

Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

## ECON 0150 | MiniExam 5 | Fall 2025

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### Academic Conduct Code

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**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:

$$\text{_____} = \beta_0 + \beta_1 \cdot \text{_____} + \beta_2 \cdot \text{_____} + \varepsilon$$

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: Jason Perillo

Student ID: 4713813

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**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 better exam scores associated with an 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:

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

b) Interpret the coefficient on remote in one sentence:

the extra productivity scores from working remotely

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

Having more experience might have more effect on productivity regardless of 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

$$\text{rent} = 250 + 0.800(900) + 150(0)$$

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 more expensive than one that does not (monthly).

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: 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: Xifan Zheng

Student ID: 4681906

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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, the more hour spend on study, the higher ~~GPA~~ exam score students ~~expected~~ expected to have.

**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:

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

remote and in office workers

b) Interpret the coefficient on remote in one sentence:

different productivity between ~~the~~ with same ~~productivity~~ experience

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

To see ~~what~~ what kind of workers are more productive in a fair way, because experience also affect 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

$$720 + 250$$

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?

$$720 + 250 + 150$$

Answer: \$1120 per month

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

have pet or ~~pet not~~ has a average change 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:  $\beta_0 = 50$ ,  $\beta_1 = 2.0$ ,  $\beta_2 = 10$ ,  $\beta_3 = 0.8$ .

$$0.8 \times (1) + 2.0 (0 \times 0) + 50$$

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

Answer: 2

~~circle one~~

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: Ruixuan Li

Student ID: 4681348

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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:

$\beta_1$ , represent the expected change in exam score for each additional hour studied, 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:

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

b) Interpret the coefficient on remote in one sentence:

$\beta_1$ , measure the difference in productivity between remote and in-office workers for employees with the same amount of experience.

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

Because experience also affect productivity, and if remote workers have more or less experience on average, failing to control for it would bias the estimated effect of remote work.

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

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

$$250 \quad 0.8 \quad 150$$

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: \$ 970 per month  $250 + 0.8 \times 900 + 150 \times 0 = 970$

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

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

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

Apartment that allow pets charge on average \$150 more per month than otherwise identical apartment (same sqft)

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  $2.0 + 0.8 \times 0 = 2$

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

Answer: 2.8  $2.0 + 0.8 \times 1 = 2.8$

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

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: Adam Arlington

Student ID: 4844780

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**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 on scores that every extra hour of studying has.

**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:

$$\frac{\text{productivity}}{\text{Score}} = \beta_0 + \beta_1 \cdot \underline{\text{Remote}} + \beta_2 \cdot \underline{\frac{\text{Years of}}{\text{experience}}} + \varepsilon$$

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

The average extra productivity of an employee who works remotely compared to in-office workers

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

Since now we can compare the difference in productivity between those with the same experience since it can't have an underlying effect 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: \$ 970 per month

$$250 + 900(0.8) + 150(0) = 970$$

$$\begin{array}{r} 180 \\ 2 \\ \hline 200 \\ -180 \\ \hline 20 \\ -10 \\ \hline 10 \\ -10 \\ \hline 0 \end{array}$$

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

Answer: \$ 1120 per month

$$970 + 150(1) = 1120$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

The average extra cost of an apartment that allows 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

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: Christian Ercol

Student ID: 4712 726

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

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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 hour you study the higher the 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:

$$\text{Productivity Scores} = \beta_0 + \beta_1 \cdot \frac{\text{Working}}{\text{Env}} + \beta_2 \cdot \frac{\text{Yrs of Experience}}{\text{Env}} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

people who work remote have a higher productivity score

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

people with more experience should have the same amount of productivity in any setting

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: \$ 756 per month

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

Answer: \$ 156 per month

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

~~For every additional hour of training, the rent increases by \$150.~~

*Every addition ~~hour~~ ~~per hr~~ of*

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: ~~\$10~~ \$0.50

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: Sofia Heimel

Student ID: 4714846

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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 exam scores are associated with 1 extra hour learning

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:

Productivity score for each remote worker

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

Comparing for 2 people instead of everyone  
↓  
(Same exp.)

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  $P = 250.0 + 0.800 \times 900 + 150.0 \times 0 =$

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

Answer: \$ 870 per month  $P = 150.0 + 0.800 \times 900 + 250.0 \times 1 =$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

an apartment that allows Pets is \$150 more than no 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: P=52  $P = 50 + 2.0 \cdot 1 + 10 \cdot 0 + 0.8(1 \cdot 0) + \varepsilon$

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

Answer: P=62  $P = 50 + 2.0 \cdot 1 + 10 \cdot 1 + 0.8(1 \cdot 1) + \varepsilon$

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: Madeline Karpas

Student ID: 4730220

## ECON 0150 | MiniExam 5 | Fall 2025

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MK 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/grade on an exam score that is associated with one more hour of studying holding prior 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:

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

b) Interpret the coefficient on remote in one sentence:

The extra productivity added from working remote holding experience constant.

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

So that instead of comparing everyone now we compare two workers 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?

Answer: \$1120 per month  $\text{rent} = 250 + (.800 \cdot 900) + (150 \cdot 0) = 1120$

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

Answer: \$970 per month  $\text{rent} = 250 + (.800 \cdot 900) + (150 \cdot 1) = 970$

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 does 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:  $2.0 = \beta_1$

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

Answer:  $2.8 = \beta_1 + \beta_3$

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: Kyle Molz

Student ID: 4660576

## ECON 0150 | MiniExam 5 | Fall 2025

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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 extra increase in exam score associated with 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:

$$\text{prod-scores} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

How much prod scores increase for working 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 the same experience when finding remote instead of every like before.

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  $250 + 900(0.8) + 150(0) = 970$

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

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

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

A house that allows pets is \$150 more per month 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  $B_1 = 2$

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

Answer: 2.8  $B_1 + B_3 = 2 + 0.8 = 2.8$

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: Abidemi Asante

Student ID: 4506550

## ECON 0150 | MiniExam 5 | Fall 2025

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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 tells you how much your score increases with 1 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:

$$\frac{\text{productivity}}{\text{Score}} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{Office worker} + \epsilon$$

b) Interpret the coefficient on remote in one sentence:

The coefficient on remote tells you how much productivity increases for every 1 remote worker

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

You would want to control because years of experience would ~~not~~ add variables that would cause bias to the score.

