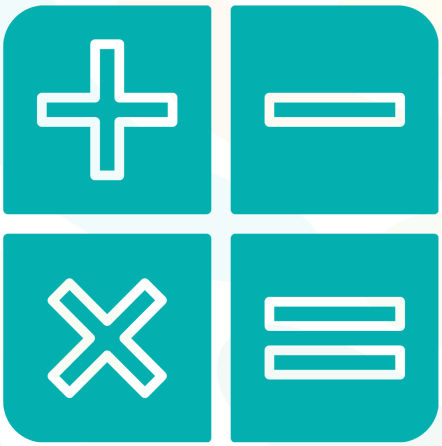
BRAINIACS OLYMPIAD

GRADES 3-4

MATHEMATICS SAMPLE PAPER

PRACTICAL PART



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MATHEMATICS SAMPLE PAPER-GLOBAL FINAL
Grade: 3-4
Time: 120 minutes
Total points: 100

Q1.
The digital clock on the exam hall wall shows the time in a 24-hour format (for example, 14:15). A student notices that the sum of the four digits displayed on the clock is exactly 22.
Which of the following times could NOT be the one the student saw?
A) 07:59
B) 09:49
C) 15:79
D) 19:57

Q2.
In the exam hall, desks are arranged in a specific repeating pattern of colors based on their numbered positions to help students find their rows. The colors follow this sequence: Red, Blue, Green, Yellow, Red, Blue, Green, Yellow...
If the first desk (Numbered 1) is Red, what is the color of the desk Numbered 2026?
A) Red
B) Blue
C) Green
D) Yellow

Q3.
A student has a stack of identical square sticky notes. When she places 3 sticky notes side by side in a single row, they form a rectangle. The total perimeter of this rectangle is 32 cm.
What is the area of one square sticky note?
A) 4 cm^2
B) 12 cm^2
C) 64 cm^2
D) 16 cm^2

Q4.
In the exam hall, 2 identical full water bottles weigh the same as 10 identical boxes of paperclips. One box of paperclips weighs 100 grams.
What is the mass of half of one water bottle?

A) 500 grams
B) 1000 grams
C) 250 grams
D) 125 grams

Q5.
The analog clock on the wall shows exactly 3:00 PM. A student looks at the clock's reflection in a shiny trophy.
What time does the reflection appear to show?
A) 3:00
B) 6:00
C) 9:00
D) 12:00

Q6.
Three students — Alice, Bob, and Cathy — have identical water bottles.
Alice's bottle is $\frac{3}{4}$ full.
Bob's bottle is $\frac{5}{8}$ full.
Cathy's bottle is $\frac{2}{3}$ full.
The proctor pours all the water into an empty large pitcher that can hold the same volume as 3 full bottles.
What fraction of the pitcher is now full?
A) $\frac{10}{15}$
B) $\frac{49}{24}$
C) $\frac{49}{72}$
D) $\frac{10}{24}$

Q7.
Note: You must use your ruler for this question.
a) Measure the length of your examination desk to the nearest whole centimeter. Let this be L.

Measure the width of your desk to the nearest whole centimeter. Let this be W.
Record these values.
b) Calculate the perimeter of your desk in millimeters.
c) Suppose you cover the entire surface of your desk with standard exam papers, each measuring 20 cm × 30 cm. The papers cannot overlap or hang over the edge.
What is the maximum number of full papers that can fit on the desk?
d) Based on your measurements, determine whether the area of your desk is greater than, less than, or equal to 15 times the area of one exam paper.
Show your work.

Q8.
Required Tool: Ruler
For this problem, use the front cover sheet of this exam booklet.
a) Use your ruler to measure the length and width of this sheet to the nearest whole centimeter.
What are the dimensions?
b) Calculate the total area of the sheet in cm^2.
c) If you fold this sheet exactly in half twice (first vertically, then horizontally), what is the perimeter of the resulting smaller rectangle?
d) Suppose $\frac{3}{25}$ of the front page is covered in ink. If the page is 600 cm^2 (hypothetically), how many cm^2 are left white/blank?

