1) 12 346 + 7632 = 19 978. Write all the other calculations you can make using these three numbers.

2) Can you work out my number in each of these?

a) I am thinking of a number. I add 6538 and then subtract 1697. I now have 13 574. What is my number?

b) I am thinking of a number. I subtract 9657 and then add 12 368. I now have 47 305. What is my number?

c) I am thinking of a number. I add 12 101, subtract 3914 and then add 6054. I now have 36 278. What is my number?

1) Terry has written the different calculations that can be made from each calculation. He has made some mistakes.
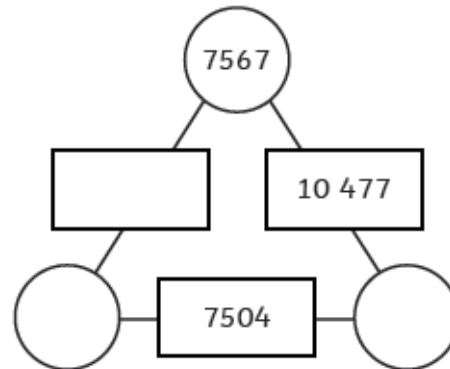
a) Can you identify them all?

32 105 + 16 251 = 48 356	52 132 – 12 658 = 39 474
16 251 + 32 105 = 48 356	52 135 – 39 474 = 12 658
16 251 – 48 356 = 32 105	39 474 + 12 658 = 52 132
48 356 – 32 105 = 16 251	12 658 + 52 132 = 39 474

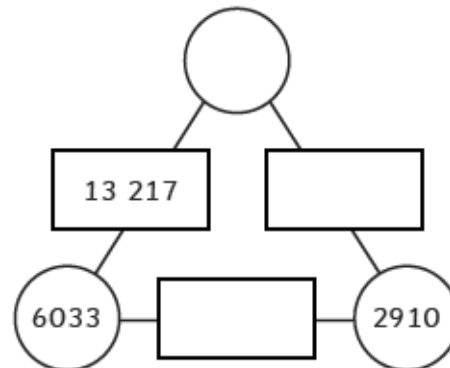| 9865 + 15 366 = 25 231 |
|---|
| 15 366 + 9865 = 25 231 |
| 25 231 – 15 366 = 9865 |
| 9865 – 25 231 = 15 366 |

b) How should Terry have written these correctly?

2) Terry says subtraction can be done in any order, just like addition. Do you agree? Explain your thinking and use examples.
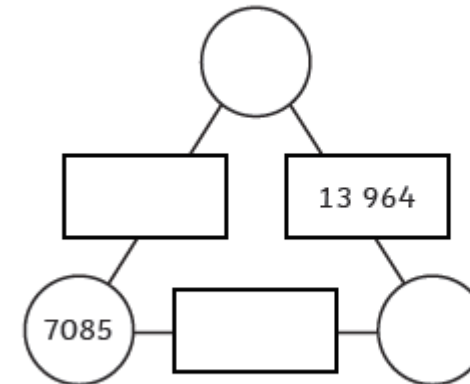
1) a) Can you complete this arithmagon by adding the numbers in two corners to find the number in the rectangle between them?

7567

10 477

7504

b) Can you complete this arithmagon by finding the difference between the two corners to find the number in the rectangle between them?

13 217

6033

2910

2) What could the numbers be to complete this arithmagon? Find 2 different possible sets of numbers using addition or difference.

13 964

7085

3) Now create your own arithmagons for your partner to try.
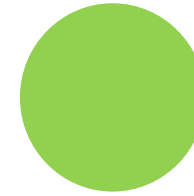
ANSWERS

1) $19\ 978 - 7632 = 12\ 346$

$19\ 978 - 12\ 346 = 7632$

$7632 + 12\ 346 = 19\ 978$

2) a) 8733 ($13\ 574 + 1697 = 15\ 271$ $15\ 271 - 6538 = 8733$)

b) $44\ 594$ ($47\ 305 - 12\ 368 = 34\ 937$ $34\ 937 + 9657 = 44\ 594$)

c) $22\ 037$ ($36\ 278 - 6054 = 30\ 224$ $30\ 224 + 3914 = 34\ 138$ $34\ 138 - 12\ 101 = 22\ 037$)
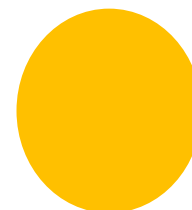
1) a)

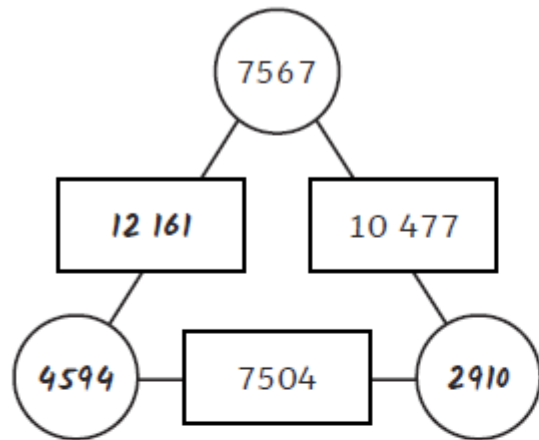| 32 105 + 16 251 = 48 356	52 132 − 12 658 = 39 474	9865 + 15 366 = 25 231
16 251 + 32 105 = 48 356	52 135 − 39 474 = 12 658	15 366 + 9865 = 25 231
(16 251 − 48 356 = 32 105)	39 474 + 12 658 = 52 132	25 231 − 15 366 = 9865
48 356 − 32 105 = 16 251	(12 658 + 52 132 = 39 474)	(9865 − 25 231 = 15 366)

b) 48 356 − 16 251 = 32 105

12 658 + 39 474 = 52 132

25 231 − 9865 = 15 366

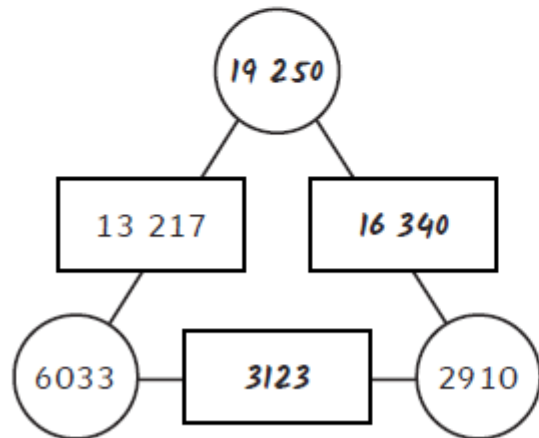**2)** Terry is incorrect. Addition is commutative (can be done in any order) but subtraction is not.
25 231 − 9865 ≠ 9865 − 25 321, but 25 231 + 9865 = 9865 + 25 231.

1) a)

Top circle: 7567

12 161 — 10 477

4594 — 7504 — 2910

b)

Top circle: 19 250

13 217 — 16 340

6033 — 3123 — 2910

2) Accept any correct answer.

Possible answers include:

Top circle: 7795

14 880 — 13 964

7085 — 13 254 — 6169 (using addition)

Top circle: 24 561

17 476 — 13 964

7085 — 3512 — 10 597 (using difference)