 0.2111, we can conclude that for each additional year of education, female income increases by an estimated 21.11%.

With an EDU:MALE coefficient of 0.0344, this tells us that for additional year of education, men make an estimated 3.44% more than females. In other words, the return to education is 3.44% more for men than women

| Full Model

Example. Gender Difference

Q. Does the gender wage gap vary with education level?



- β_0 represents the base wage
- β_2 represents the initial wage gap (at zero education)
- β_1 represents the female returns to education
- β_3 represents the male education return premium
- This model allows for differences in both baseline wages and educational returns

```

1 # Fit full model with both sex indicator and interaction
2 model3 = smf.ols('INCL0G10 ~ EDU + MALE + EDU:MALE', data=df).fit()
3 print(model3.summary())

```

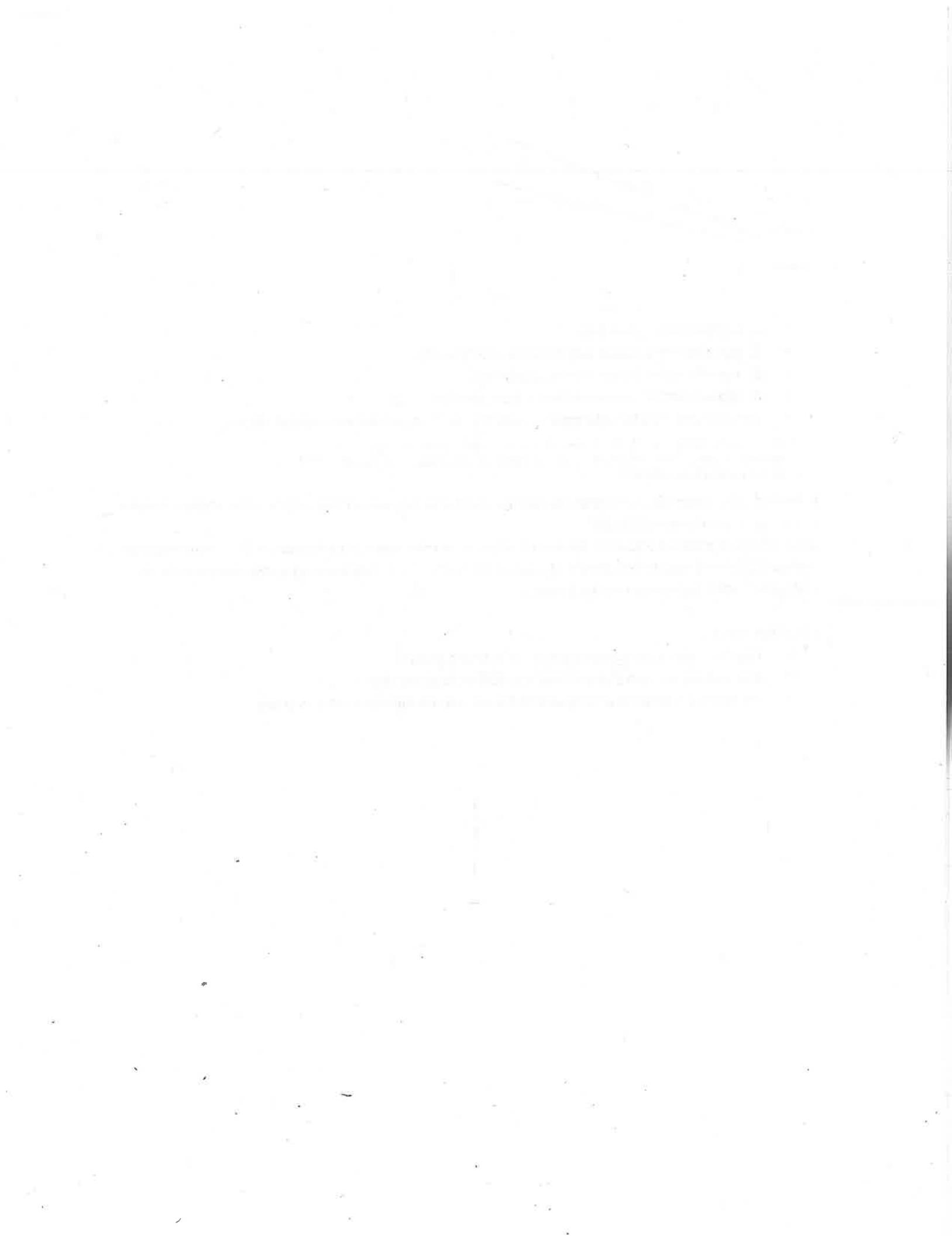
A. With an EDU coefficient of 0.2203, we can conclude that for each additional year of education, income increases by an estimated 22.03%

With a MALE coefficient of 0.2731, we can conclude that men make an estimated 27.31% more than women

With an EDU:MALE coefficient of 0.0149, we can conclude that the return to education for males is an estimated 1.49% higher than it is for females

| GLM Takeaways

- Fixed effects capture level differences between groups
- Interactions capture slope differences (differential returns)
- Combining both gives a complete picture of how relationships vary by group



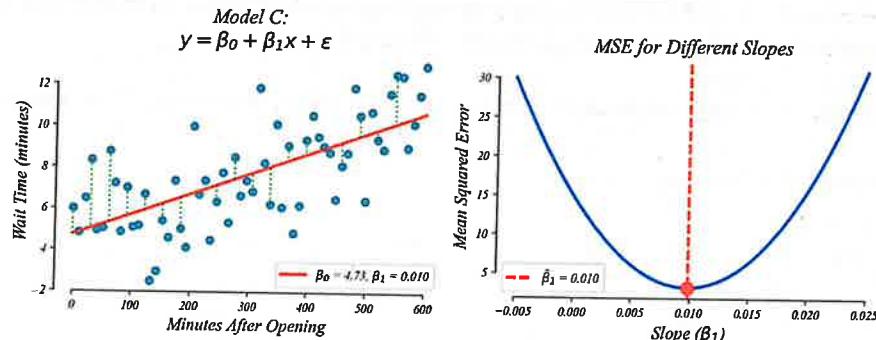
Part 4 Notes

When $p < \text{significance level}$ (typically 0.05) it means that the result is statistically significant and we can reject the null hypothesis

4.1 Numerical Predictors

| GLM Bivariate Data

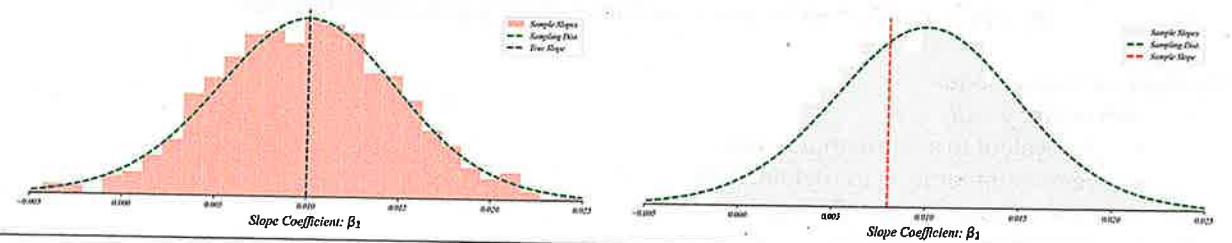
- A slope β_1 improves a model's fit/wrongness (MSE) when there is a relationship
 - The mean no longer becomes the intercept
- The GLM selects the β_1 with the smallest MSE



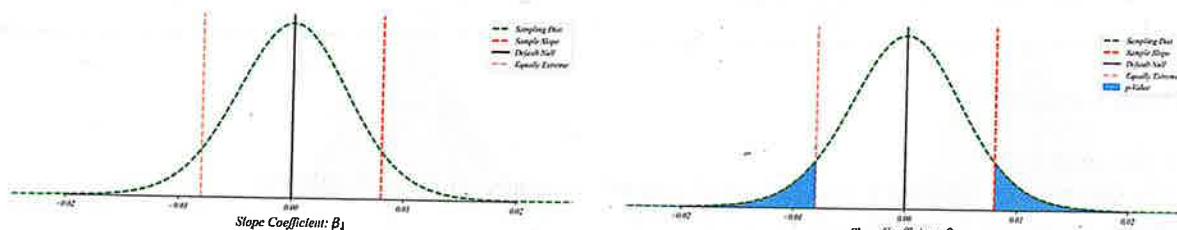
- The slope β_1 gives us the best guess of the relationship between X and Y
- Like before if we take many samples, we get slightly different slopes and slightly different best fits

| Bivariate GLM: Sampling Distribution of Slopes

- The slope coefficient follows a normal distribution centered on the population slope
- The slopes follow a normal distribution around the population relationship



Example. Sampling distribution of slopes



- The p-value is the probability of something as far from the null as our sample
 - The 'surprisingness' of our sample if $\beta_1 = 0$
- The probability of seeing our sample by chance if there is no relationship
- A small p-value is evidence against the null hypothesis ($\beta_1 = 0$)

| Exercise 4.1: Happiness and Per Capita GDP

```
1 # Model: y = b + mx
2 model = smf.ols('Life_Evaluation ~ log_GDP_PerCap', data).fit() # Intercept is included by def
3 print(model.summary().tables[1])
```

- Intercept co-efficient of -2.502 tells us the expected happiness when GDP per capita is 0
 - Our p-value of 0 tells us that the probability of getting these results/seeing something as extreme as what we do in the slope is very unlikely under the null hypothesis (the assumption that $\beta_1 = 0$)
 - Statistically significant -> there is a relationship between happiness and GDP per capita
- Log_GDP_PerCap co-efficient of 1.5145 tells us that for every one-unit increase in GDP per capita, happiness is expected to increase by approximately 1.5145 units

```
1 # Visualize: Numerical x Numerical
2 sns.regplot(data=data, y='Life_Evaluation', x='log_GDP_PerCap')#, ci=None), line_kws={'color': 'red'}
```



```
1 # Parameters
2 b0, b1 = model.params # intercept, slope
```



```
1 # Predict: Log GDP of 3
2 prediction = b0 + b1 * 3
3 print(prediction)
```

| GLM Predictions & Interpretations

- Plug any value of x into the equation to estimate the y value at x

Example. What wait time should we expect at 100 minutes after opening?

