

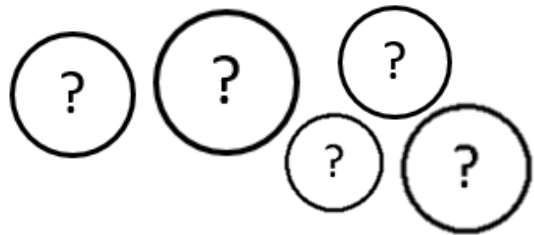
KS1 Problem

Five Coins

I have five coins in my pocket.

The total of the coins is 24p.

What coins could I have?



Find all the possible ways of making 24p with five coins.

You could make this easier by using a smaller amount of money such as 12p or more complicated by using a larger amount of money such as 57p.

Challenge

Can you make each amount of money from 1p to 20p using five coins?

Explain why or why not.

Support for Parents and Carers

If possible, provide children with a selection of coins up to £1. Ask them what coins they know and can recognise. Can they describe their colour (brown, silver, gold); shape (circle, heptagon (7 sides), dodecagon (12 sides)); size (small, large).

Encourage your children to keep a note of the sets that make 24p by either writing the values, drawing round the coins or making coin rubbings by placing the coin under the paper and rubbing their pencil over it to recreate the image.

They may be quite random in the solutions they find. Encourage your child to use what we call a trial and improvement method to solve this problem. That means that if their first guess at the coins isn't correct, they don't change them all, they think about what needs to be changed and how, rather than starting from scratch each time. For example, if they have 10p, 10p, 1p, 1p, 1p, it adds up to 23p. Which coin or coins could they change to make it 24p? They might then adapt it to a 10p, 10p, 1p, 1p, 2p.

Solution

There are three possible ways of making 24p with exactly five coins:

20p	1p	1p	1p	1p
10p	10p	2p	1p	1p
10p	5p	5p	2p	2p

KS1 Problem

Challenge Solution

1p	No	Not possible with 5 coins because the smallest amount with 5 coins is 5 lots of 1p which is 5p.
2p	No	Not possible with 5 coins because the smallest amount with 5 coins is 5 lots of 1p which is 5p.
3p	No	Not possible with 5 coins because the smallest amount with 5 coins is 5 lots of 1p which is 5p.
4p	No	Not possible with 5 coins because the smallest amount with 5 coins is 5 lots of 1p which is 5p.
5p	Yes	1p, 1p, 1p, 1p, 1p
6p	Yes	2p, 1p, 1p, 1p, 1p
7p	Yes	2p, 2p, 1p, 1p, 1p
8p	Yes	2p, 2p, 2p, 1p, 1p
9p	Yes	2p, 2p, 2p, 2p, 1p or 5p, 1p, 1p, 1p, 1p
10p	Yes	2p, 2p, 2p, 2p, 2p or 5p, 2p, 1p, 1p, 1p
11p	Yes	5p, 2p, 2p, 1p, 1p
12p	Yes	5p, 2p, 2p, 2p, 1p
13p	Yes	5p, 2p, 2p, 2p, 2p
14p	Yes	10p, 1p, 1p, 1p, 1p or 5p, 5p, 2p, 1p, 1p
15p	Yes	10p, 2p, 1p, 1p, 1p or 5p, 5p, 2p, 2p, 1p
16p	Yes	10p, 2p, 2p, 1p, 1p or 5p, 5p, 2p, 2p, 2p
17p	Yes	10p, 2p, 2p, 2p, 1p or 5p, 5p, 5p, 1p, 1p
18p	Yes	10p, 2p, 2p, 2p, 2p or 10p, 5p, 1p, 1p, 1p or 5p, 5p, 5p, 2p, 1p
19p	Yes	10p, 5p, 2p, 1p, 1p or 5p, 5p, 5p, 2p, 2p
20p	Yes	10p, 5p, 2p, 2p, 1p