

Mr Know It All

Children find out which amounts of money from 10 to 20p can be made using 10p, 5p, 2p, and 1p coins, using no more than one of each.

Skills practised:

- Finding ways to make amounts from 10p to 20p
- Finding totals of single-digit prices using known facts or counting on

Conjecture: *It is possible to make any amount from 10p to 20p by combining 1p, 2p, 5p and 10p coins, using no more than one of each. (NB Mr Know It All's conjecture is wrong, but the children might enjoy proving him to be wrong!)*

What to do:

Children work individually or in pairs.

Each child/pair needs one each of the following coins: 1p, 2p, 5p and 10p.

Some may find it helpful to have a 0 to 20 penny line.

1. Say that 'Mr Know It All' has one 10p coin, one 5p coin, one 2p coin and one 1p coin. He thinks he can now make any amount of money from 10p to 20p.



2. *Can he make 10p? Obviously, yes! Ask child/pair to make 11p, and then 12p. So far he is right! Do you think he can make EVERY amount from 10p to 20p? He only has ONE of each coin. I wonder...*
3. Ask children to investigate his claim. They should record their findings with a tick by each amount possible and a drawing of the coins they used, and a cross by any amounts which are not possible.

CHALLENGE: If Mr Know It All also had a 20p coin, which amounts from 20p to 30p do you think he could make? How do you know? What amounts from 30p to 40p could he make?

Aims:

- To prove a conjecture to be wrong
- To work systematically to find all possibilities
- To record their findings

Minimum number of calculations expected

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Mr Know It All

1. Mr Know It All has one 10p coin, one 5p coin, one 2p coin and one 1p coin. *He thinks he can make any amount of money from 10p to 20p.*



2. *Can Mr Know It All make 10p? Make 11p, and then 12p. So far he is right! Do you think he can make EVERY amount from 10p to 20p? He only has ONE of each coin. I wonder...*
3. Investigate his claim. Record your findings with a tick by each amount possible and a drawing of the coins you used, and a cross by any amounts which are not possible.

Amount	Can he make it?
10p	✓
11p	
12p	
13p	
...	

Challenge

If Mr Know It All also had a 20p coin, which amounts from 20p to 30p do you think he could make? How do you know? What amounts from 30p to 40p could he make?

Mr Know It All