Plug $x = 100$ into $y = 4.31 + 0.011x$

- β_1 tells us exactly how much y increases with every 1 unit increase in x
 - Eg. if $\beta_1 = 0.011$, then for every 1 unit increase in y, x increases by 0.011

| The General Linear Model

- Univariate: $y = \beta_0 + \varepsilon$
 - Equivalent to a one sample t-test
 - Tests whether $\beta_0 = \mu_0$ (default null)
- Numerical Predictor: $y = \beta_0 + \beta_1 x + \varepsilon$
 - x is a numerical variable
 - Tests both intercept ($\beta_0 = 0$) and slope ($\beta_1 = 0$)
 - Null hypothesis on slope suggests no relationship between x and y

4.2 Model Residuals

| GLM Assumptions

- Our models will offer inaccurate predictions if some assumptions aren't met

Linearity - the relationship between X and Y is linear

Homoskedasticity - equal error variance across all values of X

Normality - errors are normally distributed

Independence - observations are independent from each other

- If any of these assumptions are not satisfied, the inferences we can make from the model become much more limited
 - Coefficient estimates may be biased
 - Standard errors may be wrong
 - P-values may be missing

- Predictions may be unreliable

| Exercise 4.2: Residual Plot of Happiness and GDP

```

1 # Calculate residuals
2 residuals = model.resid
3 sns.histplot(residuals)

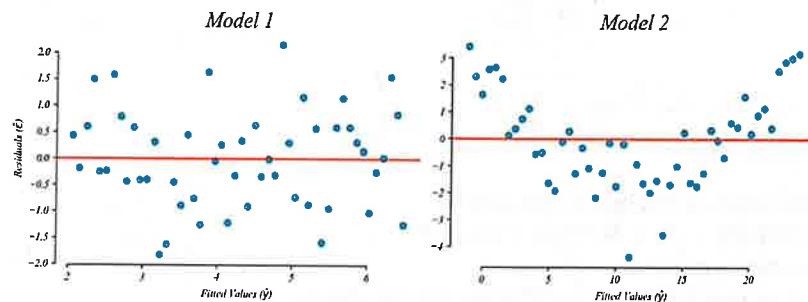
1 # Calculate predictions
2 predictions = model.predict()
3 sns.histplot(predictions)

1 # Residual Plot: predictions against residuals
2 plt.scatter(predictions, residuals)

```

- The residuals are ε whereas the model predictions are \hat{y}

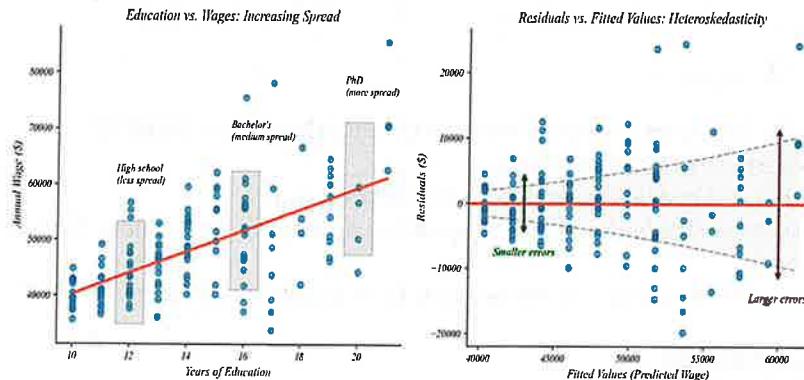
| Assumption 1: Linearity



- The left figure shows that the model is equally wrong everywhere whereas the right figure shows that the model is a good fit at only some values
- Linear models can sometimes miss curvatures, leading to systematic errors
- To transform variables to become linear, add a square term or perform a log transformation
 - Instead of $income = \beta_0 + \beta_1 age + \varepsilon$ we can use $income = \beta_0 + \beta_1 age + \beta_2 age^2 + \varepsilon$

| Assumption 2: Homoskedasticity

- The spread of residuals should not change across values of x



- The left figure shows homoskedasticity while the right figure shows heteroskedasticity
- Residual plots should show that the model is equally wrong everywhere
- Robust standard errors adjust for the changing spread in our data
 - Use robust standard errors to give more accurate hypothesis tests

```

1 # Fit the model with robust standard errors (HC3: heteroskedastic-constant)
2 robust_model = smf.ols('wages ~ education', data=df).fit(cov_type='HC3')

```

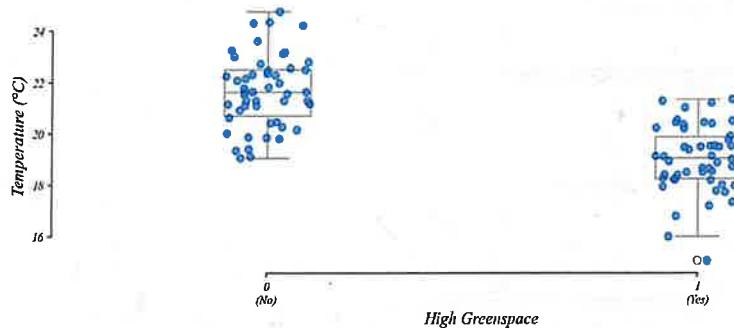
- This affects the p-value

| Assumption 3: Normality

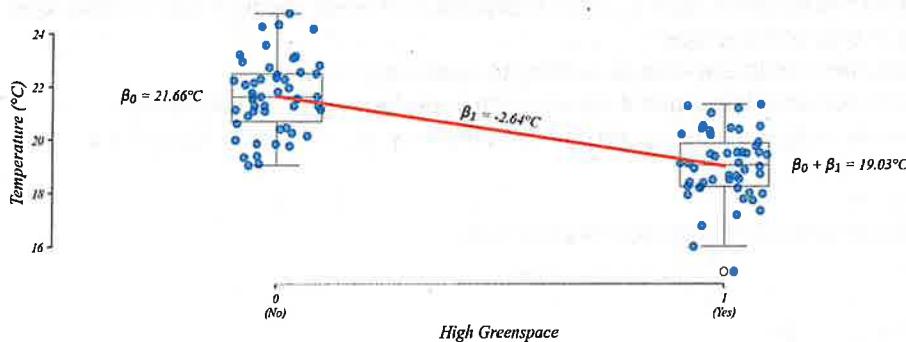
- By the CLT we can still use the GLM without normality but only if the sample is large enough

4.3 Categorical Predictors

| GLM: City Greenspace and Temperature



- Temperature changes as we move out on the horizontal axis
- We have an equation of $\text{Temperature} = \beta_0 + \beta_1 \text{HighGreen} + \varepsilon$
 - This is equivalent to the two-sample t-test
- The GLM performs a t-test on β_1 to test whether the difference is significant



- β_0 tells us the mean temperature in low green space cities ($x = 0$) which is equal to 22.03°C
- β_1 tells us how much temperature when x moves from 0 to 1
 - Cities with green space ($x = 1$) have a temperature that is lower by β_1
 - The p-value of β_1 tells us the probability of observing a slope as extreme as β_1 under the null hypothesis
- $\beta_0 + \beta_1$ tells us the mean temperature in high green space cities ($x = 1$) which is equal to 19.03°C

| Exercise 4.3: Neighborhood Income and Pollution

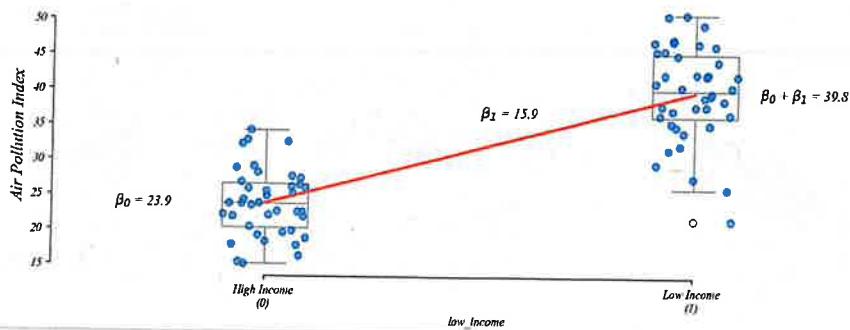
Step 1. Summarize the data

```
1 # Visualize Binary Predictor
2 sns.scatterplot(data, x='low_income', y='pollution')
3 plt.xticks([0,1], labels=['No', 'Yes'])
```

