

Addition and Subtraction Challenge Cards

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A palindromic number is the same forwards as it is backwards. E.g.

131

22

Find different ways to make palindromic numbers by adding and subtracting 2-digit numbers.

$$92 - 15 = 77$$

$$12 + 10 = 22$$

Can you make 20 by adding three numbers in a row, column or diagonally?

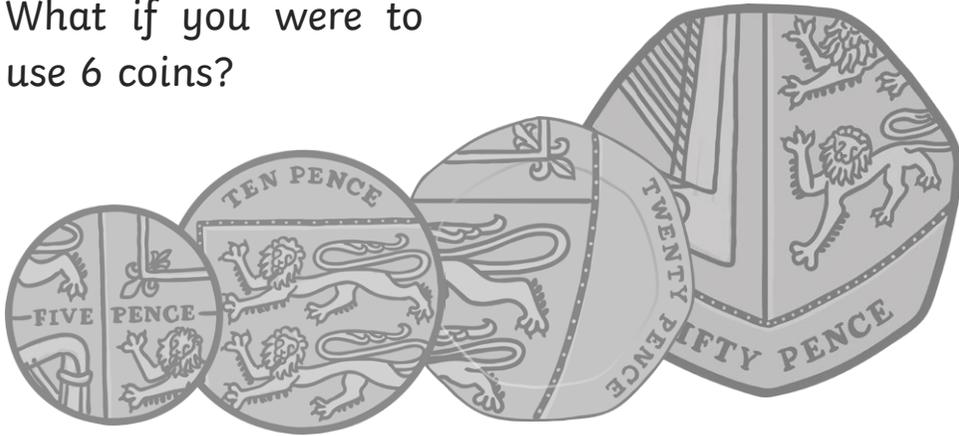
9	10	9	1
7	5	8	3
5	7	6	10
4	8	8	7

How many ways can you make £1.00, using only 50p, 20p and 10p coins?



How many ways can you find to make £1.00 using 5 silver coins?

What if you were to use 6 coins?



How many ways can you find to make 15 by adding or subtracting 3 single-digit numbers?

0 1 2 3 4 5 6 7 8 9

+ -

$$9 + 9 - 3$$

$$5 + 5 + 5$$

Mrs Rabbit's wall is 1m long. She wants her furniture to fit exactly.

What furniture could she place along her wall?



