Mathematics Admission Test

Abilities:

- Understand mathematical concepts (number sense, algebraic and geometric thinking, measurement)
- Utilize the problem solving process (explore, plan, solve, verify)
- Perform calculations with and without technology

Content:

- Operations with integers (addition, subtraction, multiplication, division, exponents, square root)
- Operations with absolute value
- Order of operations
- Operations with fractions and decimals
- Working with ratios and proportions
- Solve consumer related problems (profit, loss, discount, interest, etc.)
- Write and solve equations and inequalities from expressions
- Calculate measurable attributes of figures: degrees of angles, length, perimeter and area (of rectangles, triangles, circles and composite figures), surface area and volume of right prisms and pyramids
- Evaluate expressions involving variables
- Graphical representation of linear functions.

Sample questions

1. Natalie is a kindergarten teacher in a small village. She bought 42 colored pencils. If every child receives the same amount of pencils how many children could be in her group? Give a short and clear reason for your answer.

2. The farmer has 120 sheep. Two-thirds of the sheep were in the pasture since early morning. Half of the ones remaining joined them around 9am.

a) How many were in the pasture since early morning?

b) How many sheep are left in the stable after 9 am?

3. The average temperatures in January in a few European cities are as follows:

City	Temperature
Vienna	$0.3^0 C$
Sofia	$-0.5^0 C$
Paris	$4.9^0 C$
Prague	$-1.4^0 C$
Rome	$7.5^0 C$
Oslo	$-4.3^0 C$
Bucharest	$-1.5^0 C$

a) Order the cities from coldest to warmest.

b) If the temperatures would rise (increase) by 2 degrees, how much would the average temperature be in Vienna, Sofia, Prague and Oslo?

4. Clarissa had $721 saved last month, but now she has only $648 in her bank. How much money did she spend?

5. The gas for the trip cost $120.40. If four people are traveling in the car, how much should each pay for the gas expense.

6. A store has a 20% discount. How much would you need to pay for a jacket whose regular price is 150RON?

7. Roland works and receives $250/month. His parents give him $50 /month. He spends 25% of his money to travel. How much does he spend traveling?

Solve. Simplify.

8. a) $\frac{5}{12} \times \frac{2}{15}$ b) $\frac{3}{4} + \frac{5}{6} + \frac{1}{2}$ c) $4.30 \div 0.20$ d) 200×3.5

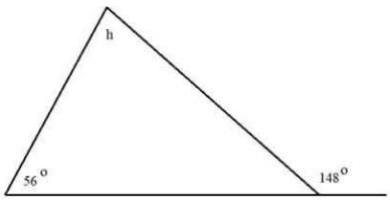
e) $\sqrt{16} - 3$ f) $(-3) - \sqrt{4}$ g) $|5-7| + (-2)^2$ h) $3 + 5(2) - (5-9) - 2^2$

9. a) $5x - 2 - 3x = 3 - x + 1$ b) $\frac{x-20}{3} = 25$

10. Solve and graph on a number line.

a) $2x - 5 < 17$ b) $-3x \leq 6$

11. Find the measurement of angle *h.*



12. Evaluate the following expression: $xy + 2x - y$, if $x = -2$ and $y = 3$.

13. Represent graphically the function:
f: {-2, -2, 0, 1, 3}→ R, f(x) = 2x - 4.

14. Find the surface area and the volume of the following prism.