All these problems appeared on a Canadian Team Math Contests, for high school students created by the Centre for Education in Mathematics and Computing at the University of Waterloo. For more contests and other resources visit their website: http://cemc.uwaterloo.ca

2 (b). Let t be TNYWR.

Three siblings share a box of chocolates that contains t pieces. Sarah eats $\frac{1}{3}$ of the total number of chocolates and Andrew eats $\frac{3}{8}$ of the total number of chocolates. Cecily eats the remaining chocolates in the box. How many more chocolates does Sarah eat than Cecily eats?

2 (a). Evaluate

$$\frac{\frac{1}{2} + \frac{1}{3}}{\frac{1}{2} \times \frac{1}{3}}.$$

3 (c). Let t=TNYWR.

In the diagram, the circle has centre O and radius t. Square $ABCD$ has side length t. The overlapping area is shaded. What is the positive difference between the unshaded area of the square and the circle? Round your answer to the nearest integer.
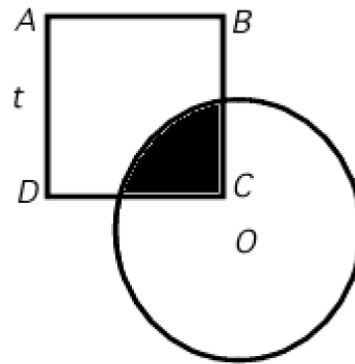
(c) Let t=TNYWR.

In the diagram, a fish tank in the shape of a rectangular prism $ABEDFJHG$ is tipped so that edge AJ rests on a table. Water fills the tank up to surface $FKCD$. The length of AB is t, and $FD = 60$, and $DA = AC = 40$.
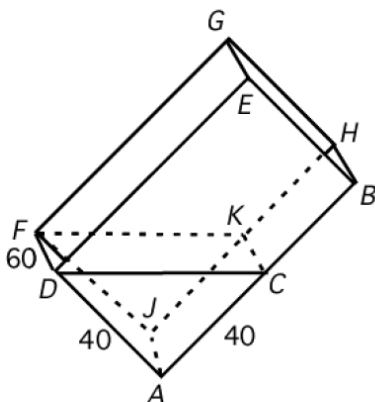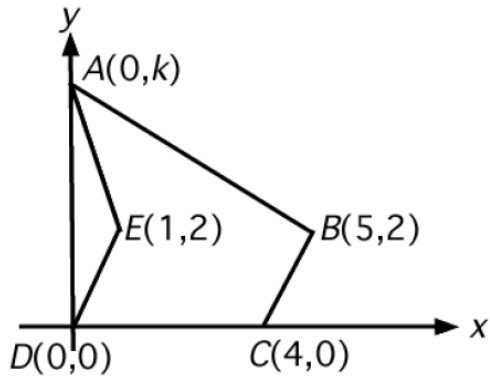

If the tank is set to rest on surface $HBAJ$, what will the depth of the water be?
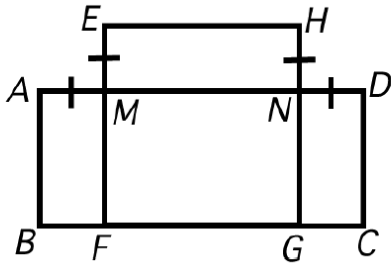
2. (a) Evaluate

$$2 + \frac{2}{2 + \frac{2}{2+2}}.$$

(b) Let t=TNYWR. Let $k = t - 90$. Determine the area of the pentagon $ABCDE$.

(c) Let t=TNYWR. $EFGH$ is a square and $ABCD$ is a rectangle. The area of $EFGH$ equals the area of $ABCD$. Also, $AM = EM = HN = DN = t$. Determine the length of BC.

17. A quantity of grey paint has a mass of 12 kg. The grey paint is a mixture of black paint and white paint, of which 80% by mass is white paint. More white paint is added until the mixture is 90% white paint by mass. What is the resulting total mass of the paint, in kg?