25cm



50cm



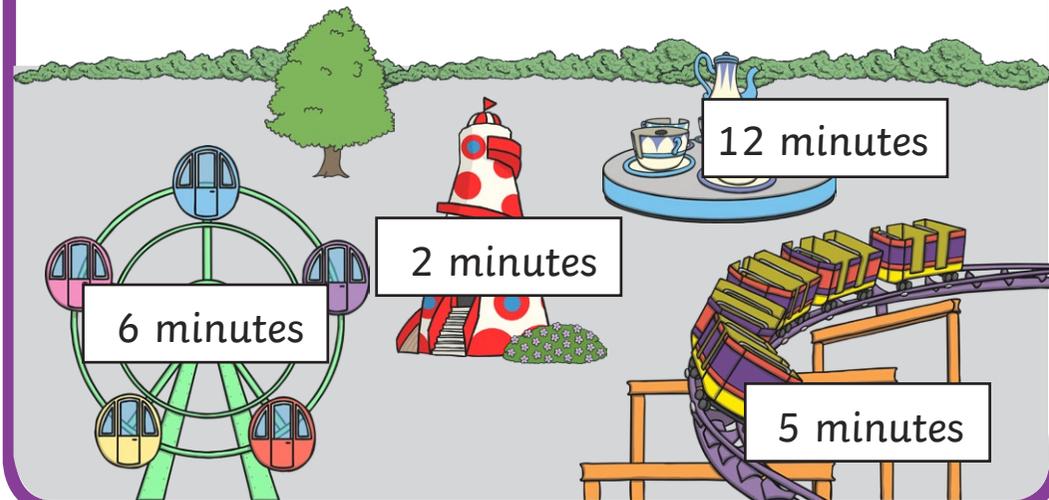
20cm



15cm

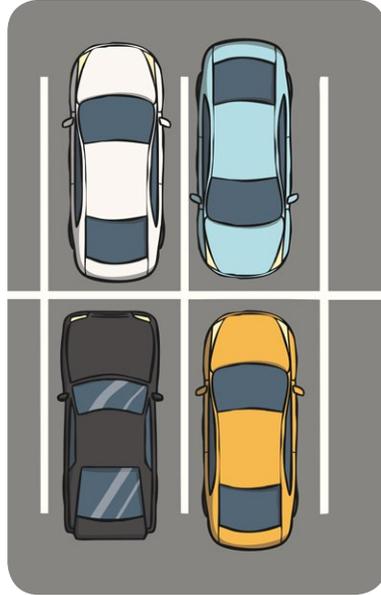
You can use each item more than once.

Sophia is allowed 20 minutes at the fairground.
What rides could she go on to fill the time exactly?



A car park holds 100 cars.

- How many spaces are left if 40 cars arrive?
- What about 70 cars?
- The car park has 80 spaces. How many cars are parked?
- Can you ask a question about the car park?



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Carla is between 13 and 19 years old. Her brother is 4 years younger.

How old might each of them be?



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How many numbers between 0 and 20 can you find that have a difference of 5?



Can you find a pattern?

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Hamish is mixing potions. His potion is 50ml.

Which ingredients might he have used?

Nettle Juice
10ml



Squished Leaves
12ml



Blackberries
20ml



Slime
8ml



Rose Water
15ml



Pond Water
25ml



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3, 5, 7, and 9

How many numbers from 1-20 can you make by adding or subtracting any of these numbers?

You can use each digit more than once.

Henry has found some old weighing scales. He can only find 1kg, 2kg, 3kg, and 6kg weights. How many different weights can he make?



If I put the 3kg and the 5kg on the scales together, I can make 8kg.

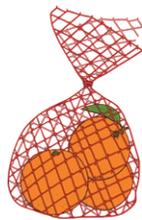
Hamish goes to the shop with 50p. What 2 items can he afford to buy? Find all possibilities.



20p



25p



28p



34p



36p

Beth went to the shop with £1.00. She bought 2 items. How much money might she have left?

Beth starts with 20 and subtracts 1. She keeps repeating this, but each time, she takes one more away than the last time. Will she arrive at zero?



$$20 - 1 = 19$$

$$19 - 2 = 17$$

$$17 - 3 = 14$$

$$14 - 4 = 10$$

I wonder if I will get to zero?

Can you think of a different starting number where Beth would get to zero?

Addition and Subtraction Challenge Cards Answers

1. Find different ways to make palindromic numbers by adding and subtracting 2-digit numbers.

$$92 - 15 = 77$$

$$12 + 10 = 22$$

2. Can you make 20 by adding three numbers in a row, column or diagonally?

9	10	9	1
7	5	8	3
5	7	6	10
4	8	8	7

3. How many ways can you find to make £1.00 using only 50p 20p and 10p coins?

$$50p + 50p$$

$$50p + 20p + 20p + 10p$$

$$50p + 20p + 10p + 10p + 10p$$

$$50p + 10p + 10p + 10p + 10p + 10p$$

$$20p + 20p + 20p + 20p + 20p$$

$$20p + 20p + 20p + 20p + 10p + 10p$$

$$20p + 20p + 20p + 10p + 10p + 10p + 10p$$

$$20p + 20p + 10p + 10p + 10p + 10p + 10p + 10p$$

$$20p + 10p + 10p$$

$$10p + 10p + 10p$$

4. How many ways can you find to make £1.00 using only silver coins?

$$50p + 20p + 20p + 5p + 5p$$

$$50p + 20p + 10p + 10p + 10p$$

$$20p + 20p + 20p + 20p + 20p$$

$$50p + 20p + 10p + 10p + 5p + 5p$$

$$50p + 10p + 10p + 10p + 10p + 10p$$

$$20p + 20p + 20p + 20p + 10p + 10p$$

5. How many ways can you find to make 15 by adding or subtracting 3 single-digit numbers?

$$9 + 6 + 0 \quad 8 + 8 + 1 \quad 6 + 5 + 4$$

$$9 + 4 + 2 \quad 9 + 5 + 1 \quad 9 + 9 - 3$$

$$8 + 7 + 0 \quad 9 + 3 + 3 \quad 9 + 7 - 1$$

$$8 + 5 + 2 \quad 8 + 6 + 1$$

$$7 + 7 + 1 \quad 8 + 4 + 3$$

$$7 + 5 + 3 \quad 7 + 6 + 2$$

$$6 + 6 + 3 \quad 7 + 4 + 4$$

6. Mrs Rabbit's wall is 1m long. She wants her furniture to fit exactly. What furniture could she place along her wall?

Possible answers:

