

KS1 Problem

Making 20p

How many different ways can you find to make 20p?

Is it possible to make 20p with every number of coins from 1 to 20?

You could use this table to help you and one has been filled in for you!

Number of coins	How I made 20p
1	
2	
3	10p + 5p + 5p
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

Challenge

Is it possible to do this with other amounts? Try it with 32p or 47p?

Can you explain what you have found out?

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). Which coins will they need for this problem? Should they use the £1 coin? Why not? Remove the coins that are worth more than 20p.

Encourage your children to keep a note of how they have made 20p 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 could use the table provided or make their own.

They may be quite random in the solutions they find. Encourage your child to record their solutions, it doesn't matter if they are in order or not.

It will help them to understand that a 2p coin has the same value as two 1p coins and that a 10p coin has the same value as two 5p coins. This will help them, for example, when moving between numbers of coins. If two 10p coins make 20p, then exchanging one of the 10p coins for two 5p coins adds one coin and they have then found the next way of making 20p.

Solution

Number of coins	How I made 20p
1	20p
2	10p+10p
3	10p+5p+5p
4	5p+5p+5p+5p
5	10p+5p+2p+2p+1p
6	10p+2p+2p+2p+2p+2p
7	10p+2p+2p+2p+2p+1p+1p
8	10p+2p+2p+2p+1p+1p+1p+1p
9	10p+2p+2p+1p+1p+1p+1p+1p+1p
10	2p+2p+2p+2p+2p+2p+2p+2p+2p+2p
11	2p+2p+2p+2p+2p+2p+2p+2p+2p+1p+1p
12	2p+2p+2p+2p+2p+2p+2p+2p+1p+1p+1p+1p
13	2p+2p+2p+2p+2p+2p+2p+1p+1p+1p+1p+1p+1p
14	2p+2p+2p+2p+2p+2p+1p+1p+1p+1p+1p+1p+1p+1p
15	2p+2p+2p+2p+2p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p
16	2p+2p+2p+2p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p
17	2p+2p+2p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p
18	2p+2p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p
19	2p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p
20	1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p+1p

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Challenge Solution

It is not possible to do this with 32p or 47p because these amounts cannot be made with one coin so other possibilities don't need to be found.

The only amounts where this challenge works are 1p, 2p, 20p and £2.