February Regional **Algebra I Team round**
Question 1

There are 34 students in the Anchor club.
There are 43 students on the Brain Brawl Team.
There are 50 students in the MAΘ Club.

15 students are in Anchor and MAΘ.
13 students are in Brain Brawl and MAΘ.
12 students are in Anchor and Brain Brawl.
5 are in all three clubs.

How many total students are there in the three clubs?

February Regional **Algebra I Team round**
Question 2

Josh weighs 187 pounds, but is on a diet that makes him lose 3 pounds per week. Tanner weighs only 111 pounds, but is trying to gain 1 pound per week.

X. After how many weeks will Tanner be only 20 pounds lighter than Josh?

Y. After how many weeks will each be the same weight?

Find X + Y.

February Regional

Algebra I Team round
Question 4

A. Keith scored 98, 78, 85, 91 percentages on his first 4 tests in calculus. What percent must he score on the final test for his average to be exactly 90% for his final grade?

B. If his lowest test could be dropped what would he have to make on the final test for his average to be exactly 90% for his final grade?

Find A - B.

February Regional

Algebra I Team round
Question 3

Robin Banks has $5000 to invest. He invested some in an investment that earned 9% interest and the rest in an investment that earned 12 % interest. He earned $537 in interest. How much did he invest at 12 %?

February Regional **Algebra I Team round**
Question 5

Solve: $3(1+w)=2[\ 3(w+2)-(w+2)\ ]$
$17-7(x-3)+x=86$
$0=5(7-y)+12y$
$4(z+3)-(\ z-1\ )=58$

Find: yx^2+wz^2

February Regional **Algebra I Team round**
Question 6

Find the point of intersection of the line that contains the points (2.5, 3.5) and (3, 4) and the line that contains the points (1, 5) and (3, 1).

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Algebra I Team round
Question 7

Given that $f(x) = 3x + 2$ and $g(x) = x^2 + 7x - 5$

Let $Q = f(-4)$
Let $R = g(4)$
Let $S = f(\frac{-1}{3})$
Let $T = g(-5)$

What is the value of $Q^2 + R - S^4 - T$?

February Regional

Algebra I Team round
Question 8

Sponge Bob Square Pants is running away from Sandy towards the Krusty Krab. He is running at 1.7 kilometers per minute (km/m). Five minutes later, Sandy leaves from the same point and decides to catch up with him going 2.9 (km/m).

To the nearest tenth of a minute, find the amount of time that it will take Sandy to catch up with Sponge Bob.

February Regional **Algebra I Team round**
Question 11

Let A = $(\sqrt{6} + 3)$ multiplied by its conjugate.

Let B = $\frac{\sqrt{5}}{5}$ added to the reciprocal of $\frac{3}{\sqrt{5}}$.

Let C = $\frac{-7}{\sqrt{5}}$ after it is simplified by rationalizing the denominator.

What is ABC?

February Regional **Algebra I Team round**
Question 12

Find the sum of the coefficients of the product of $(2x - 5)$ and $(3x^2 + 4x - 7)$.

February Regional **Algebra I Team round**
Question 13

What is the Greatest Common Factor of $(3x^2 + 21x - 24)$, $(x^2 + 16x + 64)$ and $(x^2 - 64)$?

February Regional **Algebra I Team round**
Question 14

Given A = {first 5 positive integers} B = {first 4 whole numbers}

A. Find the number of elements in $A \cup B$.

B. Find the number of elements in $A \cap B$.

Find A + B.

February Regional **Algebra I Team round**
Question 9

Complete the following steps.

Step 1: Multiply $(x - 3)(x - 4)$
Step 2: Multiply $(x + 4)(x + 4)$
Step 3: Add the result of problem step 1 and step 2 together.
Step 4: Subtract 43 from the result of step 3.

Factor the polynomial resulting in Step 4:

February Regional **Algebra I Team round**
Question 10

Find the **Sum** of the Mean, Median, Mode and Range of the following MAΘ competition scores:

100, 76, 84, 58, 76, 87, 78, 90, 87, 78, 87, 90, 66, 76, 78, 77, 59, 44, 87, 88, 94, 100

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Algebra I Team round
Question 15

A rectangle and triangle have the same height. The base of the rectangle is 19 meters and the base of the triangle is 16 meters. The combined area of the rectangle and the triangle is 324 square meters. Find the height of each figure.

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Algebra I Team round
Question 15

A rectangle and triangle have the same height. The base of the rectangle is 19 meters and the base of the triangle is 16 meters. The combined area of the rectangle and the triangle is 324 square meters. Find the height of each figure.