Monday 29th June

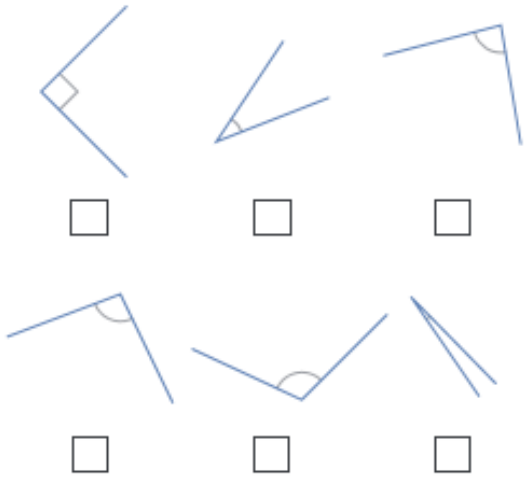
This week we will be carrying out some investigations into numbers – did you know numbers have feelings?

Remember to logon to Sumdog, everyone is really enjoying the site!

First, let's warm ourselves up with the following questions. Remember to think about whether you need a written method – can you do it mentally?

A. 23.2 + 42. 4 =	B. 93,214 – ? = 7,859
C. 62.34 x 100 =	D. 76.43 + 24.78 =
E. 400 + 1,200 =	

Q1 Tick all the acute angles.



1 mark

Q2 Fill in the missing boxes in this calculation.

$$\begin{array}{r} \square\,5\,6\,8\,\square \\ +\quad\square\,3\,4 \\ \hline \square\,3\,\square\,2 \end{array}$$

2 marks

Q3 A toy shop orders 14 boxes of small bouncy balls.

Each box contains 24 bags of bouncy balls.

Each bag contains 5 small bouncy balls.

How many small bouncy balls does the toy shop order?

bouncy balls

2 marks

Happy or Unhappy numbers?

Yes, even numbers have feelings!

To find happy numbers you follow the process below until you reach a single digit.

If the single digit answer is 1, your number is **happy**. If the single digit answer is not 1, then the number is **unhappy**.

Remember that to square a number, you multiply it by itself.

1. Select your number eg 23
2. Square both digits 2^2 3^2
   = 4 9
3. Add them together 4 + 9 = 13

Not a single digit - repeat the process

4. Square both digits 1^2 3^2
   = 1 9
5. Add them together 1 + 9 = 10

Not a single digit - repeat the process

6. Square both digits 1^2 0^2
   = 1 0
7. Add them together 1 + 0 = 1

Stop – we have a single digit!
It has ended in 1 !
So 23 is a **happy** number!

Now lets try again, this time with the number 12.

1. Select your number eg 1
2. Square both digits 1^2 2^2
   = 1 4
3. Add them together 1 + 4 = 5

Stop – we have a single digit!

The answer is not 1,

so 12 is an **unhappy** number.

Sometimes your answers will end up repeating themselves, so you are stuck in a loop. This also means that they are unhappy.

Let's investigate! Choose a task from below, or try them all!

- Find the happy numbers from 1-20 - or find them from 1 -50
- Patterns. What happens when we reverse the digits in a number ?
  Eg. If 23 is a happy number, will 32 also be happy?
  Test other numbers and see if you get the same result?
- Always true, sometimes true or never true? If a number is happy, its multiples of 10, 100 and 1000 will also be happy? Eg 23,230, 2300 and 23,000. Retest with other numbers.
  Is the same true for unhappy numbers?

Answers

A. 23.2 + 42. 4 = 65.6 *(M)*

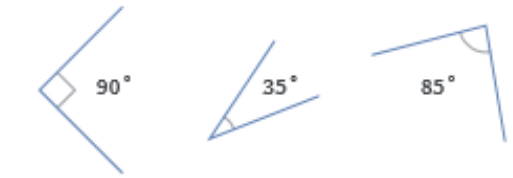
B. 93,214 – 85,355 = 7,859 *(W)*

C. 62.34 x 100 = 6,234 *(M)*

D. 76.43 + 24.78 = 101.21 *(W)*

E. 400 + 1,200 = 1,600 *(M)*

Q1 Tick all the acute angles.



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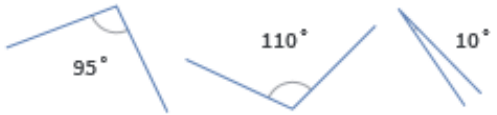

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1 mark

Q2 Fill in the missing boxes in this calculation.

	5	6	8	8
+		6	3	4
	6	3	2	2

2 marks

Q3 A toy shop orders 14 boxes of small bouncy balls.

Each box contains 24 bags of bouncy balls.

Each bag contains 5 small bouncy balls.

How many small bouncy balls does the toy shop order?

1,680 bouncy balls

2 marks

Happy number Investigation

- The happy numbers from 1 – 50 are: 1, 7, 10, 13, 19, 23, 28, 31, 32, 44, 49.

- If you reverse the digits of a happy number eg 23 and 32, both numbers will be happy.

If you reverse the digits of an unhappy number, eg 14 and 41, both numbers will be unhappy.

- Always true. If the number 23 is happy, then the multiples of 10, 100, 1000 etc (230, 2300, 23000) will also be happy.
  In addition, If a number is unhappy eg. 14 , then the multiples of 10, 100, 1000 etc will also be unhappy.