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

$$250 + .800 \cdot 900 + 150.00 \cdot 0 = \\ 250 + .800 \cdot 900 =$$

Sorry no calculator

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

Answer: \$\_\_\_\_\_ per month

$$250 + .800 \cdot 900 + 150.00 \cdot 1 =$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

That's the amount in dollars you pay for every 1 dog.

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

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 X

D) Employees with degrees complete 0.8 more training hours X

Name: Kenyi Zhang

Student ID: 4692242

## ECON 0150 | MiniExam 5 | Fall 2025

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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:

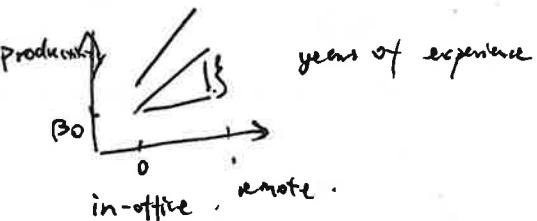
~~with 1 hour increase, the extra return~~  $\checkmark$  ~~for 1 hour increase~~  $\checkmark$  ~~is beta score~~,  $\checkmark$  ~~on exam score~~.

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:

~~Productivity~~  $\frac{\text{Score}}{\text{Productivity}} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{year} + \varepsilon$

b) Interpret the coefficient on remote in one sentence:



~~Productivity score~~  $\checkmark$  ~~remotely~~ is  $\beta_1$  more than in-office workers, everything else constant.

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

~~It prevent~~ It ~~can~~ compares in-office and remote ~~work~~ under the same condition, prevent the result from being influenced by other factor.

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

$$250 + 0.8 \times 900 + 150 \times 0 = 970$$

720.

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

Answer: \$ 1120 per month

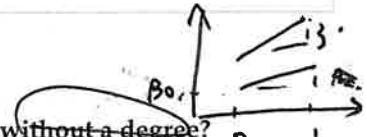
$$250 + 0.8 \times 900 + 150 \times 1 = 1120$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

the rent for pets-allowed apartment is 150 dollar more expensive than those not 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). everything else constant.

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

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.

$$50 + 2 \times 1 + 10 \times 0 + 0.8 \times 0 + \varepsilon$$

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

Answer: 12.8.

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

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

12.8

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 Gallup

Student ID: 4539909

## ECON 0150 | MiniExam 5 | Fall 2025

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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 increased exam scores associated with more study hrs

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 the employees are working (e.g. remote or in-office)

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

It allows us to compare people with the same amount of work experience, where 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	a 0.800	0.035	22.857	0.000
pets_allowed	b 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  $\text{rent} = 250 + (0.8 \times 900) + (150 \times 0)$   
 $= 250 + 720 + 0 = 970$

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

Answer: \$ 1120 per month  $\text{rent} = 250 + (0.8 \times 900) + (150 \times 1)$   
 $= 250 + 720 + 150 = 970 + 150 = 1120$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

An apartment that allows pets is \$150 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:  $\beta_0 = 50$ ,  $\beta_1 = 2.0$ ,  $\beta_2 = 10$ ,  $\beta_3 = 0.8$ .

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

Answer: +2  $= 50 + (2 \times 10) + (10 \times 0) + (0.8 \times 10 \times 0)$   $= 50 + (2 \times 11) + (10 \times 0) +$   
 $= 50 + 22 + 0 = 72$   $(0.8 \times 11 \times 0)$

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

Answer: +2.8  $= 50 + 2(10) + 10(1) + 0.8 \times 10 \times 1$   $= 50 + 2(11) + 10(1) + (0.8 \times 11 \times 1)$   
 $= 50 + 20 + 10 + 8 = 88$   $= 50 + 22 + 10 + 8.8 = 90.8$

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: Abeer Mostafa

Student ID: 1637120

## ECON 0150 | MiniExam 5 | Fall 2025

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**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:

Controlling for GPA, this is the avg. increase in score w/ 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:

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

b) Interpret the coefficient on remote in one sentence:

At 0 years of experience, this is the amount that remote scores are higher than in office scores.

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

B/c controlling for experience allows you to examine only remote vs in office in regards to productivity, and takes away experience as a confounding variable.

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	$\frac{900}{5} = 180$
sqft	0.800	0.035	22.857	0.000	250 +
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  $\text{rent} = 250 + (0.8)(900) + 0 = 250 + 720 = 970$

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

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

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

*Holding everything else constant, apartments that allow pets cost \$150 more 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: 10

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

Answer: 10.8

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: Anthony Chirincos

Student ID: 4907004

## ECON 0150 | MiniExam 5 | Fall 2025

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AC 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 more hours studied the more likely to score better

**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:

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

b) Interpret the coefficient on remote in one sentence:

whether remote workers are more effective than in house staff

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

Judging a new associate against someone w/ 10+ years of experience would skew the data too hard so we should compare those w/ similar experience to see genuine efficiency numbers.

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

$$6 \cdot 9 = 72$$

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

Answer: \$470 per month

$$250 + (0.800 \cdot 900) \rightarrow 250 + 720 \\ \begin{array}{r} 250 \\ + 720 \\ \hline 970 \end{array}$$

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

Answer: \$1120 per month

$$250 + (0.800 \cdot 900) + 150 \rightarrow 250 + 720 + 150$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

Apartments that allow pets are \$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).

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

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: ~~one extra hour for a non degree employee is 2x as effective~~

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

Answer: ~~one extra hour for a degree employee is 0.8x as effective~~

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: Luke Thompson

Student ID: 465L171

## ECON 0150 | MiniExam 5 | Fall 2025

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**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 every 1 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:

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

b) Interpret the coefficient on remote in one sentence:

The increase in productivity scores when a worker is remote compared to in-person.

