

MAY 2019

DEPARTMENT OF MATHEMATICS

PROBLEM SOLVING CHALLENGE

Q1.

Junior Cycle

Solve the following system of equations to crack the code below. All workings must be shown.

- $4i - 5h = 16$
- $3m^2 - 21m = -2i$
- $t^2 - 11t + 6h = 0$
- $2c - 3s = -13$
- $2^h = 16$
- $a^2 - ia + (c + 4)$
- $4c - s = 29$
- $e = (s - c)(i - h)$

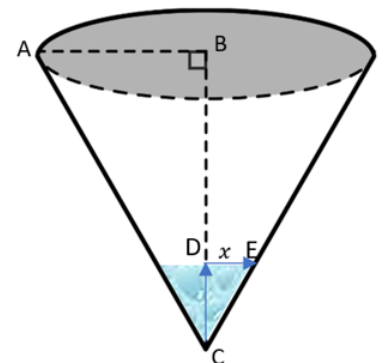
1	2	3	4	5	6	7	8	9	10	11
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Q2.

Senior Cycle

The cone in the diagram has a volume of $360\pi \text{ cm}^3$ and a radius of 10cm . The cone is filled with water so that the height of the water in the cone is 4cm . ($[CD] = 4\text{cm}$).

- Show that triangles ABC and DEC are similar triangles.
- Write down the height of the full cone and hence find the volume of water in the cone.
- If the cone is flipped upside down what would the height of the water be?



Answers on an A4 sheet with your Name, Year and Class should be given to Mr. McManus or to Mr. McEvoy in room 33 before 4pm on Friday the 24th of May.

Monthly Prize for both **Junior** and **Senior** Cycle.*

Good Luck.

Junior Cycle students answer question 1 only.

Senior Cycle students answer question 2 only