Step 2. Build a model

$$\text{Pollution} = \beta_0 + \beta_1 \text{LowIncome} + \varepsilon$$

Step 3. Estimate the model



```
1 # Model: y = b + mx
2 model = smf.ols('pollution ~ low_income', data).fit() # Intercept is included by default
3 print(model.summary().tables[1])
```

β_0 = Mean pollution in high income areas

β_1 = Additional pollution in low income areas

Step 4. Check the residuals

```
1 sns.scatterplot(x=model.predict(), y=model.resid, alpha=0.5)
2 plt.axhline(y=0, color='red', linestyle='--')
3 plt.xlabel('Fitted Values')
4 plt.ylabel('Residuals')
```

Step 5. Interpret and communicate the findings

| GLM Summary

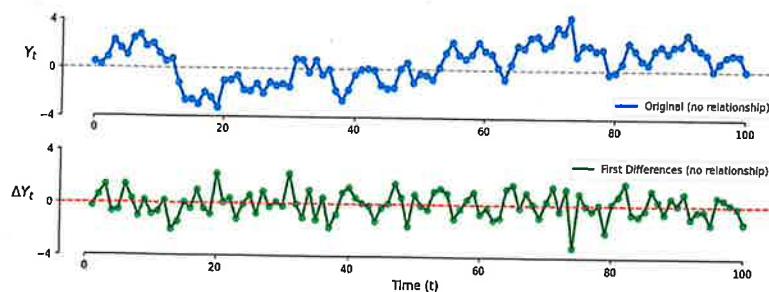
- One sample t-test
 - Continuous outcome variable with only an intercept
- Relationships
 - Continuous outcome variable with a continuous predictor
- Two sample t-test
 - Continuous outcome variable with a dummy (group)
- Multiple regression
 - Adding control variables to isolate relationships

4.4 The Problem of Timeseries

| Timeseries Analysis

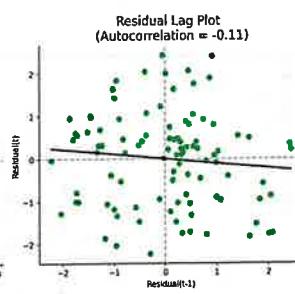
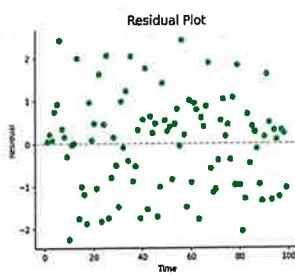
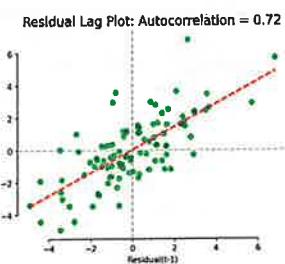
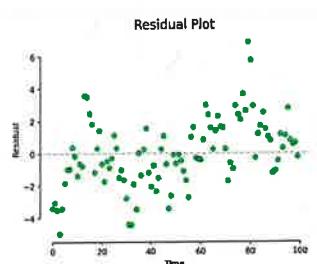
- Observations are related to their past values (autocorrelation) which violates the independence assumption

$$\Delta Y_t = Y_t - Y_{t-1}$$



- We can fix some issues of autocorrelation by looking at changes instead of levels

$$Y = \beta_0 + \beta_1 \cdot t + \epsilon$$



Part 3 Notes

When $p < \text{significance level}$ (typically 0.05) it means that the result is statistically significant and we can reject the null hypothesis

3.5 The Simplest General Linear Model

When $p < \text{significance level}$ (typically 0.05) it means that the result is statistically significant and we can reject the null hypothesis

| General Linear Model (GLM)

$$y = mx + b$$

- We refer to y as our *outcome variable*
 - Reflected on the vertical axis (typically) and always numerical
- We refer to x as our *predictor variable*
 - Can be either categorical or numerical
- There can be more than one predictor variable

$$y = m_1x_1 + m_2x_2 + b$$

How do we choose the line?

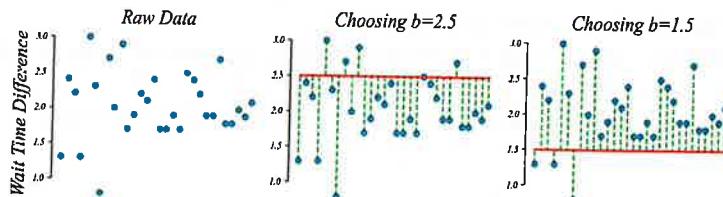
- We minimize how “wrong” our model is
 - We draw the line in this way

$$\text{Mean Squared Error: } MSE = \frac{1}{n} \sum_i \epsilon_i^2$$

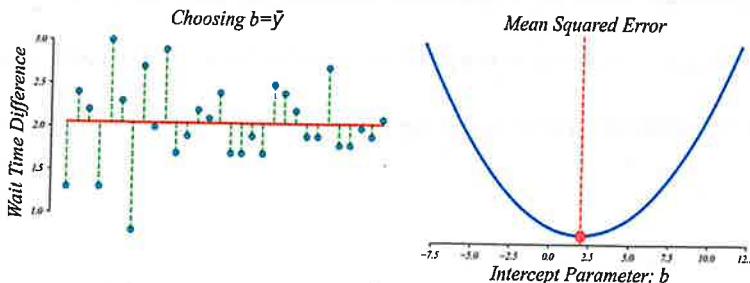
- A measure of the “wrongness” of the model
- ϵ_i is how wrong/far away our model is from data point i
 - The average distance between the line and a data point
 - Similar to variance

Example. GLM using only an intercept term $y = b$

- The data x_i is in blue
- The model b is in red
- The error ϵ_i is in green



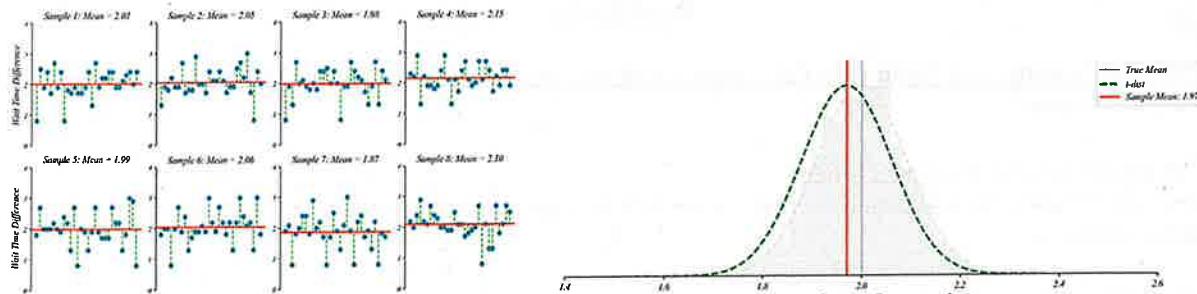
- To minimize MSE we choose b to be equal to the sample mean \bar{y}
 - When do this minimize $MSE = \text{variance}$



- Like before when we take different samples, we get different means and different models

| Distribution Around the Sample Mean

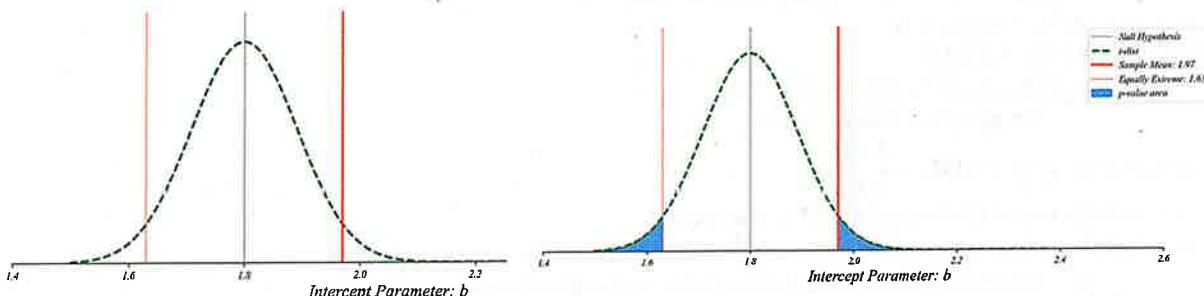
- The intercept terms follow a t-distribution centered around the true mean



- We only observe one sample mean, so we center the distribution on that mean

Example. What is the probability of seeing this is the average wait time is 1.8 minutes?

- Probability of observing something as extreme as our sample mean given the null
 - Null: 1.8
 - Sample Mean = 1.97 (higher tail)
 - Equally Extreme = 1.63 (lower tail)



- Our p-value for this test tells us the probability of getting results as extreme as this (assuming the null hypothesis is true)
 - In other words, if the wait time is exactly 1.8 minutes, the p-value tells us the probability of seeing something this extreme

| Summary

- To minimize MSE we choose b to be equal to the sample mean \bar{y}
- A one sample t-test can be represented as a simple linear regression model because the intercept b in the equation for the linear model is always equal to the sample mean \bar{y}
 - This follows because b is the only parameter in a one-sample t-test ($y = b$ as there is no outcome variable present).