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 same work experience instead of 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: \$ 970 per month  $250 + 0.8 \times 900 + 0 = 970$

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

Answer: \$ 1120 per month  $250 + 0.8 \times 900 + 150 = 1120$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

The increase in rent per month, when pet's are allowed compared to not allowed, 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  $\beta_1 = 2.0$

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

Answer: 2.8  $\beta_1 + \beta_3 = 2.8$

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: Joseph Covella

Student ID: 4515970

## ECON 0150 | MiniExam 5 | Fall 2025

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**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:

holding GPA constant, 1 additional hour is associated w/  $\beta_1$  increase in 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:

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

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

holding experience constant, when remote is true (1) we anticipate a  $\beta_1$  increase in prod-score

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

a) Correlation  $\neq$  causation, b) can't have more than 1 indep. var

c) testing by controlling  $\rightarrow$  basis of linearity

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

$$250 + 900(0.8)$$

$$\begin{array}{r} 90 \\ \times 8 \\ \hline 720 \end{array}$$

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

Answer: \$ 1120 per month

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

$$\begin{array}{r} 970 \\ + 150 \\ \hline 1120 \end{array}$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

Holding sqft constant, pets allowed when true w/ 150 is associated

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: 0.8

$$\begin{array}{r} 2 \\ \times \\ 0.8 \\ \hline 1.6 \end{array}$$

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

Answer: 1.8

$$10 \times 0.8 = 8$$

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: Chase Nass

Student ID: 4654536

## ECON 0150 | MiniExam 5 | Fall 2025

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**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 extra score associated with one 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.

a) Write the regression model:

$$\text{Score} = \beta_0 + \beta_1 \cdot \text{Remote} + \beta_2 \cdot \text{in office} + \varepsilon$$

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

It is the difference of working remote than in the office, while holding everything constant.

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

We can compare 2 people with the same job where before you compare 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

$$250 + .800 \times 900$$

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

Answer: \$ 1120 per month

$$250 + .800 \times 900 + (150 \times 1)$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

Every additional sqft is associated with \$150 extra in the price, holding everything the same

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: Performance  
by 2

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

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

Answer: Performance  
by 12.8

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

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

62.4

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: Madelyn Steele

Student ID: 106640

ECON 0150 | MiniExam 5 | Fall 2025

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

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 score increase associated with one more hour of studying, after we have controlled for previous 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

$$\underline{\text{scores}} = \beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \frac{\underline{\text{years of experience}}}{\underline{\text{experience}}} + \varepsilon$$

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

The increase in productivity scores associated with working remote, after we have controlled for work experience.

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

When controlling for work experience, we are able to compare 2 individuals with the same experience so that differences between remote and in-person work can be adequately prepared without other confounding variables (the result will most likely be different than if there was no control).

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: \$\_\_\_\_\_ 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: \$\_\_\_\_\_ per month

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

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

An apartment that allows pets is \$150 more expensive 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).

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

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: 62.8

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

Answer: 62

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: Mikailyn Matacavage

Student ID: 4656864

## ECON 0150 | MiniExam 5 | Fall 2025

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**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 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:

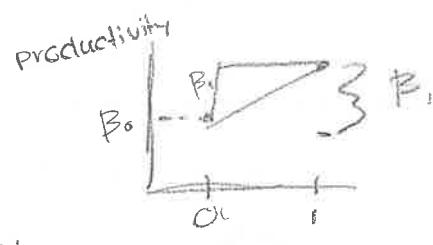
$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{year of ex.} + \varepsilon$$

b) Interpret the coefficient on remote in one sentence:

The increase in productivity associated with being remote or in-office.

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

Because there could be factors about working remotely that could affect the data in a negative way, and controlling helps avoid false answers.



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: \$  $\underbrace{\quad\quad\quad}_{250 + 0.800 \times 900 + 150 \cdot 0}$  per month

$$250 + 0.800 \times 900 \approx 250 + 720 \approx 970$$

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

Answer: \$  $\underbrace{\quad\quad\quad}_{250 + 0.800 \times 900 + 150 \cdot 1}$  per month

$$400 + 0.800 \times 900 \approx 400 + 720 \approx 1120$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

Rent on average rises 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: 2.0

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

Answer: 10.0

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: Zachary Tulce

Student ID: 4642754

## ECON 0150 | MiniExam 5 | Fall 2025

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I 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:

Test score increase associated with 1 additional hour of studying  
controlling for previous 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 =  $\beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{experience} + \varepsilon$

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

Change in productivity score associated with working  
remotely.

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

We want to see how remote vs in person work  
affects productivity scores for workers with the same level  
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

$$\begin{array}{r}
 400 \\
 5 \\
 \hline
 80 \\
 \times 4 \\
 \hline
 320 \\
 + 900 \\
 \hline
 1220 \\
 - 1000 \\
 \hline
 220 \\
 - 200 \\
 \hline
 20 \\
 - 10 \\
 \hline
 10 \\
 - 5 \\
 \hline
 5
 \end{array}$$

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

Answer: \$ 970 per month

$$250 + 0.8 \cdot 900 + 150 =$$

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

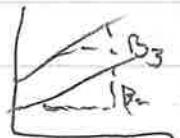
Answer: \$ 1120 per month

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

The additional cost of rent in an apartment that 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

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: Scarlett Weir

Student ID: 4759355

## ECON 0150 | MiniExam 5 | Fall 2025

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**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 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:

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

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

The productivity Scores associated with employees who work remotely.

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

We want to control for experience because it allows testing every employee, instead of comparing those with similar work experience. This allows the focus to remain on working remotely vs. in person.

**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  $\text{rent} = 250 + 0.800 \cdot 900 + (150 \cdot 0)$

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

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

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:  $\beta_0 = 50$ ,  $\beta_1 = 2.0$ ,  $\beta_2 = 10$ ,  $\beta_3 = 0.8$ .

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

Answer: 52  $\text{perf} = 50 + 2.0(1) + 10(0) + 0.8(1 \times 0)$

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

Answer: 62,8  $\text{perf} = 50 + 2.0(1) + 10(1) + 0.8(1 \times 1)$

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

Name: Eileen Hy

Student ID: 26410419

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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 scores (on avg) w/ an additional hr of studying, 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:

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

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

This coefficient represents change in productivity for a remote worker compared to an in-office worker, holding experience constant

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

You want to tease out the effect that experience has on productivity to isolate the effect of remote vs in-person. This is crucial since experience and productivity likely have a strong positive correlation.

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

$$250 + 0.8(900) \\ 250 + 720 = \underline{\underline{970}}$$

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

Answer: \$ 1120 per month

$$250 + 720 + 150 \\ = 910 + 150 = \underline{\underline{1120}}$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

This coefficient represents the expected ~~150~~ increase in monthly rent for an apartment that allows pets, holding sqft 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).

