MULTICHOICE - 30 QUESTIONS:

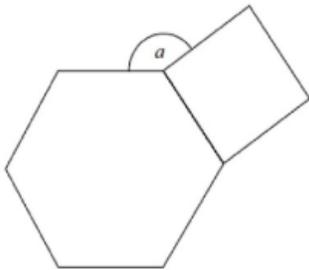## Mathswell – Year 7&8 Problem Solving Questions 2019

1. Put in one pair of brackets so that the answer is 28

Attempt 1: $16 + 8 \div 4 - 2 \times 3$ Attempt 2: $16 + 8 \div 4 - 2 \times 3$

2. If a regular hexagon and square are combined as shown. How big is angle a?

3. Greengrocer C. Carrot wants to arrange his oranges neatly for sale. Doing this he discovers that one orange is left over when he places them in groups of three. The same happens if he tries to place them in groups of 5, 7, or 9 oranges. Only when he makes groups of 11 oranges, it fits exactly.

What is the least number of Oranges the greengrocer can have?

4. There are 42 marbles in a bag. There are 3 times as many yellow marbles than green marbles and 7 more blue marbles than green. What's the probability of pulling out a green marble?

5. The digits 4, 7, 8 and 9 can be put together to form 24 different four-digit numbers. If these numbers are arranged from largest to smallest, which number is in the fifteenth position.

6. Last year, in a 40 hour famine activity each of 12 volunteers worked 40 hours and were sponsored $16 per hour. This year 16 volunteers, each working only 32 hours, raised the same total amount of money. How much did each volunteer raise per hour this year?

7. A teacher has 7 children in a group with the ages 5, 6, 7, 9, 9, 9, 11. She wants to shift 2 of these children to another group. Which 2 children can she shift and leave the range, mean, median and mode of the children's ages the same?

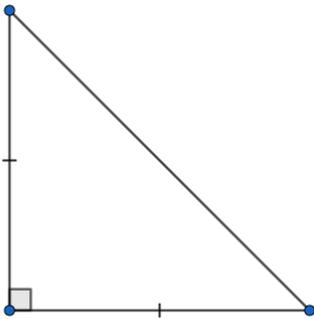8. What is the volume of the solid on the right
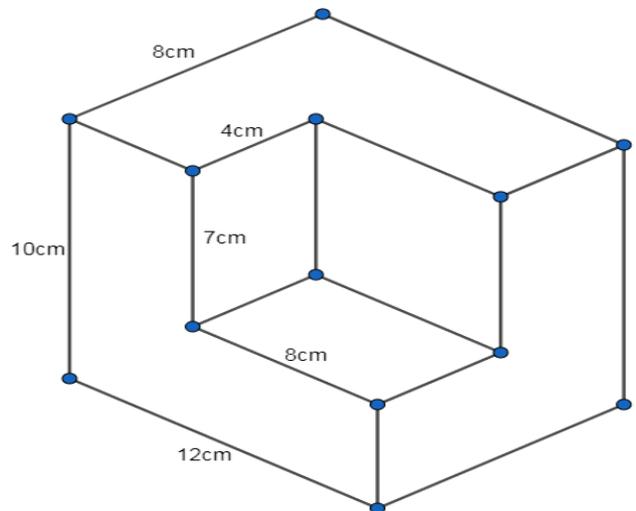
9.
A "relation machine" outputs a number when two numbers, A and B are put in. What is the value of T?

A	B	Output
2	5	16
4	2	16
3	0	9
5	3	T

10.
If A, B and C are digits to be chosen from 1, 2, 3, 4, 5, 6, 7, 8, 9. (without repetition). What is the largest number that can be made using the formula: $+B \times C - A \times B$?

11.
What is the correct name for this shape?

12.
Twenty balls, numbered 22-41 are placed in a container. Each ball is equally likely to be chosen. If one ball is chosen, what is the probability that the number on the selected ball is a prime number?

13. In the sequence: 40, 12, 38, ___, ___, ___, X, the next number is the average (mean) of the previous **three** numbers rounded to the nearest whole number, and so on.
What is the value of X?

14. How many dots from these dice are facing the ground?

15. The school lockers at Shrek's Far Far Away High School are to be numbered consecutively from 1 to 1,000 (inclusive) using plastic digits which cost 17 cents each. What is the total cost of all the digits?

16. In a bag full of balls, 1/4 of these balls are green, 1/8 are blue, 1/12 are yellow and the remaining 26 white. How many balls are blue?

17. If two numbers have a product of 308 and double the sum is 72. What is the larger number?

18. How many squares are in this image?
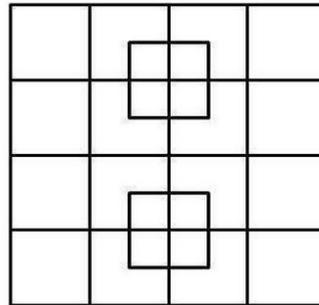
19. Here is a sequence of numbers: 1, 11, 21, 1211, 111221, …
It seems to be a strange sequence, but there is a system behind it. What is the next number in the sequence?

20. Mario and Giuseppe went to McDonalds for a feed. Mario had three cheese burgers, a thick shake and four large fries, he paid $21.45. Giuseppe had 2 cheese burgers, a thick shake and 2 fries and paid $13.90. The milkshake costs $2.60. How much does a cheese burger cost?