One Sample T-Test

- The intercept b in a regression model with no predictors x equals the sample mean \bar{y} of the outcome variable y
- The p-value for the intercept in a regression with no predictors tests whether the sample mean equals 0
 - Because there are no predictors, $y = b$ and thus the p-value is testing for the null hypothesis $H_0: y = 0$
 - On the other hand, the alternate hypothesis would be $H_1: y \neq 0$

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

8.4

Answer: \$ 1120 per month

$$\text{Rent} = 250 + 900 \cdot 0.8 + 150 \cdot 0 = 400 + 720 = 1120$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 970 per month

$$\text{Rent} = 250 + 900 \cdot 0.8 + 150 \cdot 1 = 250 + 720 = 970$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

The difference in rent prices associated with allowing vs not allowing pets is \$150.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2.0

$$2.0 + 0 + 0 = 2.0$$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 12.8

$$2 + 10 + 0.8 \cdot 1 = 12.8$$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores ?

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Jullius Katchor

Student ID: 486 6994

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

The change in exam score associated with 1 study hour.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{prod. score} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$$

b) Interpret the coefficient on **remote** in one sentence:

The estimated difference in prod. scores between those who work remotely and those who work in-office.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

The model will be more accurate because now we can compare those with the same work experience rather than just comparing culture to culture.

Name: Isha Nathan

Student ID: 4641681

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- IN I will complete this MiniExam solely using my own work.
IN I will not use any digital resources unless explicitly allowed by the instructor.
IN I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

the extra exam score that is associated with one more hour of studying

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity scores} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{years of experience} + \epsilon$$

b) Interpret the coefficient on remote in one sentence:

the additional productivity for those that are remote

c) Why might we want to control for experience when studying the effect of remote work on productivity?

We want to control for the factors like additional or less experience between remote and in-office workers

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$_____ per month = $250 + (0.8 \cdot 900) + (150 \cdot 0)$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$_____ per month = $250 + (0.8 \cdot 900) + (150 \cdot 1)$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

apartments that allow pets on average are \$150 more expensive monthly than apartments that don't allow pets

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2.0

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 0.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Makayla Yee

Student ID: 4406956

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

MY I will complete this MiniExam solely using my own work.

MY I will not use any digital resources unless explicitly allowed by the instructor.

MY I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

The hours coefficient shows the additional increase in scores associated with 1 more study hour.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \epsilon$$

b) Interpret the coefficient on remote in one sentence:

It represents the additional productivity remote workers possess

c) Why might we want to control for experience when studying the effect of remote work on productivity?

We would want to control experience because it lets us control a factor that differs between workers that is unrelated to working in or out of office.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$970 per month $250 + 900(0.8) + 150(0)$
 $250 + 720 = 970$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$1120 per month $250 + 900(0.8) + 150(1) =$
 $970 + 150 = 1120$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

If the apartment allows pets, you can expect it to cost an additional \$150 compared to an identical, no pet apt.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: $20\uparrow$ $50 + 20(1) + 10(0) + 0.8(0) - 50 = 20$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: $20.8\uparrow$ $50 + 20(1) + 10(1) + 0.8(1 \times 1) - (50 + 10)$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Christian Wieliczki

Student ID: 4624229

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

The exam score correlates with the amount of hours studied

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity score} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{coefficient} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

The productivity score associated with working remotely

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Because some people have worked remote for long periods of time, and some people can have access to outside resources to make it easier.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$150.8 per month $\rightarrow 150.8$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$1300.8 per month $\rightarrow 1300.8$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

every coefficient allows pets its an additional 150.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 70

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Riley Henderson

Student ID: _____

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$
 C) $\text{score}' = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

The coefficient on hours represents the expected additional increase in exam scores for a one hour increase in studying.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{PRODUCTIVITY SCORES} = \beta_0 + \beta_1 \cdot \text{REMOTE} + \beta_2 \cdot \text{experience} + \epsilon$$

b) Interpret the coefficient on remote in one sentence:

The coefficient on remote represents how much productivity scores increase for every additional unit of remote workers.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

We want to control for experience when studying the effect of remote workers on productivity because so we can compare two workers with the same experience instead of comparing all workers. This makes the results more accurate.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 270 per month $\text{rent} = 250 + (0.800)(900) + (150)(0)$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $\text{rent} = 250 + (0.800)(900) + (150)(1)$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

An apartment that allows pets is \$150, dollars more expensive to rent than an apartment that doesn't allow pets

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

$$\text{performance} = 50 + 2 \cdot \text{train} + 10 \cdot \text{degree} + 0.8(\text{train} \cdot \text{degree})$$

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 50

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 52.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Megan Suess

Student ID: 4331770

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

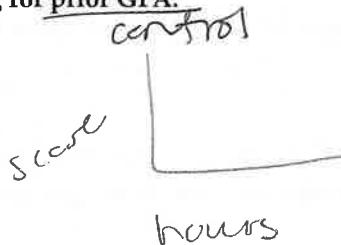
The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$



b) Interpret the coefficient on hours in one sentence:

the inc in score associated with one more hour
of studying

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\frac{\text{prod.}}{\text{score}} = \beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{experience}} + \epsilon$$

b) Interpret the coefficient on remote in one sentence:

the inc in productivity score associated with
remote workers

c) Why might we want to control for experience when studying the effect of remote work on productivity?

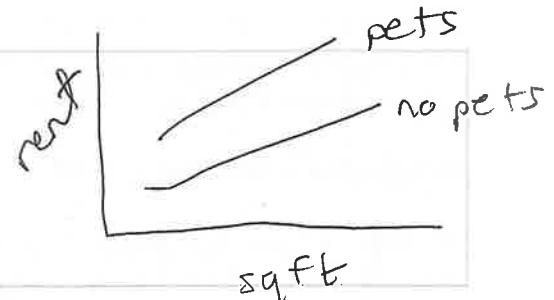
Now we compare people with the same
experience, before we compared everyone

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \epsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000



a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 770 per month $250 + 900(0.8) = 970$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $250 + 900(0.8) + 150(1) =$

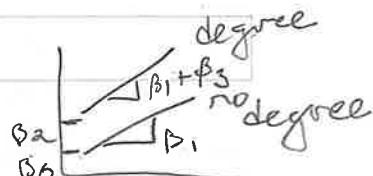
c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

The avg inc in price for apartments allowing pets
is \$150

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \epsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.



a) What is the effect of one additional hour of training on performance for employees without a degree?

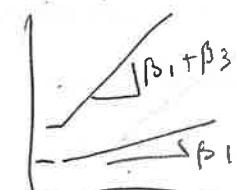
Answer: 2

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 2.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores



B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Joe L.J.

Student ID: 4565604/jo1165

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

2

b) Interpret the coefficient on hours in one sentence:

The score increase associated with 1 more hour of study.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

2

a) Write the regression model:

Prod. Score = $\beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{YOE}} + \varepsilon$

b) Interpret the coefficient on remote in one sentence:

The difference in productivity for remote workers was the same YOE.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

You can then control prod. scores between remote/in-person workers that have the same YOE.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month $250 + 0.8 \cdot 900 + 0 \cdot 150 = 250 + 720 = 970$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $250 + 0.8 \cdot 900 + 1 \cdot 150 = 250 + 720 + 150 = 1120$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Aptments that allow pets cost \$150 more/mo, on average.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2.0 $2.0 \cdot 1 + 10 \cdot 0 + 0.8(1 \cdot 0) = 2.0$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 2.8 $2.0 \cdot 1 + 10 \cdot 1 + 0.8(1 \cdot 1) = 24.0 + 0.8 = 24.8$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Connor McCollum

Student ID: 4551099

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on **hours** in one sentence:

How much score increases for every additional unit of study hours

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{Score} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{years} + \varepsilon$$

b) Interpret the coefficient on **remote** in one sentence:

Average productivity score for remote workers holding everything else constant

c) Why might we want to control for experience when studying the effect of remote work on productivity?

You control to compare two people with the same experience before you compare it to others. It's whether ~~remote~~ and more accurate evaluation.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 170 per month

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Apartments that allow pets are ~~more~~ on average \$150 more than those that don't.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: ~~10.8~~ 2.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Rylie Teets

Student ID: 4720986

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

X Y Z
Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

the change in exam score with one additional hour of studying

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{Productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience}$$

b) Interpret the coefficient on remote in one sentence:

the additional slope for remote workers productivity

c) Why might we want to control for experience when studying the effect of remote work on productivity?

different levels of experience are likely more productive as their skills are more developed

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month $y = 250 + 0.8(900) + 150(0)$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $y = 250 + 0.8(900) + 150(1)$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

An apartment that allows pets is expected to have an increase in rent of \$150

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

performance = 50 + 2(training) + 10(degree) + 0.8(training × degree) + ε
The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: O

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: C. 8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

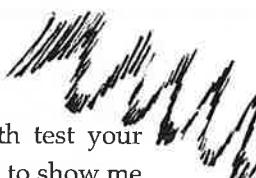
C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Charley Wan

Student ID:

4616524



ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.



Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
- I will not use any digital resources unless explicitly allowed by the instructor.
- I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
- B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
- C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
- D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on **hours** in one sentence:

For each additional hour in study time, the exam score increases by a factor of β_1

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity score} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{years of experience} + \varepsilon$$

b) Interpret the coefficient on **remote** in one sentence:

If an employee works remotely, their productivity score increases by a factor of β_1

c) Why might we want to control for experience when studying the effect of remote work on productivity?

~~People with more experience can work from anywhere~~

People with more experience can work more independently and away from the office compared to people with less experience

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

$$\begin{aligned} & 250 \\ & \cancel{720} \\ & \underline{\underline{970}} \\ & 720 \end{aligned}$$

$$\begin{aligned} & 970 \\ & 180 \\ & \cancel{120} \end{aligned}$$

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$970 per month $\text{rent} = 250.000 + 0.8(900) + 150.00(0) = 970$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$1120 per month $\text{rent} = 250.000 + 0.8(900) + 150.00(1) = 970 + 150 = 1120$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

If pets are allowed in the apartment, rent is an additional 150\$

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: +2 performance score ~~OK Performance / 184~~

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: +2.8 performance score and a one time increase of 10 in performance for getting the degree

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

~~C) Training is 0.8 times as effective for degree holders~~

D) Employees with degrees complete 0.8 more training hours

Name: Max Irish

Student ID: 4618211

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

MI I will complete this MiniExam solely using my own work.

MT I will not use any digital resources unless explicitly allowed by the instructor.

MD I will not communicate directly or indirectly with others during the MiniExam.

X J
Q1. A researcher studies how "study hours" affect "exam scores" while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

Z

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

The exam score is associated with the amount of hours studied.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

Productivity = $\beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{in office}} + \epsilon$
Score

b) Interpret the coefficient on **remote** in one sentence:

The productivity score associated with working remotely.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Because comparing 2 people without looking at prior experience is a better form of research, and better answers our question. By controlling experience, prior work along with other skills is taken out of the equation.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t	
Intercept	250.000	45.000	5.556	0.000	$250 + 900 \cdot 0.8 + 0$
sqft	0.800	0.035	22.857	0.000	$250 + 900 \cdot 0.8 + 150$
pets_allowed	150.000	38.000	3.947	0.000	

$$250 + 900 \cdot 0.8 + 0$$

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$1150.8 per month

$$\text{Price} = 250 + 0.8 \cdot 900 + 900$$

$$1,150.8$$

$$1150.8$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$1300.8 per month

$$\text{Price} = 250 + 0.8 \cdot 900 + 150$$

$$1300.8$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Every apartment that allows pets is an additional 150\$ per month.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52

$$0 = 50 + 2.0 + 0 + 0 = 52$$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 70

$$0 = 50 + 2.0 + 10 + 8 = 70$$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \epsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month

$$y = 250 + 0.8(900) + 150(0)$$

$$250 + 720$$

$$\begin{array}{r} 900 \\ 0.8 \\ \hline 7200 \\ 000 \\ \hline 7200 \end{array}$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

$$y = 250 + 0.8(900) + 150(1)$$

$$970 + 150$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

The coefficient on pets_allowed provides an additional \$150 to monthly rent if the building allows pets.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \epsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52

$$y = 50 + 2(1) + 10(0) + 0.8(1 \times 0)$$

$$y = 52$$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 62.8

$$y = 50 + 2(1) + 10(1) + 0.8(1 \times 1)$$

$$50 + 2 + 10 + 0.8$$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Milie Broderi

Student ID: 463911

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

MB I will complete this MiniExam solely using my own work.

MB I will not use any digital resources unless explicitly allowed by the instructor.

MB I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on **hours** in one sentence:

The β_1 adds an additional value for every additional unit of hours

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable `remote` is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

productivity = $\beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{experience}} + \epsilon$

b) Interpret the coefficient on **remote** in one sentence:

The beta for `remote` adds an additional value if the worker is remote that in office workers can't receive.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

controlling for experience helps narrow down total categories of experience into a few to allow for less variability in final productivity calculations

Name: Medha Pendota

Student ID: 4722507

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
- I will not use any digital resources unless explicitly allowed by the instructor.
- I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$
- B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$
- C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$
- D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on **hours** in one sentence:

The exam score after study one more extra hour

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience}$$

b) Interpret the coefficient on **remote** in one sentence:

The avg productivity an employee has works
remote with controlled experience

c) Why might we want to control for experience when studying the effect of remote work on productivity?

because experience employee will have a choice
in how much one works, therefore you need to
standardize the variables so you make the
experience controlled - so you can properly test for prod
of remote.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month $250.00 + 0.800(900) = 970$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $250.00 + 0.800(900) + 150.00 = 1120$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

It is \$150.00 more expensive for the rent if you want pets allowed

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2.0

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 0.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Juan Fernandez

Student ID: 4640249

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

The extra score earned associated with one more hour of studying

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{Experience}} + \epsilon$$

b) Interpret the coefficient on **remote** in one sentence:

The difference in productivity associated with those who work remotely

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Because now we compare people with the same experience, when before we compared everyone regardless of experience.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month

$$(900 \cdot 0.8) + 250 + (150 \cdot 0) =$$

$$900 \cdot \frac{8}{10} = \frac{7200}{10} = 720 \\ + 250 \\ \underline{+ 150} \\ 970$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

$$900 \cdot 0.8 + 250 + 150 \\ 720 + 250 = 970 + 150 = 1120$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

An apartment that allows pets is on average \$150 more expensive than one that doesn't

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: +2

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: +2.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Ragan Lilbsch

Student ID: 4614370

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

The extra exam scores associated with one more study hour.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \epsilon$$

b) Interpret the coefficient on remote in one sentence:

Every additional remote worker is associated with an extra 1 increase in productivity score.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

BECAUSE we can compare workers who have the same experience level rather than everyone.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 250 per month

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 150 per month

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Every one more pet allowed is associated with \$150 extra in the price, holding everything else constant.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 50

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 2.0

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Nicole Sobolewski

Student ID: 4711981

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

NJS I will complete this MiniExam solely using my own work.

NJS I will not use any digital resources unless explicitly allowed by the instructor.

NJS I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$

~~$\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$~~

b) Interpret the coefficient on hours in one sentence:

It represents the slope of study hours (how ~~one~~ ^{each additional study hour} ~~hours~~ affects exam scores)

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

~~productivity~~ = $\beta_0 + \beta_1 \cdot \text{years} + \beta_2 \cdot \text{remote} + \varepsilon$

b) Interpret the coefficient on remote in one sentence:

It represents the difference in productivity (slope) between remote workers and in-office workers.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Because experienced workers may be better able to handle doing work by themselves, remotely, whereas less experienced workers may require more accountability ^{and guidance} to get their work done.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 1120 per month

$$\text{rent} = 250 + 0.8(900)$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

$$\text{rent} = 250 + 720 + 150$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

The average rent increases by \$150 a month when the apartment allows pets.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2

$$P = 50 + 2t + 10d + 0.8(td)$$

$$P = 50 + 2t$$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 2.8

$$P = 50 + 2 + 10 + 0.8 \quad \text{vs. } P = 50 + 4 + 10 + 1.6$$

$$62.8$$

$$64 + 1.6$$

$$65.6$$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Amina Taiyan

Student ID: 4782263

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
- I will not use any digital resources unless explicitly allowed by the instructor.
- I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
- B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
- C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
- D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

An increase in exam score is associated with one more hour of studying.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{in-office}} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

Every increase in productivity is associated with the worker working remotely, holding everything else constant.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

We are comparing two people with same work experience, differ when working remotely or in office.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month $= 250 + 0.8 \cdot 900 + 150 \cdot 0 =$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $=$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

An apartment that allows pet is \$150 more expensive than apartment that don't allow.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52 Decrease Lower performance score

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 62.8 (Increase) Higher performance score

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

(A) Employees with degrees have 0.8 higher performance scores

(B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

(C) Training is 0.8 times as effective for degree holders

(D) Employees with degrees complete 0.8 more training hours

Name: Asliddin Nurboev

Student ID: 4571391

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

AN I will complete this MiniExam solely using my own work.

AN I will not use any digital resources unless explicitly allowed by the instructor.