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

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: Jean-Luc Tessier

Student ID: 4652635

## ECON 0150 | MiniExam 5 | Fall 2025

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**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:

$\beta_1$  is increase in exam score we would expect to see

from 1 additional hour of studying, holding prior 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:

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

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

$\beta_1$  is the expected change in productivity caused by being remote, instead of in person, while holding years of experience constant.

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

We don't want it to impact our study of remote work on productivity. A more experienced worker may be more efficient, or a less experienced one may be more motivated, affecting productivity. Including experience allows us to hold it constant, and

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: \$ 110 per month

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

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

Answer: \$ 170 per month

$$250 + 150 = 110$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

This is the increase in rent that comes from the apartment allowing pets, so the same apartment will cost an extra \$150 compared to 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: 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: Dawen Cen

Student ID: 4746297

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**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 change in the hours unit will be associated with  $\beta_1$  a change in score by  $\beta_1$  per one unit increase, assuming all else is constant

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.**

Experience

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  $\beta_1$  coefficient represents the average change associated with working remote in comparison to working in office.

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

It allows us to compare 2 people with the same amount of experience while holding other constant, in comparison to 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

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:

The allowance of pets is <sup>an additional</sup> ~~an extra~~ charge of \$150 to each apartment that does 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 or  $50 + 2 \times 0 = 52$

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

Answer: 12.0 or  $50 + 2 \times 10 = 70$

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: Kiersten Engstrom

Student ID: 4719223

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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 higher exam 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 difference in averages of productivity between remote and in-office workers.

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

We would control for it because experience can influence productivity and we are only testing the difference in productivity between remote and in-office workers. Now you are comparing people with some experience, before you compare 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       $\text{Price} = 250 + .800(900) + 150(0)$

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

Answer: \$1120 per month       $\text{Price} = 250 + .800(900) + 150(1)$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

On average the rent in places that allow pets is \$150 more per month than places who 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: 52       $50 + 2.0(1) + 10(0) + .8(0)(1)$

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

Answer: 62.8       $50 + 2.0(1) + 10(1) + .8(1)(1)$

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

A) Employees with degrees have 0.8 higher performance scores

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: McLenna hooks

Student ID: 4785948

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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:

More hours studying gives a better 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:

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

b) Interpret the coefficient on remote in one sentence:

remote workers tend to be less productive than in-office workers

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

So then we can see if productivity levels rise if there are more 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: \$ 910 per month  $\text{rent} = 250 + 0.8 \cdot 900 + 150 \cdot 0 + -150 \cdot 0 =$

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

Answer: \$ 820 per month  $\text{rent} = 250 + 0.8 \cdot 900 - 150 \cdot 1$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

Rent is cheaper if there are 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: 52  $50 + 2.0 \cdot 1 + 10 \cdot 0 + 0.8 \cdot (1 \cdot 0) =$

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

Answer: 62.8  $50 + 2.0 \cdot 1 + 10 \cdot 1 + 0.8 \cdot (1 \cdot 1) =$

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

Name: Lauren Stuccio

Student ID: 4619490

## ECON 0150 | MiniExam 5 | Fall 2025

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 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 exam scores associated with one more additional study hour, after we control 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:

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

b) Interpret the coefficient on remote in one sentence:

The extra productivity scores associated with employees who work remotely, after controlling work experience

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, 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: \$ 970 per month  $250 + 0.800(900) = 970$

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

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

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

It is an additional \$150 per month to pay rent and have 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: B2

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

Answer: B3

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 Widdop

Student ID: 4646592

## ECON 0150 | MiniExam 5 | Fall 2025

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**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 scores that are associated with one more hour of studying.

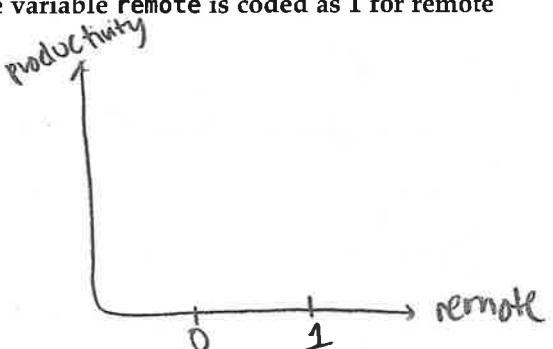
**Q2.** A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable **remote** is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

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

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

The productivity increase changing from in office workers to remote workers.



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

Comparing people with the same amount of experience will make it a closer comparison, it could change the effect.

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

$$\text{price} = 250 + 0.800 * 900 + 150(0) = \\ \text{no pets}$$

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

Answer: \$ 1120 per month

$$= 250 + 0.800 * 900 + 150(1) = \\ \text{pets}$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

If an apartment allows pets they ~~are~~ have higher rent by \$150 a month ~~compared to~~ compared to no 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:  $\beta_1$

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

Answer:  $\beta_3$

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: Ava Carvagher

Student ID: 4621779

## ECON 0150 | MiniExam 5 | Fall 2025

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AC 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 after we controlled 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:

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

b) Interpret the coefficient on remote in one sentence:

The additional productivity score for those who work remote after we controlled for years of experience

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 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: \$ 970 per month       $\text{rent} = 250 + .8(900) + 150 \cdot 0 = 250 + 720 \rightarrow 970$

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

Answer: \$ 1120 per month       $\text{rent} = 250 + .8(900) + 150 \cdot 1 = 250 + 720 + 150 = 970 + 150 = 1120$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

An apartment that allows pet is on average \$150 more expensive in 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:  $\beta_0 = 50$ ,  $\beta_1 = 2.0$ ,  $\beta_2 = 10$ ,  $\beta_3 = 0.8$ .

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

Answer:  $\beta_1$

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

Answer:  $\beta_1 + \beta_3$

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: Hannah Ghobrial

Student ID: 4611952

## ECON 0150 | MiniExam 5 | Fall 2025

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**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 exam score associated with 1 more hour of studying,  
after 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 =  $\beta_0 + \beta_1 \cdot \underline{\text{remote}} + \beta_2 \cdot \underline{\text{experience}} + \epsilon$

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

Additional productivity for remote workers compared to in-office workers,  
after controlling for yrs of experience

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

Including the control allows for comparisons between workers  
with the same experience, while not including the control compares  
everyone, which may change the estimated effect.

