



Pocket Money Problem



The Pocket Money Problem

You have three different options for receiving your pocket money:

1. You can receive £5 pocket money this week and every week thereafter.
2. You can receive 50p pocket money this week and the amount increases by an additional 50p every week thereafter.
3. You can receive 1p pocket money this week, but every week thereafter the amount will be doubled.

Which option would you choose? Design a spreadsheet to find a solution: which is the best option?

The Spreadsheet Solution: Help & Instruction

1. Open the Pocket Money Problem Spreadsheet with row and column headings already set up.
2. Format the columns C to H as 'Currency'.
3. In the row for Week 1, type the first weekly amounts in pounds: (A) £5.00, (B) £0.50, (C) £0.01
4. Copy the same figures to the Cumulative amount as this is also the total so far.
5. Enter the weekly amounts for Week 2. (A) Still £5.00, (B) Formula: Week 1 amount + £0.50, (C) Formula: Week 1 amount x 2.
6. Enter the cumulative amounts for Week 2. For each Option, enter a formula to add the Week 2 Weekly Amount to the Week 1 Cumulative Amount.
7. Can you continue the formulas for Week 3 and beyond?

Try calculating the total for the first 20 weeks. Remember to replicate the formulas (Fill Down) to save typing separately into each row but check carefully that the calculations are correct.

Questions

1. Which is the better option?

2a. How many weeks until Option B has a bigger weekly amount than Option A?

2b. How many weeks until Option B has a greater cumulative total than Option A?

3a. How many weeks until Option C has a bigger weekly amount than the others?

3b. How many weeks until Option C has a bigger cumulative amount than the others?

Were you surprised by any of the results?



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Which option would you choose? Design a spreadsheet to find a solution: which is the best option?

The Spreadsheet Solution

For each of the three options, use your spreadsheet to calculate the amount of pocket money received each week AND the cumulative total (this means how much money is received overall for all weeks so far).

For example, in Week 1 the cumulative total will be the same as the weekly amount. However in Week 2, you will need to add the Week 1 and Week 2 amounts together for the cumulative total; in week 3 it will be the total for weeks 1, 2 and 3; and so on.

Try calculating the total for the first 20 weeks. Remember to replicate the formulas (Fill Down) to save typing separately into each row but check carefully that the calculations are correct.

Questions

1. Which is the better option?

2a. How many weeks until Option B has a bigger weekly amount than Option A?

2b. How many weeks until Option B has a greater cumulative total than Option A?

3a. How many weeks until Option C has a bigger weekly amount than the others?

3b. How many weeks until Option C has a bigger cumulative amount than the others?

Now try extending the calculations to 30 weeks!

4a. How many weeks until one of the options earns a total over £100?

4b. How many weeks until one of the options earns a total over £1000?

4c. How many weeks until one of the options earns a total over £1,000,000?

Were you surprised by any of the results?

Pocket Money Problem

Answers

1. Which is the better option?

Option C

2a. How many weeks until Option B has a bigger weekly amount than Option A?

11

3a. How many weeks until Option C has a bigger weekly amount than the others?

10

4a. How many weeks until one of the options earns a total over £100?

14

4c. How many weeks until one of the options earns a total over £1,000,000?

27

2b. How many weeks until Option B has a greater cumulative total than Option A?

20

3b. How many weeks until Option C has a bigger cumulative amount than the others?

13

4b. How many weeks until one of the options earns a total over £1000?

17