

Disco model activity 4: Adding posters

This activity sheet will help you to develop your disco model.

As more variables are added to the model it becomes more realistic and useful. This time, you are going to add posters to your model.

High-quality posters

Past experience suggests that high-quality, colour posters can increase ticket sales by 50. Each of the teachers coming to the disco has agreed to place a poster in their classroom. You also decide to put a poster in the main entrance of the school. The cost of producing one poster is £6.

You now have to add three extra pieces of information to your model:

- 7 the total number of posters required (teachers' classrooms plus main entrance)
- 8 the cost of each poster
- 9 the total cost of paying for the posters.

Step 1 Adding extra labels

You need to add two new labels under the heading *Additional information*.

One label is for the *Cost of poster* and the other is for the *Number of posters*.

This is what your additional information table should look like now.

| | |
|----|-------------------------------|
| 6 | Additional Information |
| 7 | <i>Number of teachers</i> |
| 8 | <i>Cost per teacher</i> |
| 9 | <i>Total number of people</i> |
| 10 | <i>Cost per drink</i> |
| 11 | <i>Cost of poster</i> |
| 12 | <i>Number of posters</i> |

Step 2 How to work out the *Number of posters* needed

Each of the teachers coming to the disco will be putting a poster in their classroom. Another poster is to be placed in the main school entrance.

So, the *Number of posters* needed is set by how many teachers you have, plus one.

$$\text{Number of posters} = \text{Number of teachers} + 1$$

Enter the formula in B12.

Step 3 Adding the *Cost of a poster*

The cost of a poster is £6. This information is just typed into B11. The cell refers to money so you will need to format the cell as currency.

Step 4 Inserting an extra row

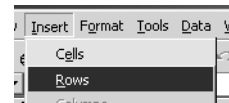
You now have to add the *Cost of posters* into the list of *Costs*.

As you can see, there is no room so you will need to insert a row.

| | |
|----|-------------------------------|
| 22 | Costs |
| 23 | <i>Total cost of teachers</i> |
| 24 | <i>Hire disco equipment</i> |
| 25 | <i>Pay the DJ</i> |
| 26 | <i>Cost of the caretakers</i> |
| 27 | <i>Total costs</i> |

To insert a row:

- 1 Click where you want the row inserted (click on the label for *Cost of free drinks*).
- 2 Click on the Insert menu.
- 3 Click on Row.



Now type in your label and your list should look like this.

| | | |
|----|-------------------------------|--|
| 22 | Costs | |
| 23 | <i>Cost of posters</i> | |
| 24 | <i>Cost of free drinks</i> | |
| 25 | <i>Total cost of teachers</i> | |
| 26 | <i>Hire disco equipment</i> | |
| 27 | <i>Pay the DJ</i> | |
| 28 | <i>Cost of the caretakers</i> | |
| 29 | <i>Total costs</i> | |

Step 5 Calculating the *Cost of posters*

You can now put the formula to calculate *Cost of posters* into cell B23. The formula needs to multiply the *Cost per poster* by the *Number of posters*.

Remember: the * sign is used to show multiplication in a spreadsheet formula.

Step 6 Recalculating the formula for *Total costs*

Your formula for *Total costs* has now moved down to B29. This will need to be checked to make sure it includes all costs from row 23 to row 28.

Using your model to answer questions

Now that you have added posters into your model you are going to use it again to find out what happens to your overall profit on the three different days. The posters will increase your ticket sales by 50 for each night.

There are 450 pupils in the year.

If you hold the disco on Wednesday, 300 pupils would attend.

If you hold the disco on Thursday, 400 pupils would attend.

If you hold the disco on Friday, 450 pupils would attend.

Profit forecast after posters have been added.

| | Wednesday | Thursday | Friday |
|---------------------------------|-----------|----------|--------|
| Tickets sold | | | |
| Profit | | | |
| Would you make a loss? (Yes/No) | | | |

Extension questions

- 1 You are going to change the *Number of tickets* sold in B15 to 400. **Before** you do this, think about how many different values will also be changed across the spreadsheet by doing this. Write down their cell references.

Now enter 400 in B15. Did it change all the values you expected?

- 2 You are going to find out what would happen if you reduced your *Ticket price*. Set the *Number of tickets sold* to 400.

If you set the *Ticket price* to £2.00 you will make a loss. Try this. Now keep changing the *Ticket price* until you only just make a profit.

What was the price?

Price £.....

What was the profit?

Profit

- 3 You are going to find out what would happen if you increased the cost of each poster. Keep the *Number of tickets* sold at 400. Change the *Ticket price* back to £2.50. Keep increasing your poster cost until you only just make a profit.

What is the highest poster cost that still lets you make a profit?

£

- 4 Try asking a question of the model yourself. Ask another pupil to try to answer it. Did they answer it? Was it a sensible question to ask of the model?

Describe what happened.