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  $\text{rent} = 250 + 0.80(900) + 0$

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

Answer: \$ 1120 per month  $250 + 0.80(900) + 1(150)$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

An apartment that allows pets has rent that is \$150 more expensive than an apartment with the same sq feet that does 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: 2.0

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

Answer: 2.8  $\beta_1 + \beta_3 = 2 + 0.8$

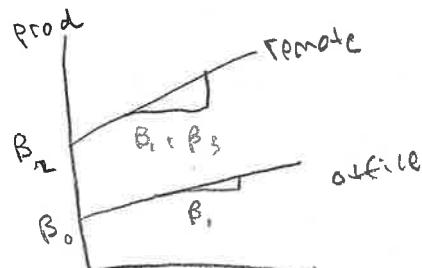
c) The interaction coefficient ( $\beta_3 = 0.8$ ) tells us: (circle one)

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: Sophia Ghobrial

Student ID: 46011953

## ECON 0150 | MiniExam 5 | Fall 2025

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y

y

$\varepsilon$

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)  $score = \beta_0 + \beta_1 \cdot hours + \varepsilon$   
B)  $score = \beta_0 + \beta_1 \cdot GPA + \varepsilon$   
 C)  $score = \beta_0 + \beta_1 \cdot hours + \beta_2 \cdot GPA + \varepsilon$   
D)  $score = \beta_0 + \beta_1 \cdot hours + \beta_2 \cdot (hours \times GPA) + \varepsilon$

b) Interpret the coefficient on hours in one sentence:

The average additional score associated with one more hour of studying, after 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:

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

b) Interpret the coefficient on remote in one sentence:

The additional productivity associated with working remote, controlling for years of experience

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

By controlling for experience, only people with the same amount of experience will be compared instead of comparing everyone - shows relationship between remote + productivity score without differences in years of experience impacting the comparisons.

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       $\text{rent} = 250 + 0.8(900) + 150 \cdot 0$

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

Answer: \$ 1120 per month       $\text{rent} = 250 + 0.8(900) + 150 \cdot 1$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

An apartment that allows pets has rent that is on average \$150.00 more per month than an apartment that does 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: 2.0

$$\hookrightarrow \beta_2 \cdot 0 + \beta_1 \cdot 1$$

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

Answer: 12

$$\hookrightarrow \beta_2 \cdot 1 + \beta_1 \cdot 1$$

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

Name: Aline Chan

Student ID: 4645883

## ECON 0150 | MiniExam 5 | Fall 2025

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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:

Every additional hour of studying is associated with an increase in 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 scores =  $\beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{in-office} + \epsilon$

b) Interpret the coefficient on remote in one sentence:

a worker who works in-office is associated with higher productivity scores, holding everything else constant

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

Because we are comparing two people with the same experience, where when controlling experience we can test actual productivity if remote or in-office impacts 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?

Answer: \$ 0.800 per month

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

Answer: \$ 150.000 per month

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

an apartment that does allow pets is \$150.000 more expensive than an apartment that does 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).

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

$$50 \quad 2.0 \quad 10 \quad 0.8$$

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: Alexis Alvaren

Student ID: 4820752

## ECON 0150 | MiniExam 5 | Fall 2025

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AA I will not use any digital resources unless explicitly allowed by the instructor.  
AA 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 increase in score associated 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:

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

b) Interpret the coefficient on remote in one sentence:

The increase in productivity associated with whether or not someone is in the office or remote.

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

When controlling for experience, you're comparing people with the same work experience. When that's not the case, you're working at everyone at once.

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 $\beta_0$	45.000	5.556	0.000
sqft	0.800 $\beta_1$	0.035	22.857	0.000
pets_allowed	150.000 $\beta_2$	38.000	3.947	0.000

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

Answer: \$850 per month

$$\text{rent} = 250 + 0.8(900) + 150(0) = 250 + 0.8(900)$$

250  
600  
850

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

Answer: \$1000 per month

$$\text{rent} = 250 + 0.8(900) + 150(1) = 250 + 600 + 150$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

When pets are allowed, rent increases by \$150 extra

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).

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

$$50 \quad 2 \quad 10 \quad 0.8$$

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: 52     $\text{performance} = 50 + 2(1) + 10(0) + 0.8(1 \cdot 0) = 50 + 2$     increase of 52

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

Answer: 62.8     $\text{performance} = 50 + 2(1) + 10(1) + 0.8(1 \cdot 1) = 50 + 2 + 10 + 0.8$     increase of 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: Ruby Iskandarani

Student ID: 4806285

## ECON 0150 | MiniExam 5 | Fall 2025

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

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

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

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 increase in scores associated with a 1 hour increase in 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:

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

b) Interpret the coefficient on remote in one sentence:

The increase in productivity for 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 the factors that may differ between remote and in-office workers that may impact their productivity levels beyond the location of where they work.

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  $250 + 0.800 \times 900 + 150 \times 0 = 970$

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

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

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

Renting with a pet is \$150 more expensive than without one.

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).

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

$$50 \quad 2.0 \quad 10 \quad 0.8$$

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: 52.0  $50 + 2.0(1) + 0 + 0 = 52.0$

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

Answer: 62.8  $50 + 2.0 + 10 + 0.8 = 62.8$

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

Name: Katie Hovan

Student ID: 4655199

## ECON 0150 | MiniExam 5 | Fall 2025

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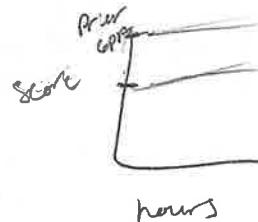
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- I will not communicate directly or indirectly with others during the MiniExam.

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 of hours is our slope/intercept to see if an increased amount makes a higher outcome

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:

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

Remote = 1

In office = 0



b) Interpret the coefficient on remote in one sentence:

It could tell us that the prod.

goes up if you work from home or not

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

The more experience a person has, the more

comfortability/productivity they might have

working in the office or from 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  $= 250 + 0.8 \cdot 900 + 0$

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

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

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

An apartment that allows pets charges an additional \$ 150 more than an apt without 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: 62  $= 50 + 2 \cdot 1 + 10 + 0.8 (1 \times 0)$

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

Answer: 62.8  $= 50 + 2 \cdot 1 + 10 + 0.8 (1 \times 1)$

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

Name: Kurt Habazin

Student ID: 3608342

## ECON 0150 | MiniExam 5 | Fall 2025

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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:

$\beta_1$  determines the rate or number of hours required for exam score  $\beta_0$  relative to the 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:

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

b) Interpret the coefficient on remote in one sentence:

$\beta_1$  measures the difference of productivity scores of remote workers to those of in office workers relative to years of experience.

