

Problem 3.3

An **inverse variation** is a relationship between two non-zero integers if

$$y = \frac{k}{x} \text{ or } xy = k \text{ where } k \text{ is a constant that is not } 0$$

Part A Read the top of page 52.

1. Write an equation relating the cost y per student to the number of students x .
2. Use your equation to make a graph showing how the cost per student changes as the number of students increases.

Part B

1. Find the change in the cost per student as the number of students increases from:
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 y the teachers will collect if x students go on the trip.

2. Sketch a graph of the relationship.

3. This is a linear relationship/inverse variation.