AN I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

The effect of each extra hour studied to the exam score when GPA held constant.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{experience}} + \varepsilon$$

b) Interpret the coefficient on **remote** in one sentence:

Difference that remote employees have in productivity score when experience held constant. → (could be + or -)

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Holding experience constant helps us to see difference between productivity a lot clearer which means we are assessing productivity based on solely on remote and in office workers when they have same experience.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month $250 + 0.8 \times 900 + 150 \times 0 = 250 + 720 + 0 = 970$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $250 + 720 + 150 \times 1 = 970 + 150 = 1120$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Rent is \$150 higher if pets allowed in the unit.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52 $50 + 2.0 \times 1 + 10 \times 0 + 0.8 \times (1 \times 0) = 52$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 62.8 $50 + 2 \times 1 + 10 \times 1 + 0.8 \times (1 \times 1) = 62.8$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Grace Burge

Student ID: 4647455

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
- I will not use any digital resources unless explicitly allowed by the instructor.
- I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
- B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
- C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
- D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

The higher score associated w/ one extra hour of studying.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

The higher productivity associated w/ those who work remotely

score

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Comparing two people w/ the same work experience allows us to only have working remotely vs. in-office as variables.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month $250 + 0.8(900) + 0(150) = \970

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $250 + 0.8(900) + 1(150) = \$1,120$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Every apartment that allows pets is predicted to have an additional \$150 charge in rent.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52 $50 + 2(1) + 10(0) + 0.8(1 \times 0) = 52$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 62.8 $50 + 2(1) + 10(1) + 0.8(1 \times 1) = 62.8$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

- A) Employees with degrees have 0.8 higher performance scores
- B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without
- C) Training is 0.8 times as effective for degree holders
- D) Employees with degrees complete 0.8 more training hours

Name: Emily Nguyen

Student ID: 4589082

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
- I will not use any digital resources unless explicitly allowed by the instructor.
- I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
- B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
- C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
- D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

Extra points associated with one more hour of studying.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{Score} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

Additional productivity score for those who work remote.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Now comparing two people with the same work experience, where before you compared everyone.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month

$$\begin{array}{r} 900 \\ \times 0.8 \\ \hline 720.0 \\ + 250 \\ \hline 970 \\ + 150 \\ \hline 1120 \end{array}$$

$$\text{rent} = 250 + 0.8(900) + 150(0)$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

$$\begin{array}{r} 250 + 0.8(900) + 150(1) \\ \hline 1120 \end{array}$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Apartments that allow pets are 150 more expensive per month than ones that do not allow pets.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: +2 $= 50 + 2(+1) + 10(0) + 0.8(0) = 52$
 $(+2 \text{ performance for every additional hour})$ (50)

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: +2.8 $= 50 + 2(+1) + 10(1) + 0.8(+1 \times 1) = 62.8$
 $(+10 \text{ for having degree THEN } +2.8 \text{ for each add. hour})$ (60)

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: J J Sensibar

Student ID: 4860646

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

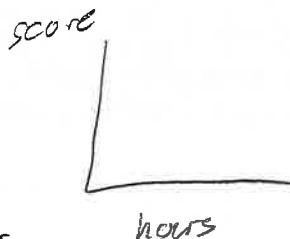
The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$



b) Interpret the coefficient on hours in one sentence:

For students with the same prior GPA, the average change in score for each additional hour of study time

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience}$$

b) Interpret the coefficient on remote in one sentence:

For employees with the same amount of experience, the average change in productivity between remote workers (0) & in office (1)

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Experience is a confounding variable, if you didn't control for it you wouldn't know if your employees were actually more productive based on location or just more experienced which likely makes them more productive.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month $250 + 0.8(900) + 150(0)$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $250 + 0.8(900) + 150(1)$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

apartments that allow pets are on average \$150 more expensive than apartments of the same size that don't allow pets.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52 $50 + 2(1) + 10(0) + 0.8(0)$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 62.8 $50 + 2 + 10 + 0.8(1+1)$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

additional return on investment

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Sophia Chebli

Student ID: 4642360

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- S.C. I will complete this MiniExam solely using my own work.
S.C. I will not use any digital resources unless explicitly allowed by the instructor.
S.C. I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

The higher score wi every additional hour a person studies

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$$



b) Interpret the coefficient on remote in one sentence:

For every additional unit of productivity for remote workers

c) Why might we want to control for experience when studying the effect of remote work on productivity?

You can compare two people wi the same experience to get the best view of productivity

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 800 per month

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 950 per month

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

An apartment that allows pets is \$150 more expensive than one that does not.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

units = quality of performance

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 10.8 units

$$0.8 + 10 = 10.8$$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 82 units $50 + 2 + 10 + (10 \cdot 2) = 62 + 20 = 82$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Chase Arthur

Student ID: 4628108

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

The higher the score associated with one more hour of studying X y

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity Scores} = \beta_0 + \beta_1 \cdot \text{Remote} + \beta_2 \cdot \text{YOE} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

The additional productivity score for remote workers, productivity score will be effected by β_1 given they work remote

c) Why might we want to control for experience when studying the effect of remote work on productivity?

We can compare two peoples score based on their years of experience

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month $250 + .8(900) + 150(0)$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1170 per month $250 + .8(900) + 150(1)$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Monthly rent increases by 150\$ when pets are allowed

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2 an increase of 2 for every additional hour

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 17.8 an increase of 12.8 for every hour with a degree

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Christian Ketels

Student ID: 4704976

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \underline{\text{hours}} + \varepsilon$
B) ~~$\text{score} = \beta_0 + \beta_1 \cdot \underline{\text{GPA}} + \varepsilon$~~
C) $\text{score} = \beta_0 + \beta_1 \cdot \underline{\text{hours}} + \beta_2 \cdot \underline{\text{GPA}} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \underline{\text{hours}} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

how does one more hour of studying affect exam score.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{Score} = \beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{exp:}} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

~~How does remote work affect productivity?~~

work
after accounting for experience,
remote workers have "this"
much higher productivity scores.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

So we can ~~make~~ ~~comparisons~~ ~~while holding~~
See how remote work affects productivity for differing amounts
of work experience

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 170 per month $= 250 + 0.8 \cdot 900 + \beta_2 \cdot 0 + \varepsilon$

No calc $\frac{11}{\square}$
 $250 + 0.8 \cdot 900 + 150 + \varepsilon$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 170 per month $= 250 + 0.8 \cdot 900 + 150 + \varepsilon$

$250 + 0.8 \cdot 900 + 150 + \varepsilon$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Apartments that allow pets see an increase per sqft of \$150 $\frac{150+250}{250}$

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52 $50 + 2 \cdot 1 + 10 \cdot 0 + 0.8 \cdot (1 \times 0) + \{$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 62.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

- A) Employees with degrees have 0.8 higher performance scores
- B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without
- C) Training is 0.8 times as effective for degree holders
- D) Employees with degrees complete 0.8 more training hours

Name: Jack Bochhoris

Student ID: 4631986

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

The coefficient for hours represents how many increase in exam score per hour studied.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{Productivity Score} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{in-office} + \varepsilon$$

b) Interpret the coefficient on **remote** in one sentence:

The Productivity Score for remote workers

c) Why might we want to control for experience when studying the effect of remote work on productivity?

People that may have just started may either work harder or slower depending on if they are remote. When we control experience, it eliminates a confounding variable that may effect productivity scores.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

Don't have a calc but these are the equations

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ ____ per month

$$250(0.8 \cdot 900) =$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ ____ per month

$$250(0.8 \cdot 900) + 150 =$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

If a pet is allowed there will be a \$150 dollar charge for that pet

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

10 2 10 10

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2 $50 + (2 \cdot 1) + 0$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 2.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Bailey Michalak

Student ID: 4614927

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

BM I will complete this MiniExam solely using my own work.

BM I will not use any digital resources unless explicitly allowed by the instructor.

BM I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

For every extra hour that someone studies, they will see an improvement on their exam scores.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\frac{\text{Productivity}}{\text{Score}} = \beta_0 + \beta_1 \cdot \underline{\text{remote}} \cdot \underline{\text{office}} + \beta_2 \cdot \underline{\text{yrs of}} \underline{\text{experience}} + \epsilon$$

b) Interpret the coefficient on remote in one sentence:

For every year that someone works remote, they will have a point higher in productivity score than someone who works in office.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Someone who has more years of experience might be more productive regardless of their work location.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month = $250 + 0.8(900) + 150 \cdot 0$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month = $250 + 0.8(900) + 150 \cdot 1$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

An apartment that allows pets costs \$150 more per month than one that doesn't allow pets.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52 = $50 + 2(1) + 10(0) + 0.8(1 \cdot 0) + \varepsilon$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 62.8 = $50 + 2(1) + 10(1) + 0.8(1 \cdot 1) + \varepsilon$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Coco Reed

Student ID: 4531679

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
- I will not use any digital resources unless explicitly allowed by the instructor.
- I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
- B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
- C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
- D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

β_1 = the increase in exam scores associated with one more hour of studying

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable `remote` is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity score} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$$

b) Interpret the coefficient on `remote` in one sentence: (one more)

increase/difference in productivity for each employee that works remotely

c) Why might we want to control for experience when studying the effect of remote work on productivity?

so that we can study/compare 2 people w/ the same work experience versus comparing everyone

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

$$\begin{aligned} \text{rent} &= 250 + 900(0.8) \\ &\quad + 150(0) \\ &= 250 + 720 = 970 \end{aligned}$$

1 ep. 8
x 900

+ 150

1170

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

$$\begin{array}{r} 970 \\ + 150 \\ \hline 1120 \end{array}$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

there is a increase of \$150.0 on rent for those apartments that allow pets, holding everything else constant

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

$$P = 50 + 2(T) + 10(D) + 0.8(T \cdot D) + \varepsilon$$

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 53

$$\begin{aligned} P &= 50 + 3.0(1) + 10(0) + 0.8(0) + 2 \\ &= 53 \end{aligned}$$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 63.8

$$\begin{aligned} P &= 50 + 3.0(1) + 10(1) + 0.8(1) \\ &= 63.8 \end{aligned}$$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without extra returns on investment (time)

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Ryan Olijol

Student ID: 4785321

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
- I will not use any digital resources unless explicitly allowed by the instructor.
- I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
- B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
- C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
- D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

When hours increases, how does that affect the score, given GPA remains the same

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{Productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

how much working remotely changes the productivity, given the experience is controlled

c) Why might we want to control for experience when studying the effect of remote work on productivity?

different experiences would lead to different productivity, so controlling it lets us more clearly see how remote effect productivity

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month $250 + 900 \times 0.8$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $250 + 900 \times 0.8 + 150$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

If pets are allowed, price/apartment increases by \$150

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2 units

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: .8 more than if you didn't have degree

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Henry Cooper

Student ID: 4730704

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

HC I will complete this MiniExam solely using my own work.