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

Experience most likely affects 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: \$ 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:

The predicted monthly rent for a 900 sqft apartment that allows 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

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

Answer: Q.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: Jay Zheng

Student ID: 4766538

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

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

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: *associated with*

$\beta_1$  represents the additional scores, on exam per one additional hour of studying

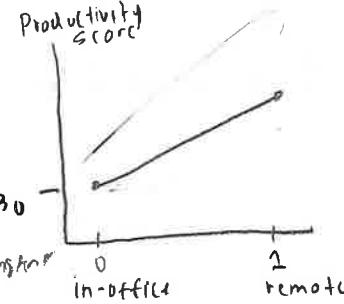
Q2. A company wants to test whether employees who work remotely have different productivity scores than those who work in-office, while controlling for years of experience. The variable remote is coded as 1 for remote workers and 0 for in-office workers.

a) Write the regression model:

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

b) Interpret the coefficient on remote in one sentence:

$\beta_1$  represents the extra productivity score associated with working remote



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

Without controlling, we can compare everyone holding experience constant such as that experience brings more familiarity with work environment.

\* With controlling, we can compare worker with same work experience distinction on if there remote and in-office worker effect to productivity score.

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:

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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:

If an apartment allows pets, the rent is associated to be raised an extra 150 dollar/month  
Compare to no pet allowed apartment w/ sqft constant

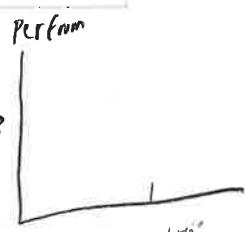
Q4. A firm estimates how training hours affect employee performance, allowing the effect to differ based on whether the employee has a college degree (1 for those with a college degree; 0 for those without).

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

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: 2.0



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: Yulin Li

Student ID: 4578696

## ECON 0150 | MiniExam 5 | Fall 2025

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**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:

Other no change hours change can change 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:

$$\text{productivity} = \beta_0 + \beta_1 \cdot \text{Remote} + \beta_2 \cdot \text{Experience} + \varepsilon$$

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

at same the experience, how remote can change the productivity.

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

because experience can same time control the work in-office and 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

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:

at the same sqft, pets\_allowed (150) only change the rent  
add \$150, to

**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: 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: Emily Rod

Student ID: CAR113 2693

## ECON 0150 | MiniExam 5 | Fall 2025

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### Academic Conduct Code

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- 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 number associated with the increase in exam score per one hour increase in studying for students with the same 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:

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

b) Interpret the coefficient on remote in one sentence:

The predicted productivity of a remote worker is expected to change by  $\beta_1$  in comparison to an in office worker.

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

To focus on the impact of remote work in particular.

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

$$250 + .8(900) = 250 + 720 \\ + 150 = 970$$

$$\begin{array}{r} 900 \\ .8 \\ \hline 720 \\ + 150 \\ \hline 970 \end{array}$$

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

Answer: \$ 1120 per month

$$250 + .8(900) + 150 = 970 + 150 \\ = 1120$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

Pets being allowed in apartments increases the predicted rent per month by 150 compared to rent in apartments 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: 2 point increase in predicted performance  $2(1) + 10(0) + .8(0) = 2$

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

Answer: 2.8 increase in predicted performance  $2(1) + .8(1) = 2.8$

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

D) Employees with degrees complete 0.8 more training hours

Name: Kyle Reardon

Student ID: 4626331

## ECON 0150 | MiniExam 5 | Fall 2025

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KR 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:

**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 **remote** coefficient is the baseline variable describing an increase in productivity while being **remote** compared to those in office.

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

We may control for experience to prevent skew from favoring more/less experienced workers. This will give us a similar baseline and allow us to compare workers of similar experience levels.

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  $(.8 \cdot 900) + 250$

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

Answer: \$ 1120 per month  $(.8 \cdot 900) + 250 + 150$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

*It costs, on average, \$150 <sup>per month</sup> more to live in an apartment that allows pets, 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).

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

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  $(\beta_1 \cdot 1) = 2 \cdot 1 = 2$

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

Answer: 12.8  $(\beta_1 \cdot 1) + (\beta_2 \cdot 1) + (\beta_3 \cdot 1) = (2 \cdot 1) + (10 \cdot 1) + (0.8 \cdot 1) = 12.8$

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: Daniel Harter

Student ID: 4613422

## ECON 0150 | MiniExam 5 | Fall 2025

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✓  $X$   $Y$   
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:

$\beta_1$  = the amount of 1 unit score gained from 1 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:

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

b) Interpret the coefficient on remote in one sentence:

$\beta_1$  = additional units added  $\wedge$  more by remote workers than in-office workers.  
(of productivity scores on average)

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

regardless of where someone works, having more experience will typically affect your productivity score because you understand your business better and therefore are 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	$\beta_0 = 250.000$	45.000	5.556	0.000
sqft	$\beta_1 = 0.800$	0.035	22.857	0.000
pets_allowed	$\beta_2 = 150.000$	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  $\text{rent} = \beta_0 + \beta_1 \cdot 900 = 250 + 0.8 \cdot 900 = 970 + \varepsilon$

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

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

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

The additional rent in \$/month is \$50/month if the apartment allows pets 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: 52  $= 50 + 2 \cdot 1 = 52 + \varepsilon$

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

Answer: 62.8  $= 50 + 2 \cdot 1 + 10 \cdot 1 + 0.8 \cdot 1 \cdot 1 = 62.8 + \varepsilon$

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: Willow Chen

Student ID: 4571386 ☺

## ECON 0150 | MiniExam 5 | Fall 2025

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 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 score associated with one more <sup>hour</sup> 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:

Scores =  $\beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{Exp} + \varepsilon$

b) Interpret the coefficient on remote in one sentence:

The productivity score associated with working remote vs in office

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

To make sure we are just looking for remote with no other variables that can affect the outcome.

