

ALGEBRA ONE COMPETITION MARCH 25, 1995
TEAM QUESTION # 1

20 % OF 30 % OF WHAT NUMBER IS 30 ?

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TEAM QUESTION # 2

Given: $3w - 2x = 2$ $-3y + 7z = 26$
 $7w - 5x = 6$ $8y - 4z = 4$

Find the value of:

$$4w - 3x + 2y + 10z$$

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TEAM QUESTION # 3

Solve for x :

$$\frac{x}{x+1} + \frac{1}{1-x} = \frac{2}{x^2-1}$$

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TEAM QUESTION # 4

In a walkathon to raise money to go to Math competition, XUN walked a certain distance at 5 mi/h and then jogged twice that distance at 8 mi/h. His total time walking and jogging was 2 hours and 15 minutes. How many miles long was the walkathon?

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TEAM QUESTION # 5

Solve: $\frac{1}{2} |d| + 5 \geq 2 |d| - 13$

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TEAM QUESTION # 6

Completely factor: $x^3 - 3x^2 + 3x - 2$

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TEAM QUESTION # 7

Simplify: Positive Exponents only !

$$\left(\frac{u}{v^{-1}}\right)^0 \cdot \left(\frac{u^{-1}}{v^2}\right)^2 \cdot (uv^2)^{-1}$$

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TEAM QUESTION #8

At 7:38:16 a.m. (38 minutes and 16 seconds after 7 o'clock) the count down on a rocket launch stood at -14:42 (14 minutes and 42 seconds before launch). There was a one minute and 15 second delay in resuming the count. At what time did the rocket take off?

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 TEAM QUESTION #9
 Simplify:

$$\frac{x^{2n} - 2x^n y^n + y^{2n}}{x^{2n} + 3x^n y^n - 4y^{2n}}$$

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 TEAM QUESTION #10
 A certain fraction is equivalent to $\frac{2}{7}$.

If the numerator is doubled and the denominator is decreased by 1, the value of the new fraction is $\frac{3}{5}$.

Find the original fraction.

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 TEAM QUESTION #11
 Simplify:

$$u + \frac{1}{1 + \frac{1}{u}}$$

$$\frac{1}{u+1}$$

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 TEAM QUESTION #12

Members of the math club were to be assessed equally to raise \$400 for the purchase of software. When 4 more persons joined the club, the per-member assessment was reduced by \$5.00. What was the new size of the club membership?

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 TEAM QUESTION #13

In a 2 candidate election 1401 votes were cast. If 30 voters had switched their votes from the winner to the loser, the loser would have won by 5 votes. How many votes did the winner actually receive?

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 TEAM QUESTION #14
 Find the solution set:

$$x \leq \frac{x+4}{3} + 2 \quad \text{or} \quad x \geq 2x - 1 \quad \text{and} \quad 1 \leq \frac{x-1}{2} \leq 3$$

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 TEAM QUESTION #15
 If $t > 0, m > 1, n > 1$ Simplify:

$$\frac{t^{n+1} t^{n-1}}{t^n}$$