


TEST YOUR SKILLS

- 1** Roger enjoys soccer and his team is pretty good: last season they won 7 more games than they lost. There were a total of 23 games; none were ties. How many games did his team win?

(CAN John Abbott College, Final Exam, 1999)

[7]

- 2** Trevor's farm of mutant animals has 3 legged goats and 5 legged goats. In one pen he counts 83 legs and 23 heads; how many 5 legged goats are there?

(USA Rice University Mathematics Tournament, 2005)

[7]

- 3** Let r be the line with equation $y = 2x - 8$ and let P and Q be the points at which r crosses the x -axis and the y -axis, respectively. Find the area of the triangle OPQ , where O is the origin.

[16]

- 4 TEST** Given $ax + by = (a - b)^2$ and $ax - by = a^2 - b^2$, determine the difference in x and y .

- A** $3(a + b)$. **D** $2(a - b)$.
B $3(a - b)$. **E** $(a - b)$.
C $2(a + b)$.

(USA North Carolina State High School Mathematics Contest, 2003)

- 5** Find the equation of the line through the point of intersection of $x - 2y + 6 = 0$ and $3x + 10y - 2 = 0$, and which contains the point $\left(\frac{1}{4}; 0\right)$.

(IR Leaving Certificate Examination, Higher Level, 1995)

[$4x + 12y - 1 = 0$]

- 6** The real numbers s, y, z, w satisfy:

$$\begin{cases} 2x + y + z + w = 1 \\ x + 3y + z + w = 2 \\ x + y + 4z + w = 3 \\ x + y + z + 5w = 25 \end{cases}$$

Find the value of w .

(USA Catawba College NCCTM, Mathematics Contest, 2005)

$\left[\frac{11}{2}\right]$

- 7** A dog and a cat together cost \$ 25. If the dog had cost \$ 5 more and the cat's price did not change, then the cat's price would have been a third of the total. How much did the dog cost?

(USA Bay Area Math Meet, Bowl Sampler, 1997)

[\$ 15]

- 8** Solve the system and state your conclusion.

$$\begin{cases} x - 2y = 8 \\ 3x + 4y = 6 \end{cases}$$

(CAN John Abbott College, Final Exam, 2001)

$\left[\frac{22}{5}; -\frac{9}{5}\right]$

- 9** The sum of three numbers is 17. The first is 2 times the second. The third is 5 more than the second. What is the value of the largest of the three numbers?

(USA Lehigh University: High School Math Contest, 2005)

[8]

GLOSSARY

to change: cambiare
to cross: attraversare
to enjoy: trovare piacere in
goat: capra
(...)-legged: a (...) zampe
to lose-lost-lost: perdere

pen: recinto per animali
pretty: piuttosto, abbastanza
price: prezzo
to satisfy: soddisfare
season: stagione
soccer: calcio (sport)

to solve: risolvere
to state: dichiarare, precisare
system: sistema
team: squadra
tie: pareggio
to win-won-won: vincere