



Sherlock Holmes



Conundrums for the Forensic Science Class..!

Puzzles and Brain-Teasers...

See the end for hints & more details



Set 1



Dear forensic scientists of DCU,

Watson and I are in urgent need of assistance with our detective work. We're looking for certain individuals trained in the art of forensics.

We require some expert opinion regarding the many new scientific breakthroughs in the world of forensics to aid in our crime solving—particularly in the fields of fingerprinting, blood spatter and DNA analysis.

Below are a number of puzzles I have posed to Dr. Watson that require answering...perhaps you can lend us a hand?

Yours faithfully,

Sherlock Holmes

1. The First Camouflage...

I've got four words for you, Watson —

Elephantine,

Beechwood,

Bugleweed,

Stepmother.

Each word contains a smaller word, well camouflaged within its parent.

What is the common theme uniting the four smaller words?'

2. The First Wordknot...

'Examine this list of triplet letters, Watson, similar to 'codons' in the genetic code —

1. C D P

2. E H E

3. L O P

4. P I C

5. E C O

6. A R L

7. M A C

8. I T I

9. E E N

10. T S S

There are three ten-letter words on this note. The first line bears their initial letters, the second their second letters, and so on, until the tenth line, which bears their final letters.

However, on each line, the three letters are jumbled around. These words are also linked by a loose theme. Can you find the three ten-letter words?'



3. The Bottle...

'Watson, take this ruler —

That bottle over there is about one-third full of surgical spirits for a DNA extraction experiment.

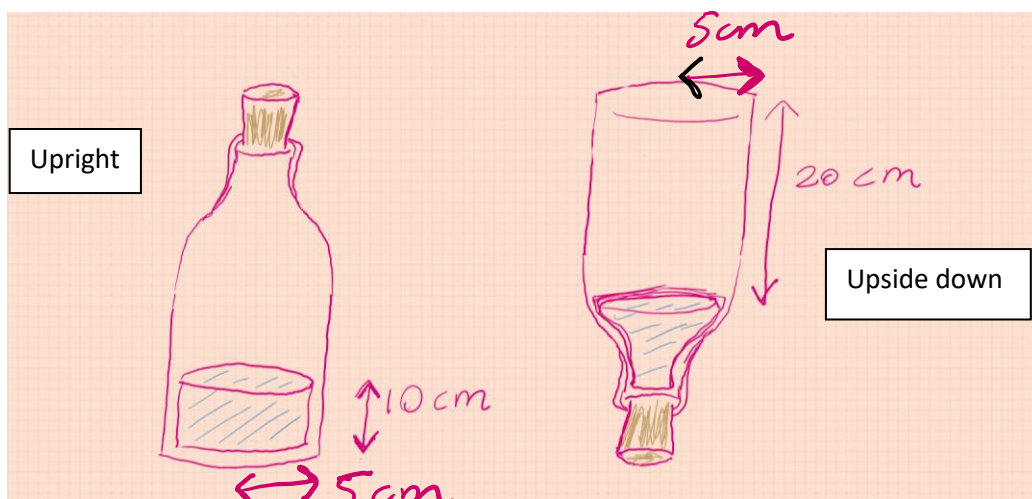
*Without opening the bottle or immersing it in any way, can you **think** of a way to find the **volume** of the bottle **if it were full**, using only the ruler?*

BONUS Q. — can you actually calculate this volume using the dimensions in the picture below? You can set the radius to 5cm!

Remember the importance of mathematics, Watson!

Recall that we use maths to analyse blood spatter patterns, for example...

(This is a hard one, see hints for help!!)



...Hints

(use as many or as few as you wish! You can cover hints using a piece of paper as you go down if you don't want too many spoilers 😊)

1.

- *One of the answers to the first riddle is part of the name of one of the animal species we looked at in class already... a hint to help you identify it is in the name of this puzzle in red!*
- *The answers are not jumbled up in the words themselves, so you don't have to mix up the letters!*
- *The answers are all related to the animal kingdom...*
- *They are all small animals! And small words!*
- *This group in the animal kingdom is very diverse, with lots of different species... the name of the group begins with the letter **I***

- *They are 'hexapod invertebrates'!*

2.

- *The words are all related to... food!*
- *One of the words is a word to describe a group of a certain type of food...*
- *One of them is a noun ('a thing'), and they are lovely and sweet*
- *Another is also a noun, and makes a great flavour for candy canes or tea.*

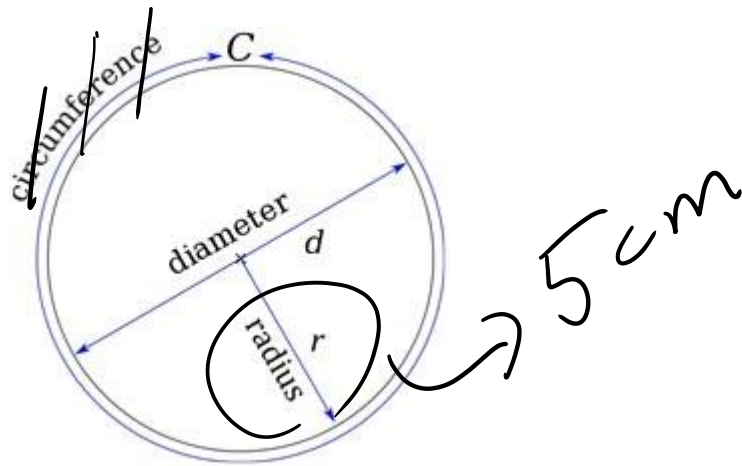
This tea can actually help ease indigestion, and its oils can stimulate the gallbladder to produce and release bile that the body uses to digest fat!

3.

Don't worry about this one!!! It's just a little teaser... message me and I'll explain it to you better if you'd like

- *'Volume' – you might see on a carton of milk or orange juice the symbol '1L' – this means that there is 1 litre of liquid in the carton. This is the 'volume' of the carton. 1 litre = 1000 cm³*
- *A ruler is the only tool needed for this puzzle, but feel free to use a calculator too!*
- *The **area** of a circle is the number π ('pi') multiplied by r^2 (r = 'radius' of a circle). You can set π equal to 3.14 ('.' is a decimal point!). ' r^2 ' or 'r squared' just means the radius multiplied by the radius...*
- *You can use the above formula to calculate the area of the base of the bottle (3.14 multiplied by r^2)*
- *Using the ruler, you can measure the 'diameter' of the base of the bottle, which is from one point of the edge*

of the base to the point directly opposite it. The **radius is half of the diameter!** (You don't need to use the 'circumference')



- To find the **volume** it would hold when full, you first need to measure the **height** of the liquid from the base to measure the volume of the liquid already there. Volume is found by multiplying area by height! You can record your figure for this calculation down now... (this is the volume of a cylinder: $3.14 \times r^2 \times \text{height}$). \times = multiply
- Then, you'd have to **turn the bottle upside down** and measure the height of the **empty space** from the top of the liquid to the base! Then, find the volume of this new empty cylinder using the same formula, but with

the height of the empty space this time: $(3.14 \times r^2 \times \text{height } 2)$

- *Finally, add the volumes of the two cylinders together to find the **total** volume of the whole bottle!!! Your answer will be in **cm³**...*



Answers!

Email me at michael.glynn1.staff@ctyi.org if you have any ideas/questions/answers/! I can give more hints too...

I've got loads of these, and I can put up easier and/or harder ones! Let me know which you'd prefer and stay tuned

I'll also put up answers on the website, I'll give you some time to try it first 😊

For more puzzles like these, check out *Sherlock Holmes' Rudimentary Puzzles*, an excellent book by Tim Dedopulos