

Investigation 3.3 Inverse Variation Patterns

An **inverse variation** is a relationship between two non-zero integers if $y = k/x$, or $xy = k$, where k is a constant that is not 0.

Part A Read the paragraph at the top of page 52.

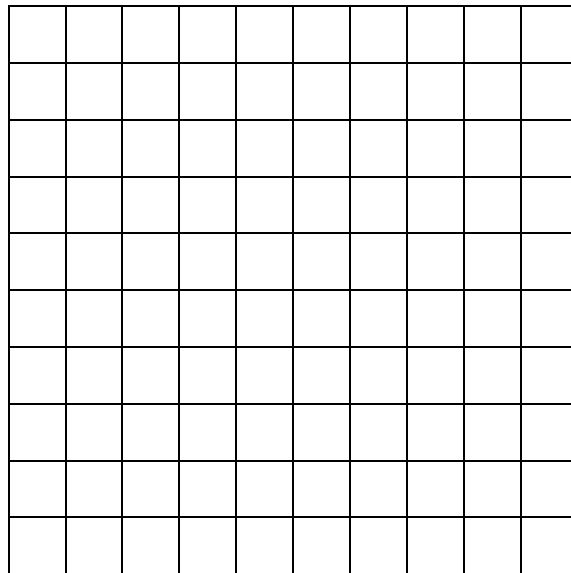
1. Write an equation relating the **cost c** per student to the **number of students n** .

2. Use your equation to make a graph showing how the cost per student changes as the number of students increases.

Hint Complete this chart to help you out.

Number of Students (n)	50	100	150	200	250
Cost per Student (c)					

Remember $c = 750 \div n$



Part B

1. Find the change in the cost per student as the number of students increases.
 - a) 10 to 20
 - b) 100 to 110
 - c) 200 to 210

2. How do your results show that the relationship between the number of students and the cost per student is not linear?

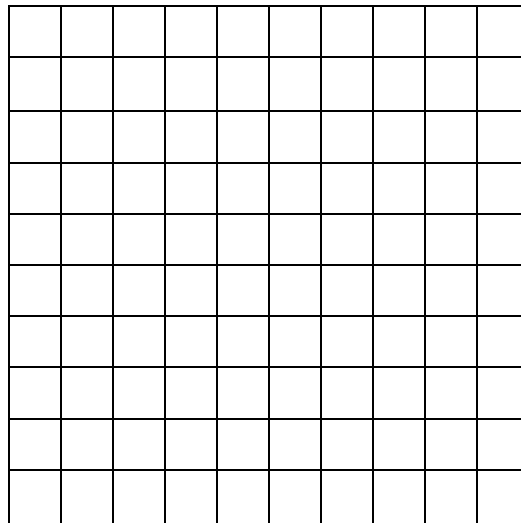
Part C

1. Find the change in the per-student cost as the number of students increases from:
a) 20 to 40 b) 40 to 80 c) 80 to 160
2. Describe the pattern in your results. Explain how your equation from Question A shows this pattern.

Part D The science teachers decide to charge \$5 per student for the trip. They will use any extra money to buy science equipment for the school.

1. Write an equation for the **amount a** the teachers will collect if **n students** go on the trip.
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2. Sketch a graph of the relationship.



3. Is this a linear relationship or an inverse relationship? Explain.