HC I will not use any digital resources unless explicitly allowed by the instructor.

HC I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on **hours** in one sentence:

The change in exam scores associated with an additional hour of study.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote is coded as 1 for remote workers and 0 for in-office workers.**

a) Write the regression model:

Productivity
Score = $\beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{experience}} + \varepsilon$

b) Interpret the coefficient on **remote** in one sentence:

How productivity score changes on the basis of being a remote worker compared to in-office worker.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Rather than comparing all workers, the control allows us to compare two workers with the same years of experience to truly test the role that environment plays while working.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

For apartments with pets allowed, an additional 150\$ per month is owed in rent.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2.0

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 10

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Ryan Berry

Student ID: 4757443

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

The change in score for every extra study hour

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{Productivity} = \beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{Experience}} + \epsilon$$

b) Interpret the coefficient on **remote** in one sentence:

The difference in productivity of a remote worker compared to in-office when accounting for work experience

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Because a more experienced worker might have a higher productivity

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month $250 + 900 \cdot 0.8 = 720 + 250 = 970$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $670 + 150 = 1120$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

The rent of an apartment that allows pets is \$150 more when accounting for square feet.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 2.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Shanvi Sharma

Student ID: 464126

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

The extra points associated with one more hour of studying

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{experience}} + \epsilon$$

b) Interpret the coefficient on **remote** in one sentence:

extra productivity associated with remote

c) Why might we want to control for experience when studying the effect of remote work on productivity?

now we compare two people with the same work experience instead of everyone.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$_____ per month

$$250 + .800 \times 900 + 150 = \begin{matrix} \text{Iran out} \\ \text{of time} \\ \text{!!} \end{matrix}$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$_____ per month

$$250 + .800 \times 900 + 150 + \text{not allowed}$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

A apartment that allows pets is 150 more expensive than one that does not allow

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

$$50 + 2.0 \cdot \text{training} + 10 \cdot \text{degree} + 0.8 \cdot (\text{training} \times \text{degree})$$

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: _____

0.8 increase in performance

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: _____

2.0 increase per additional hour

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

I'm sorry I did ~~not~~
so bad on this
one !!

Name: Charlie Voss

Student ID: 4716256

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on **hours** in one sentence:

the coefficient on hours means the extra score associated with 1 more hour spent studying

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote is coded as 1 for remote workers and 0 for in-office workers.**

a) Write the regression model:

~~productivity scores~~ $= \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \epsilon$

b) Interpret the coefficient on **remote** in one sentence:

Up How much extra is earned on productivity scores for those who work remote.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

So we can compare two people with same experience, when before we compared everyone, focusing on the factors of remoteness.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month

$$\text{rent} = 250 + 0.8 \cdot 900 + 150 \cdot 0 = \underline{\underline{720}}$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

$$\text{rent} = 250 + 0.8 \cdot 900 + 150 \cdot 1 = \underline{\underline{1120}}$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

An apartment that allows pets is \$150 more expensive.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 20

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 50

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: giana torri

Student ID: 4636747

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

gt I will complete this MiniExam solely using my own work.

gt I will not use any digital resources unless explicitly allowed by the instructor.

gt I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how ~~x~~ study hours affect exam scores while controlling for prior GPA. ~~y~~ ~~z~~

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

Q2. A company wants to test whether employees who work ~~x~~ remotely have different ~~y~~ productivity scores than those who work in-office, while controlling for ~~years of experience~~. The variable ~~remote~~ is coded as 1 for remote workers and 0 for in-office workers. ~~z~~

a) Write the regression model:

$$\text{Score} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{years} + \varepsilon$$

(experience)

b) Interpret the coefficient on remote in one sentence:

the added score for those who work remotely

c) Why might we want to control for experience when studying the effect of remote work on productivity?

to make sure the "playing field" is equal, as years of experience changes the outcome of productivity greatly

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

$$\begin{array}{r}
 900 \\
 * 0.8 \\
 \hline
 720.0 \\
 250 \\
 \hline
 970.0
 \end{array}
 \quad
 \begin{array}{r}
 +150 \\
 \hline
 1120
 \end{array}$$

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$970 per month price = 250,000 + 0.800 · 900 + 150,000 · 0

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$1120 per month price = 250,000 + 0.800 · 900 + 150,000 · 1

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

The price of rent for an apartment that allows pets is 150 dollars more than one that does not.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2.0

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 0.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Connor Richards

Student ID: 457 9086

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

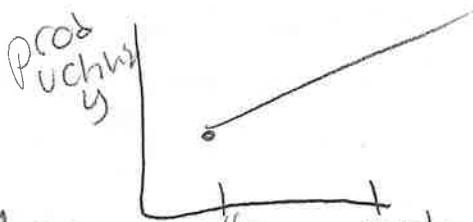
b) Interpret the coefficient on hours in one sentence:

The additional exam score associated w/ 1 more hour of studying.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

productivity = $\beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{yrs of experience} + \varepsilon$



b) Interpret the coefficient on remote in one sentence:

The additional productivity is associated w/ 1 more remote employee.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Comparing on more of a level playing field,

Similar ε variable rather than holding the experience side accountable,

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

$\approx 0 - 8(900) \quad 150 \quad 0 \text{ or } 1$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

If leaser has a pet, there is a \$150 upcharge to rent.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

$5.0 + 2(1) + 10(1 \text{ or } 0) + 0.8 (-1 \text{ or } 1) \times 1 \text{ or } 0 + \varepsilon$

The estimated coefficients are: $\beta_0 = 5.0$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 7

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 17.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Amer Banawan

Student ID: 4640677

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

Additional increase in exam score associated with 1 more study hour.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model: $(\text{in office} \times$
Productivity Score $= \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{Experience}$)

b) Interpret the coefficient on remote in one sentence:

Additional increase in productivity score when working remote.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Now we're comparing people with the same experience, when before we compared everyone.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 710 per month $\text{rent} = 250 + 0.800 \times 900 + 150 \times 0$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $\text{rent} = 250 + 0.800 \times 900 + 150 \times 1$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Predicted monthly rent is \$150.00 more expensive when pets are allowed, versus when they're not.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2.0

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 0.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Ella Shroff

Student ID: 4751899

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

The exam score associated with one more study hour.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable `remote` is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity scores} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$$

b) Interpret the coefficient on `remote` in one sentence:

The change in productivity score associate with working remotely.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

so we can compare people with the same amount of experience.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month

$$250 + 0.8(900) + 0 = \frac{250}{+ 720} \underline{\underline{970}}$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

$$\begin{array}{r} 1970 \\ + 150 \\ \hline 1120 \end{array}$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Rent increases by 150 if pets are allowed.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: increase in performance by 2

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: increase in performance by 12.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Maya Evans

Student ID: 4743118



ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- ME I will complete this MiniExam solely using my own work.
ME I will not use any digital resources unless explicitly allowed by the instructor.
ME I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$

$$\beta_0 + \beta_1(\text{study}) + \beta_2(\text{GPA}) + \epsilon$$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

The extra exam score percentage associated with one more hour of studying

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable `remote` is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{in-office} + \beta_2 \cdot \text{remote} + \epsilon$$

b) Interpret the coefficient on `remote` in one sentence:

The additional productivity for remote workers

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Now we can compare two people with the same work experience while before you compared everyone

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 1150 per month

$$\text{rent} = \beta_0 + \beta_1 \cdot 900 + \beta_2 \cdot (0)$$

$$250 + 900$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1300 per month

$$\text{rent} = \beta_0 + \beta_1 \cdot 900 + \beta_2 \cdot 1 =$$

$$+ 150 \times 1$$

$$1150$$

$$150$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Apartments with pets allowed are 150 dollars more expensive than those without pets.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52

$$50 + 2.0 \cdot 1$$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 52.8

$$50 + 2.0(1) + 0.8(1 \times 1) \cdot 8 = 50 + 2 + 0.8 \cdot 8$$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: myriam Randidja

Student ID: 4545505

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

A higher score is associated with one more hour of studying

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{prod} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{years of experience} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

Additional productivity for those who work remotely

c) Why might we want to control for experience when studying the effect of remote work on productivity?