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: \$ 2110 per month  $250 + (0.8 \cdot 900)$

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

Answer: \$ 1110 per month  $250 + (0.8 \cdot 900) + 150$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

An additional 150\$ for pets allowed on 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: 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: Lucas Nakamura

Student ID: 449 1861

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**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 studied, score will increase by  $\beta_1$ , holding all else 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:

Productivity =  $\beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{years\_of\_exp} + \epsilon$

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

Productivity will see a  $\pm$  shift of  $\beta_1$  if the workers are remote, controlling for years of experience.

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

Because experience is another variable that may grant increasing returns to 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       $\text{rent} = 250 + 0.8 \cdot 900 + 150 \cdot 0 = 970$

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

Answer: \$ 1120 per month       $\text{rent} = 250 + 0.8 \cdot 900 + 150 \cdot 1 = 1120$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

rent on apartments that allow pets will be \$150 higher than ones 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: 2.0

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: Riley Prell

Student ID: 4628824

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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:

Every additional hour studied the exam score goes up by that coefficient.

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:

How productive that employee is remote vs online.

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

Because people that have lots of experience will most likely be more productive than new people no matter where they are working from.

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

$$250 + 900 \times 0.800 + 150 \cdot 0$$

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

Answer: \$ 1120 per month

$$250 + 900 \times 0.800 + 150 \cdot 1$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

Every apartment that allows pets is going to be \$150 more than a similar one 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).

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

$$50 + 2 \cdot \text{Training} + 10 \cdot \text{degree} + 0.8(\text{Training} \times \text{degree}) + \epsilon$$

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

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

$$50 + 2 + 10 + 0.8$$

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: James Sampugnando

Student ID: 4569386

## ECON 0150 | MiniExam 5 | Fall 2025

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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)  $score = \beta_0 + \beta_1 \cdot hours + \epsilon$

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

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

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

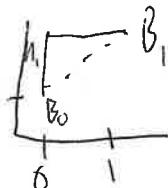
b) Interpret the coefficient on hours in one sentence:

hours spent studying material or time spent being productive

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



b) Interpret the coefficient on remote in one sentence:

the increase from in office +  $\beta_1$

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

over a more experienced worker will  
more likely have better 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  $(250 + 0.8 \cdot 900) = 970$

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

Answer: \$ 1120 per month  $250 + 720 + 150 = 1120$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

extra dollars amount per pet had and allowed in the building

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  $50 + 2 \cdot 1 = 52$

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

Answer: 54.8  $50 + 2 \cdot 1 + 0.8 \cdot 1 = 54.8$

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: SARVI SHK HUJAStudent ID: 4737248

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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 number of hours studied)  $\rightarrow$  this change's impact on the score ( $\rightarrow$  dependent variable) (each hour has an impact on the 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:

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

b) Interpret the coefficient on remote in one sentence:

the change in location or working remote and its impact on productivity scores

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

experience may determine if an employee would be more efficient & productive.

usually, with higher experience, employees can work better and more efficiently.

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?  $(\overset{\ominus}{250} + 0.800 \times 900 + 150 \times 0)$   
 eq mentioned  
 Answer: \$ 250 + 0.800 \times 900 + 150 \times 0 per month

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

Answer: \$ 250 + 0.800 \times 900 + 150 \times 1 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:  $\beta_0 = 50$ ,  $\beta_1 = 2.0$ ,  $\beta_2 = 10$ ,  $\beta_3 = 0.8$ .

Int 50  
training 2.0  
degree 0.8

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

eq mentioned  
 Answer:  $50 + 2.0 \times 1 + 10 \cdot 0 + 0.8(1 \times 0)$

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

eq mentioned  
 Answer:  $50 + 2.0 \times 1 + 10 \cdot 1 + 0.8(1 \times 1)$

- 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

# equation written due to availability of calculator

Name: Lisa-Sophia Rachalau

Student ID: 4818143

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

$$\text{Score} = \beta_0 + \beta_1 \cdot \text{hours} + \beta_2 \cdot \text{GPA} + \epsilon$$

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 extra points on the scale 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:

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

b) Interpret the coefficient on remote in one sentence:

Coeficient on remote is additional productivity score for those who were remote.

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

Because we are now comparing only effect of remote and in-office with the same 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  $250 + 900 \times 0.8$ )

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

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

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

an apartment with pets allowed costs 150 more 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:  $\beta_0 = 50$ ,  $\beta_1 = 2.0$ ,  $\beta_2 = 10$ ,  $\beta_3 = 0.8$ .

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: 16

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: Anna Merlos

Student ID: 9665152

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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 in one semester, extra hours of study would be associated with higher 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 Score =  $\beta_0 + \beta_1 \cdot \text{WORKIN} + \beta_2 \cdot \text{Remote} + \epsilon$

b) Interpret the coefficient on remote in one sentence:

Remote working remote would, would increase productivity Scores as it applies

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

We would want to control for experience because it is a confounding

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~~ <sup>375</sup> per month  $250.0 + 0.800 \cdot 900 = 150 + 72 =$

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

Answer: \$ ~~250~~ <sup>375</sup> ~~410~~ per month  $250.0 + 0.800 \cdot 900 + 150 = 150$

c) Interpret the coefficient on pets\_allowed (150,000) in one sentence:

for the coefficient on pets allowed, the apartment would be extra associating higher cost yet giving options to those who want pets <sup>150</sup>

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: ~~100~~

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

Answer: ~~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

Name: Dylan Jones

Student ID: 4647848

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**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 addition to exam score per each 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:

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

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

the addition to productivity based on work location, with in office being the standard.

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

Workers with higher experience may be less effected by location in their outcome 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  $= 250 + 900(0.8) + 150(0) = 720 + 250 = 970$

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

Answer: \$ 1120 per month  $970 + 150 = 1120$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

Apartments that allow pets charge \$150 more per month on 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  $2(1) + 10(0) + 0.8(1 \cdot 0) = 2$

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

Answer: 12.8  $2(1) + 10(1) + 0.8(1 \cdot 1) = 12.8$

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: Isabella Dragan

Student ID: 4653919

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

X                  Y                  Z

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 added on an exam 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:

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

b) Interpret the coefficient on remote in one sentence:

The extra points in productivity associated with one more year of experience

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

We can compare 2 people with the same years of experience, when before we compared all individuals

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       $\text{rent} = 250 + (0.800)(900) + 150 \times 0$

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 <sup>rent</sup> 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).

$$50 \quad 2.0 \quad 10 \quad 0.8$$

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

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: 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: Cooper Sainiah

Student ID: 4543852

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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 extra points (score) associated with 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:

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

b) Interpret the coefficient on remote in one sentence:

The extra productivity (score) associated with working remote

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

We now compare with employees with equal experience instead of everyone. It gives a better indication of the influence location of work has on productivity scores.

