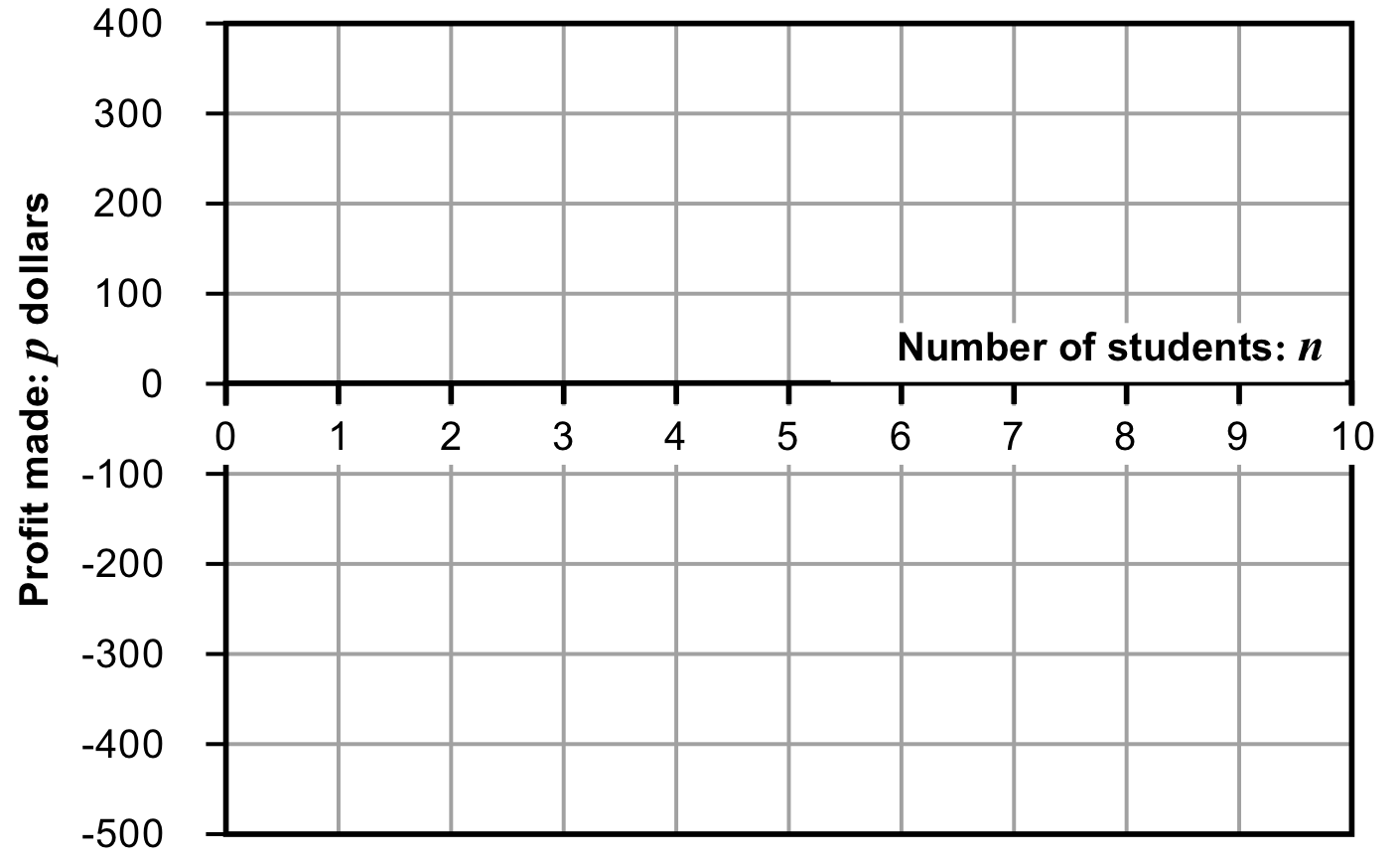
### The Guitar Class

A music teacher runs a guitar class for 20 weeks. The class meets each week in a rented music studio.

Suppose that:

* It costs the teacher ***c*** dollars to rent the studio for the 20 weeks.
* The class contains ***n*** students.
* Each student pays the teacher a single fee of ***f*** dollars for the course.
* The teacher makes a profit of ***p*** dollars at the end of the course.

1. Suppose that ***c*** = 400 and ***f*** = 70. Write an equation to show how the profit made, ***p*,** depends on ***n*,** the number of students attending.
2. Graph your equation and explain the significance of the point where the graph crosses the horizontal axis.



1. Write a formula for calculating p when you know ***c, n,*** and ***f.***
2. Write a formula for calculating ***f*** when you know ***c, n***, and ***p.***

### Making and Selling Candles

A student wants to earn some money by making and selling candles. Suppose that he can make 60 candles from a $50 kit, and that these will

each be sold for $4.

###### k

The cost of buying the kit:

(This includes the molds, wax and wicks.) $

###### n

The number of candles that can be made with the kit: candles

###### s

The price at which he sells each candle: $ per candle

###### p

Total profit made if all candles are sold: $

1. Write the values for ***k, n***, and ***s*** into the table above.
2. How can you calculate the profit ***p*** using the given values of ***k, n***, and ***s***?

Would your method change if the values of ***k*, *n***, and ***s*** were different? Explain your answer.

1. Now that you know the profit, erase the selling price of each candle, ***s.***

The values of ***k, n,*** and ***p*** are in the table.

Suppose you didn't know ***s.*** How could you figure it out?

Would your method change if the value of each variable were different? Explain your answer.

1. Now **erase two** numbers: ***n*** and ***p.***

###### k

The cost of buying the kit:

(This includes the molds, wax and wicks.) $

###### n

The number of candles that can be made with the kit: candles

###### s

The price at which he sells each candle: $ per candle

###### p

Total profit made if all candles are sold: $

What could these numbers be?

Construct a table of possible values. Plot a graph to show the relationship.

1. Write down four general formulas showing the relationships between the variables.

***p*** = ***s*** =

***n*** = ***k =***

### Rescue Helicopter



r

|  |  |  |
| --- | --- | --- |
|  | ***w*** |  |
| Time to load and warm up the helicopter before take-off: | 5 | minutes |
|  | ***s*** |  |
| The average speed of the helicopter in flight: | 1.5 | miles pe minute |
|  | ***d*** |  |
| The distance flown to the accident: | 60 | miles |
|  | ***t*** |  |
| The total time needed to arrive at the scene of the accident: | 45 | minutes |

Hide each number in turn.

If you didn’t know this number, how might it be found from the other numbers?

Hide two numbers.

What could they be? Construct a table of possible values. Sketch a graph to show the relationship between these numbers. Repeat this with another pair of numbers.

Hide all the numbers.

Construct a general formula for the relationship between them.

Try to write your formula in different ways, starting ***t****=…,* ***d****=…,* and so on.

# Making and Selling Candles

#### k

The cost of buying the kit:

(This includes the molds, wax and wicks.) $

***n***

The number of candles that can be made with the kit: candles

***s***

The price at which he sells each candle: $ per candle

***p***

Total profit made if all candles are sold: $

**Rescue Helicopter**

***w***

Time to load and warm up the helicopter before

take-off: minutes

***s***

The average speed of the helicopter in flight: miles per minute

***d***

The distance flown to the accident: miles

***t***

The total time needed to arrive at the scene

of the accident: minutes