



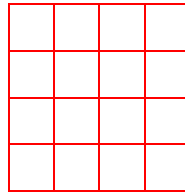
ECIS Mathematics League
Aristotle League 2007
Suggested age 10-12

Section One

Calculators are not allowed

Time: 40 minutes

1. How many squares are there in this shape?



2. Who am I? If you multiply me by 6, and subtract 7, the result is 59.

3. A rabbit in a bucket weighs 3 kg. A cat in a bucket weighs 5 kg. A cat and a rabbit weigh 4 kg together. How much does the bucket weigh?

4. Write down the next four terms in each of these patterns:

(a) 2, 4, 6, 8, ____, ____, ____, ____

(b) AL, BM, CN, DO, ____, ____, ____, ____

(c) 1, 2, 4, 7, 11, ____, ____, ____, ____

5. Sasha, Tammy and Mena play on the basketball team. Their positions are forward, centre and guard. Sasha and the guard shook hands with Mena. Sasha is not the forward. What is each person's position?

Sasha:

Tammy:

Mena:

6. When Rachel put her marbles in groups of 5, she had 2 marbles left over. When she put her marbles in groups of 6, she had 2 marbles left over. She has less than 40 marbles. How many marbles does she have?



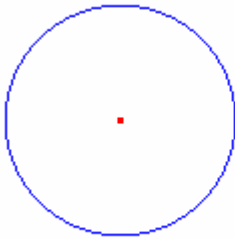
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Section Two

Calculators are not allowed

Time: 40 minutes

1. I cut a pie using four straight cuts which go completely across the pie. What is the maximum number of pieces I can cut the pie into? The pieces can be different shapes and sizes.



2. If 3 bananas are worth 2 oranges, how many oranges are 24 bananas worth?

3. Using the numbers 5, 6, 7 and 8 only once, put one number in each space to make a true statement.

____ + ____ - ____ = ____

4. Write down the next four terms in each of these patterns:

(a) A, C, E, G, ____, ____, ____, ____

(b) 1, 4, 9, 16, ____, ____, ____, ____

(c) Z, W, T, Q, N, ____, ____, ____, ____

5. In a horse race: **Alfie** finished 3 lengths ahead of Charlie
Energy finished 5 lengths ahead of Dolly
Alfie finished 4 lengths behind Bobby
Dolly finished 4 lengths behind Alfie
What was the finishing position of each horse?

1st :

2nd :

3rd :

4th :

5th :

6. A small bakery sells cakes. The number of cakes they sell increases each month by **10**.
If during the year 2006 they sold **1920 cakes**, how many cakes did the bakery sell in **December 2006**?



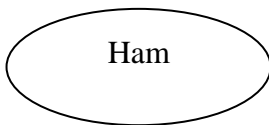
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Section Three

Calculators are not allowed

Time: 40 minutes

1. **Tammy, Nathan and Kristy** ordered different pizzas for lunch. They ordered **one ham pizza, one salami pizza and one mushroom pizza**. **Kristy** likes mushroom pizza and salami pizza. **Nathan** doesn't like ham pizza or salami pizza. Which pizza did they each order?



Tammy:

Nathan:

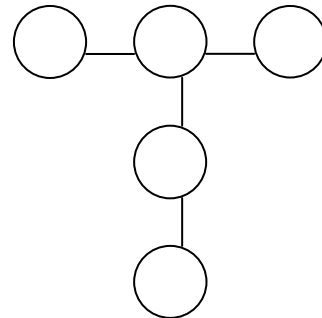
Kristy:

2. How many ducks and how many rabbits are there if there are **16 heads and 54 legs**?

Rabbits:

Ducks:

3. Use the numbers **1-5**. Use them **only once each** so that the **sum of the numbers is the same** in both directions. How many different solutions can you find?



4. Write next three terms in each sequence:

- (a) 1, 4, 7, 10, 13, ____, ____, ____
 (b) 29, 28, 26, 23, 19, ____, ____, ____
 (c) 2, 6, 18, 54, ____, ____, ____

5. The mean (average) of X, Y and Z is 6. Find the mean (average) of **2X + 3, 2Y - 2** and **2Z + 5**.

6. A frog sits on a lily-pad in the middle of a pond which is **45 meters across**. The frog can hop **12 meters**, after which it is so tired it can only hop **half the length of each previous hop** (its next hop is half the length its last hop and so on, it goes on hopping half its last hop). How many hops does it take for the frog to get to the edge of the pond?



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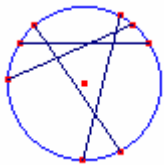
Answers: - "accept a correct numeric answer
without units"

Section one

- 27.
- 11
- 2 kg
- (a) 10, 12, 14, 16
(b) EP, FQ, GR, HS
(c) 16, 22, 29, 37
- Tammy, guard; Sasha, centre; Mena, forward.
- 32

Section two

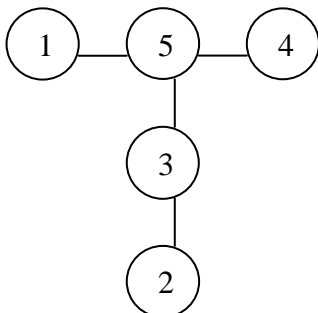
- 11



- 16
- $7 + 6 - 5 = 8$. Other solutions are possible, for example $7 + 6 - 8 = 5$
- (a) I, K, M, O.
(b) 25, 36, 49, 64
(c) K, H, E, B.
- 1st, Bobby; 2nd, Energy; 3rd, Alfie; 4th, Charlie; 5th Dolly
- 215 cakes they baked in December.

Section three

- Tammy, ham; Kristy, salami; Nathan, mushroom.
- 11 rabbits, 5 ducks.
- Sum 10 is provided in the diagram but sum to 8 and 9 are also possible



- (a) 16, 19, 22
(b) 14, 8, 1
(c) 162, 486, 1458
- 14
- 4