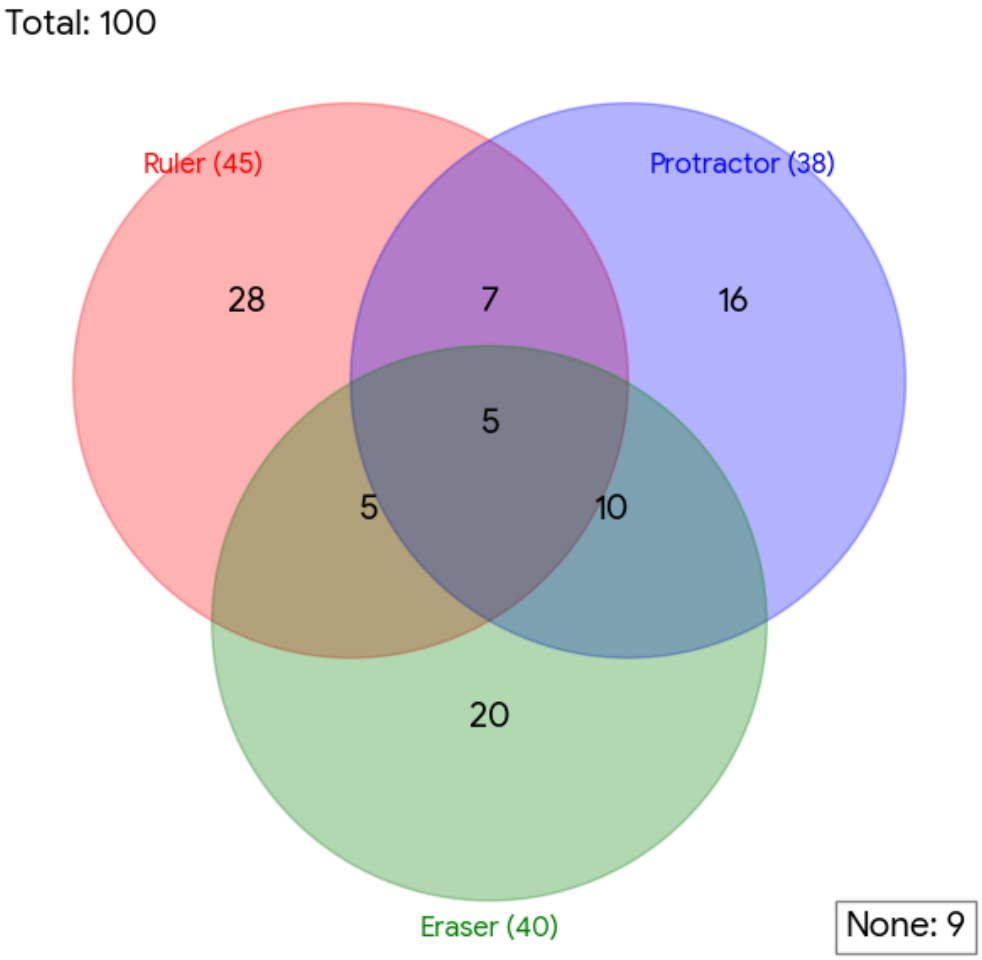
Q9.
A student is bored and arranges her pencils in a pattern on the desk.
Pattern 1: 3 pencils (forming a triangle)
Pattern 2: 5 pencils (two triangles sharing a side)
Pattern 3: 7 pencils (three triangles sharing sides)
a) How many pencils are needed for Pattern 5? (Answer: 11)
b) Write a rule to find the number of pencils if you know the Pattern Number (N). (Answer: *P(N)=2N+1*)
c) If the student has a box of 25 pencils, what is the largest Pattern Number she can complete? (Answer: 12)
d) What is the total number of pencils used if she builds all patterns from 1 to 4 at the same time? (Answer: 24)

Q10.
The invigilator checks the bags of 100 students for three items: a Ruler, a Protractor, and an Eraser.

- 45 students have a Ruler.

- 38 students have a Protractor.
- 40 students have an Eraser.
- 12 students have both a Ruler and a Protractor.
- 15 students have both a Protractor and an Eraser.
- 10 students have both a Ruler and an Eraser.
- 5 students have all three items.

a) Draw a Venn Diagram representing this data.



(Answer:)

b) How many students have **only** an Eraser?

(Answer: 20)

c) How many students have **none** of these three items in their bags?

(Answer: 9)