To see if experience is contributing to productivity compared to work place location.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

$$250 + 0.8 \cdot 900 + 150$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 830 per month

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1180 per month

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Rent is 150 more expensive when you have a pet

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 12

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 56

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Allyson Yedrdji

Student ID: 4751143

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
 C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on **hours** in one sentence:

An increase in exam score for one extra hour of studying.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

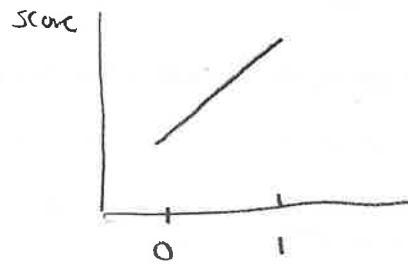
$$\text{Score} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$$

b) Interpret the coefficient on **remote** in one sentence:

Increase in productivity score when working remote.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

We only want to compare those who work in-office vs remote, controlling the experience would make sure they have the same experience.



Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month $250 + (0.800 \times 900) + (150 \cdot 0) = 970$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month $250 + (0.800 \times 900) + (150) =$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

The extra cost of one additional pet is 150.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2.0 increase $50 + 2 \text{ increase}$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 0.8 increase $50 + 0.8(2 \cdot 10) =$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Alex Sarris

Student ID: 4621267

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

AS I will complete this MiniExam solely using my own work.

AS I will not use any digital resources unless explicitly allowed by the instructor.

AS I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon \quad \times$

b) Interpret the coefficient on hours in one sentence:

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable `remote` is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

Productivity = $\beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$

b) Interpret the coefficient on `remote` in one sentence:

Higher productivity scores for those who work remote

c) Why might we want to control for experience when studying the effect of remote work on productivity?

Those with more experience may be more skilled, possibly increasing their productivity scores. This would make it more difficult to determine whether the work location has an impact on productivity.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \epsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

$$250 + 0.8 \times 900 + 150$$

Answer: \$ 970 per month

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

$$250 + 0.8 \times 900 + 150$$

Answer: \$ 1120 per month

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

Apartments that allow pets cost an additional \$150.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \epsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 50

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 2.0

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders \times

D) Employees with degrees complete 0.8 more training hours \times

Name: Hamsa Bandi

Student ID: 4727075

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
- I will not use any digital resources unless explicitly allowed by the instructor.
- I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \epsilon$
- B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \epsilon$
- C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$
- D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \epsilon$

b) Interpret the coefficient on hours in one sentence:

The additional score associated with one more hour of studying

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \epsilon$$

b) Interpret the coefficient on remote in one sentence:

The additional productivity score for those working remotely

c) Why might we want to control for experience when studying the effect of remote work on productivity?

We would be comparing two people with the same experience, rather than comparing everyone

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 250 + 0.800 \cdot 900 + 150 \cdot 0 =

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 250 + 0.800 \cdot 900 + 150 \cdot 1 =

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

An apartment that does allow pets is \$150 more expensive than one that doesn't

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 320 $2 \times 10 = 20$ $20 + 0.8 \cdot 20 = 320$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

320

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: JARED SHANKEN

Student ID: 4723953

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

JS I will complete this MiniExam solely using my own work.

JS I will not use any digital resources unless explicitly allowed by the instructor.

JS I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

For every extra hour studied, your grade increases/decreases by X amount when controlling for prior GPA

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable `remote` is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

Productivity Score = $\beta_0 + \beta_1 \cdot \text{Remote} + \beta_2 \cdot \text{Years of Experience} + \varepsilon$

b) Interpret the coefficient on `remote` in one sentence:

β_1 represents the slope of the regression, so it's the increase/decrease in productivity when moving from 0 to 1 (in office \rightarrow remote)

c) Why might we want to control for experience when studying the effect of remote work on productivity?

We may want to control for experience because someone who is more experienced may be more productive at home, or in office (regardless of location), so to truly see how location affects productivity, we should control for experience

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ per month

$$\begin{aligned} \text{Rent} &= \beta_0 + \beta_1(\text{sqft}) + \beta_2(\text{pets}) \\ &= 250 + 0.8(900) \end{aligned}$$

 250 + 0.8(900) dollars
month

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ per month

$$\begin{aligned} \text{Rent} &= 250 + 0.8(900) + 150(1) \\ &= 250 + 0.8(900) + 150 \end{aligned}$$

 400 + 0.8(900) dollars
month

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

For every 1 extra pet, rent then increases by \$150

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 52 + ε

$$\beta_0 + \beta_1(\text{training}) + \beta_2(\text{degree}) + \beta_3(\text{training} \times \text{degree}) = 50 + 2(0) + 10(0) + 0.8(1 \times 0)$$

 50 + 0 + 0 + 0 50 + ε

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 62.8 + ε

$$\beta_0 + \beta_1(\text{training}) + \beta_2(\text{degree}) + \beta_3(\text{training} \times \text{degree}) + \varepsilon = 50 + 2(1) + 10(1) + 0.8(1 \times 1)$$

 50 + 2 + 10 + 0.8 62.8 + ε

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Johnny Gerardi

Student ID: 4487372

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
 I will not use any digital resources unless explicitly allowed by the instructor.
 I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

- A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$
B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$
C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$
 D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

An additional hour of studying improves exam score by β_1 .

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

$$\text{Productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{remote} \times \text{years} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

β_1 + β_2 times their years of experience

c) Why might we want to control for experience when studying the effect of remote work on productivity?

How productive a worker is while working remote may be impacted by how much on-the-job experience they have. Likely they will be more productive given more experience because they will have fewer questions/need less guidance and working remote makes it difficult for communication.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

A pet allowed in an apartment comes with a fixed upcharge of \$150 per month.

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 2.0

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 2.8

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours

Name: Aidan Burnard

Student ID: 4653239

(Thanks for a great semester, this class has been super valuable to me!!)

ECON 0150 | MiniExam 5 | Fall 2025

This MiniExam will take 20 minutes with a quick break to follow. MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

AB I will complete this MiniExam solely using my own work.

AB I will not use any digital resources unless explicitly allowed by the instructor.

AB I will not communicate directly or indirectly with others during the MiniExam.

Q1. A researcher studies how study hours affect exam scores while controlling for prior GPA.

a) Which regression model answers this question? (circle one)

A) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \varepsilon$

B) $\text{score} = \beta_0 + \beta_1 \cdot \text{GPA} + \varepsilon$

C) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \varepsilon$

D) $\text{score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot (\text{hours} \times \text{GPA}) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

the higher score on exam associated w/ one more hour of studying.

Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

prod. score = $\beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$

b) Interpret the coefficient on **remote** in one sentence:

the production score ~~based~~ incr. based on if someone is remote vs someone in-office.

c) Why might we want to control for experience when studying the effect of remote work on productivity?

people who have more years of experience may inherently be faster workers regardless of location compared to new workers. controlling this prevents confounds from skewing data.

Q3. A researcher collected data on 120 apartments and estimated the following model:

$$\text{rent} = \beta_0 + \beta_1 \cdot \text{sqft} + \beta_2 \cdot \text{pets_allowed} + \varepsilon$$

Where rent is in dollars per month, sqft is in square feet, and pets_allowed = 1 for apartments that allow pets and pets_allowed = 0 for those that don't. The regression output shows:

	coef	std err	t	P> t
Intercept	250.000	45.000	5.556	0.000
sqft	0.800	0.035	22.857	0.000
pets_allowed	150.000	38.000	3.947	0.000

a) What is the predicted monthly rent for a 900 sqft apartment that does NOT allow pets?

Answer: \$ 970 per month

$$0.8 \cdot 900 + 0 + 250$$

b) What is the predicted monthly rent for a 900 sqft apartment that DOES allow pets?

Answer: \$ 1120 per month

$$0.8 \cdot 900 + 150 + 250$$

c) Interpret the coefficient on pets_allowed (150.000) in one sentence:

if the place allows pets, it increases the rent by approx. \$150.
= (1)

Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

$$\text{performance} = \beta_0 + \beta_1 \cdot \text{training} + \beta_2 \cdot \text{degree} + \beta_3 \cdot (\text{training} \times \text{degree}) + \varepsilon$$

The estimated coefficients are: $\beta_0 = 50$, $\beta_1 = 2.0$, $\beta_2 = 10$, $\beta_3 = 0.8$.

a) What is the effect of one additional hour of training on performance for employees without a degree?

Answer: 50 + 2 (only $\beta_1 \cdot \text{training}$) $50 + 2.0(1) \cdot 1 + 0 + 0$

b) What is the effect of one additional hour of training on performance for employees with a degree?

Answer: 50 + 2.8 $\frac{\beta_1 \cdot \text{training}}{\beta_3 \cdot (\text{inter.})} + 2.0$ $50 + 2.0(1) + 10 \cdot 1 + 0.8(2 \cdot 1)$

c) The interaction coefficient ($\beta_3 = 0.8$) tells us: (circle one)

A) Employees with degrees have 0.8 higher performance scores

B) An additional hour of training increases performance by 0.8 more for employees with degrees than those without

C) Training is 0.8 times as effective for degree holders

D) Employees with degrees complete 0.8 more training hours