↳ remote v. 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  $\text{rent} = 250 + 0.8(900) + 150(0) = \$970$

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

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

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

The extra cost to one's rent if they decide to live in an apartment that 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: 52  $\text{performance} = 50 + 2(1) + 10(0) + 0.8(1 \times 0) + \varepsilon = 52 + \varepsilon$

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

Answer: 62.8  $\text{performance} = 50 + 2(1) + 10(1) + 0.8(1 \times 1) + \varepsilon = 62.8 + \varepsilon$

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: David Perkins

Student ID: 4711921

## ECON 0150 | MiniExam 5 | Fall 2025

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

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

NCF 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 increase in amount of hours studied score will increase by the coefficient.

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:

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

b) Interpret the coefficient on remote in one sentence:

The coefficient on remote represents the amount of productivity score gained (or lost) from being a remote worker.

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 productive simply due to the fact that they have been doing the work for longer.

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	$250 + .8(\text{sqft}) + 150(\text{pet or not})$
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

$$250 + .8(900)$$

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

Answer: \$ 1120 per month

$$970 + 150$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

This is the additional increase in rent if pets being allowed is true ( $\text{pets\_allowed} = 1$ )

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:  $\beta_0 = 50$ ,  $\beta_1 = 2.0$ ,  $\beta_2 = 10$ ,  $\beta_3 = 0.8$ .

$$50 + 2(\text{train}) +$$

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

Answer: 52  $50 + (2 \cdot 1) + (10 \cdot 0) + .8(1 \cdot 0) = 52$

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

Answer: 62.8  $50 + (2 \cdot 1) + (10 \cdot 1) + .8(1 \cdot 1) = 62.8$

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: Joseph Ambroff

Student ID: 4693682

## ECON 0150 | MiniExam 5 | Fall 2025

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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:

expected change in score based on each 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:

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

b) Interpret the coefficient on remote in one sentence:

remote represents the change in productivity from working remote

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

We want to control for experience to show factors that differ for remote rather than 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: \$ 70 per month  $\text{rent} = 250 + 0.8(900) + 150(0)$

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

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

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

Every apartment that allows pets will increase rent 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  $50 + 2(0) + 10(0) + 0.8(1 \times 0) = 52$

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: Ty Serakowski

Student ID: 4643653

## ECON 0150 | MiniExam 5 | Fall 2025

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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 exam 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:

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

b) Interpret the coefficient on remote in one sentence:

remote represents change in productivity when working in office

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

We might want to control what experience works

**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       $250 + .8 \cdot 900 =$

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

Answer: \$ 1120 per month       $250 + .8 \cdot 900 + 150$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

An apartment is \$150 more expensive if you want pets to be 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: 4.8

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: Alex Paluso

Student ID: 4648164

## ECON 0150 | MiniExam 5 | Fall 2025

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**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 scores are associated with the extra 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:

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

b) Interpret the coefficient on remote in one sentence:

*The additional productivity score for those who work remote*

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

*We can compare 2 people who are similar with the same work expenses where 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: \$ 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:

Apart where pets allowed is \$150 more expensive than those 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: 2.0

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: Matan Cohen

Student ID: 4631169

## ECON 0150 | MiniExam 5 | Fall 2025

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

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

Control

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

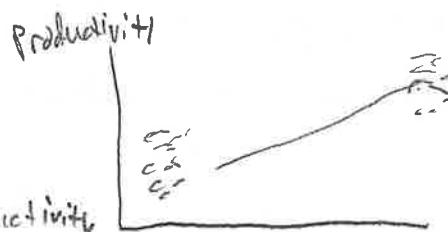
b) Interpret the coefficient on hours in one sentence:

The increase on score per hour of study, 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:

$$\text{Productivity} = \beta_0 + \beta_1 \cdot \text{Remote} + \beta_2 \cdot \text{Experience} + \varepsilon$$



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

The difference between the average productivity score of remote workers compared to in-office workers.

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

To make sure we are only comparing workers with the same level of experience. If we compare someone with 14 years of experience vs. someone with 1 year, that could impact productivity, which makes it less clear to the researcher what effect remote vs. in-person actually has 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: \$ 970 per month

$$\text{Rent} = 250 + .8 \cdot 900$$

$$250 + 720 = 970$$

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

Answer: \$ 1120 per month

$$250 + .8 \cdot 900 + 150 = 1120$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

Apartment that allow pets are on average \$150/month more expensive 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: An increase of 2 in performance.

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

Answer: An increase of 12.8 in performance  $2 + 10 \cdot 0.8$

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: Ethan Ryan

Student ID: A537873

## ECON 0150 | MiniExam 5 | Fall 2025

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- 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 variable to see outcome of 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* =  $\beta_0 + \beta_1 \cdot \text{remote} + \beta_2 \cdot \text{years} + \varepsilon$

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

*Remote workers are associated with different productivity scores, the standard.*

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

*Experienced workers might be more/less productive regardless of remote or not. By variable.*

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

$$\text{price} = 250 + .8 \times 900 + \frac{150}{=0} =$$

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

Answer: \$ 1120 per month

$$\text{price} = 250 + .8 \times 900 + 150 =$$

c) Interpret the coefficient on pets\_allowed (150.000) in one sentence:

*It is \$150 a month more expensive to have 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:  $\beta_0 = 50$ ,  $\beta_1 = 2.0$ ,  $\beta_2 = 10$ ,  $\beta_3 = 0.8$ .

$$50 + 2 + 10 \cdot 1 + .8 (x \cdot 1) + \varepsilon$$

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

Answer: 52

$$50 + 2 \cdot 0 = 52$$

52

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

Answer: 62.8 (10.2)

$$50 + 2 \cdot 1 + 10 \cdot 0 + .8 (1 \cdot 1) = 62.8$$

62.8

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

$$50 + 2 \cdot 1 + 10 \cdot 1 + .8 (1 \cdot 1)$$

62.8

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