- 4 cupboards
- 2 tables
- 5 bookcases
- 2 cupboards + 1 table
- 2 cupboards, 1 bookcase and 2 chairs
- 1 cupboard, 1 chair and 3 bookcases
- 1 table, 1 bookcase and 2 chairs
- 4 chairs and 2 bookcases

7. Sofia is allowed 20 minutes at the fairground. What rides could she go on to fill the time exactly?

$$12 + 6 + 2$$

$$6 + 6 + 6 + 2$$

$$10 + 10$$

$$5 + 5 + 5 + 5$$

$$12 + 2 + 2 + 2 + 2$$

$$5 + 5 + 6 + 2 + 2$$

8. How many spaces are left if 40 cars arrive?
60

What about 70 cars?

30

The car park has 80 spaces. How many cars are parked?

20

Addition and Subtraction Challenge Cards Answers

9. How old might each of them be?

13 and 9
14 and 10
15 and 11
16 and 12
17 and 13
18 and 14
19 and 15

10. How many numbers between 0 and 20 can you find that have a difference of 5? Can you spot a pattern?

0-5, 1-6, 2-7, 3-8, 4-9, 5-10, 6-11, 7-12, 8-13, 9-14, 10-15, 11-16, 12-17, 13-18, 14-19, 15-20

11. Which ingredients might he have used?

25 + 25
25 + 15 + 10
15 + 15 + 20
15 + 15 + 10 + 10
20 + 20 + 10
20 + 10 + 10 + 10
12 + 12 + 8 + 8 + 10
12 + 8 + 20 + 10
12 + 8 + 10 + 10 + 10

12. How many numbers from 1-20 can you make by adding or subtracting any of these numbers?

All numbers from 1 – 20 can be made. Provided is one solution for each number.

$9 - 5 - 3 = 1$	$3 + 5 = 8$	$9 + 9 - 3 = 15$
$5 - 3 = 2$	$9 + 3 - 3 = 9$	$9 + 9 - 5 + 3 = 16$
$9 - 3 - 3 = 3$	$7 + 3 = 10$	$7 + 3 + 7 = 17$
$7 - 3 = 4$	$9 + 9 - 7 = 11$	$9 + 9 = 18$
$7 + 3 - 5 = 5$	$7 + 5 = 12$	$9 + 9 - 5 + 3 + 3 = 19$
$3 + 3 = 6$	$9 + 9 - 5 = 13$	$5 + 3 + 5 + 3 = 20$
$9 - 5 + 3 = 7$	$7 + 7 = 14$	

13. How many different weights can he make?

1kg
2kg
3kg
3kg + 1kg = 4kg
3kg + 2kg = 5kg
6kg
6kg + 1kg = 7kg
6kg + 2kg = 8kg
6kg + 3kg = 9kg
6kg + 3kg + 1kg = 10kg
6kg + 3kg + 2kg = 11kg
6kg + 3kg + 2kg + 1kg = 12kg

14. Find all possibilities.

bread and a comic or bread and fruit

How much money might she have left?

20p + 25p = 45p (55p change)
20p + 28p = 48p (52p change)
20p + 34p = 54p (46p change)
20p + 36p = 56p (44p change)
25p + 28p = 53p (47p change)
25p + 34p = 59p (41p change)
25p + 36p = 61p (39p change)
28p + 34p = 62p (38p change)
28p + 36p = 64p (36p change)
34p + 36p = 70p (30p change)

15. Will she arrive at zero?

No
 $10 - 5 = 5$

Can you think of a different starting number where Beth would get to zero?

1, 3, 6, 10, 15, 21, 28