# Pairs in purses	# Skills practised:

Children use reasoning and logic to work out pairs of 2-digit amounts that can be made in the two purses given only ten coins.

- Knowing the value of each digit in a 2-digit number
- Showing a 2-digit number by combining groups of ten and one

Conjecture: We can find all the possible pairs of amounts using ten coins altogether, and only 10p and 1p coins.

What to do:
Children work in pairs.
Each pair will need a copy of the purses, ten 10p and ten 1p coins.

1. Tell children that they are going to make amounts of money using EXACTLY ten coins. They can be 10ps or 1ps or a mixture of both.
2. Say that the coins must be split between two purses.
3. Give an example: You could have three 10p coins and two 1p coins in one purse and two 10p coins and three 1p coins in the second purse. That is ten coins in all.
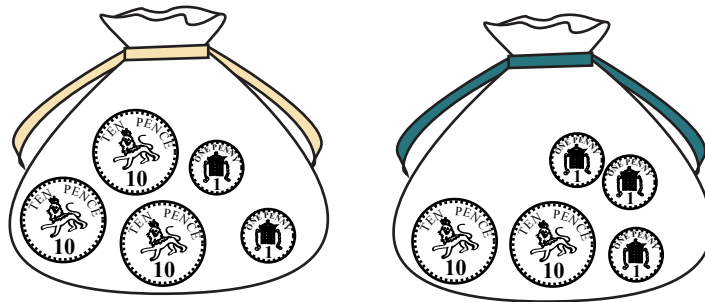
4. Ask children to write the two amounts for this example: 32p and 23p.
5. You could have six 10p coins and one 1p coin in one purse and just three 1p coins in the second purse. That is ten coins in all.
6. Ask children to write the two amounts: 61p and 3p
7. You could have one 10p coin and five 1p coins in one purse and three 10p coins and one 1p coin in the second purse. That is ten coins in all.
8. Ask children to write the two amounts: 15p and 31p
9. Ask children to find lots of different pairs of amounts that can be made using JUST ten coins. They write them all down.

What pair of numbers can you make which are as close as possible to each other, so that there is almost the same in each purse?
What pair of numbers can you make so that there is as much as possible in one purse and as little as possible in the other, so that there is the biggest difference between the purses?

CHALLENGE: Can children find another pair which has reversed digits – like 32p and 23p?

Aim:
– To use logic and reasoning to find different amounts using just ten coins
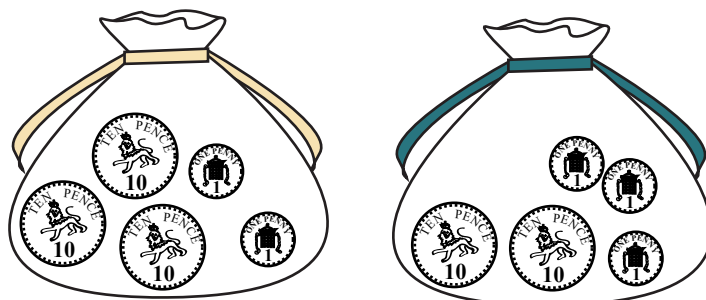
Minimum number of calculations expected
20

Pairs in Purses

1. Can you make amounts of money using EXACTLY ten coins?
    Use 10ps or 1ps or a mixture of both, and the coins will need to be split between two purses.

    You could have three 10p coins and two 1p coins in one purse and two 10p coins and three 1p coins in the second purse. That is ten coins in all.

    Write down the two amounts.

2. You could have six 10p coins and one 1p coin in one purse and just three 1p coins in the second purse.
    That is ten coins in all.

3. Write the two amounts.

4. You could have one 10p coin and five 1p coins in one purse and three 10p coins and one 1p coin in the second purse.
    That is ten coins in all.

5. Again, write the two amounts.

6. Find lots of different pairs of amounts that can be made using JUST ten coins. Write them all down.

> 32p   23p
>
> 61p   3p
>
> 15p …

Can you make two amounts which are as close as possible to each other, so that there is almost the same in each purse?
Can you make two amounts so that there is as much as possible in one purse and as little as possible in the other, so that there is the biggest difference between the purses?

Challenge

Can you find another pair of amounts which have reversed digits – like 32p and 23p?

Pairs in purses